Please check our wiki for help on navigating the form.

Horizon 2020

Call: H2020-SC5-2018-2019-2020

(Greening the economy in line with the Sustainable Development Goals (SDGs))

SECOND STAGE

Topic: SC5-27-2020

Type of action: RIA

Proposal number: SEP-210687569

Proposal acronym: MULTISOURCE

Deadline Id: H2020-SC5-2020-2

Table of contents

How to fill in the forms

The administrative forms must be filled in for each proposal using the templates available in the submission system. Some data fields in the administrative forms are pre-filled based on the steps in the submission wizard.

1 - General information

Topic	SC5-27-2020	Type of Action	RIA
Call Identifier	H2020-SC5-2018-2019-2020	Deadline Id	H2020-SC5-2020-2

Acronym	MULTISOURCE
Proposal title	ModULar Tools for Integrating enhanced natural treatment SOlutions in URban water CyclEs

Note that for technical reasons, the following characters are not accepted in the Proposal Title and will be removed: < > " &

Duration in months	*48*
Fixed keyword 1	Business models
Fixed keyword 2	Integrated management of water
Fixed keyword 3	International cooperation
Fixed keyword 4	Piloting
Fixed keyword 5	Urban water management
Fixed keyword 6	Wastewater management
Free keywords	*Climate change adaptation, Circular economy, Innovation, New business opportunities, Nature based solutions for water treatment, Stakeholder engagement, Waste water management, Water re-use policy*

Abstract

The overall goal of MULTISOURCE is to, together with local, national, and international stakeholders, demonstrate a variety of about Enhanced Natural Treatment Solutions (ENTS) treating a wide range of urban waters and to develop innovative tools, methods, and business models that support citywide planning and long-term operations and maintenance of nature-based solutions for water treatment, storage, and reuse in urban areas worldwide. MULTISOURCE will allow users to identify multiple sources for local water reuse, promote increased uptake of nature-based solutions, and minimize discharge of water that has not received adequate treatment. MULTISOURCE will deliver new knowledge about ENTS and their ability to remove waterborne contaminants and provide effective risk reduction for chemical and biological hazards, as well as their capacity to be integrated into the landscape and contribute to the improvement of urban habitats. The project includes seven pilots treating a wide range of urban waters. Two individual municipalities (Girona, Spain; Oslo, Norway), two metropolitan municipalities (Lyon, France; Milan, Italy), and international partners in Brazil, Vietnam, and the USA will contribute to each of the main project activities: ENTS pilots, risk assessment, business models, technology selection, and the MULTISOURCE Planning Platform. The use of urban archetypes in the Planning Platform will enable users to quickly classify regions (in both developed or developing countries) suitable for the application of nature-based solutions for water treatment (NBSWT) and compare scenarios both with and without NBSWT. This unique approach provides the knowledge, business models, and modular tools that will enable stakeholders to conduct fit-to-purpose, large-scale planning in their local region and, in doing so, promote circularity and sustainable development in the urban water sector and overcome barriers to widespread uptake of nature based solutions for water treatment.

Remaining characters 4

Has this proposal (or a very similar one) been submitted in the past 2 years in response to a call for proposals under Horizon 2020 or any other EU programme(s)? ○ Yes ◉ No

Please give the proposal reference or contract number.	
xxxxxx-x	

Declarations

1) The coordinator declares to have the explicit consent of all applicants on their participation and on the content of this proposal.	☒
2) The information contained in this proposal is correct and complete.	☒
3) This proposal complies with ethical principles (including the highest standards of research integrity — as set out, for instance, in the European Code of Conduct for Research Integrity — and including, in particular, avoiding fabrication, falsification, plagiarism or other research misconduct).	☒

4) The coordinator confirms:

- to have carried out the self-check of the financial capacity of the organisation on http://ec.europa.eu/research/participants/portal/desktop/en/organisations/lfv.html or to be covered by a financial viability check in an EU project for the last closed financial year. Where the result was "weak" or "insufficient", the coordinator confirms being aware of the measures that may be imposed in accordance with the H2020 Grants Manual (Chapter on Financial capacity check); or	○
- is exempt from the financial capacity check being a public body including international organisations, higher or secondary education establishment or a legal entity, whose viability is guaranteed by a Member State or associated country, as defined in the H2020 Grants Manual (Chapter on Financial capacity check); or	◉
- as sole participant in the proposal is exempt from the financial capacity check.	○

5) The coordinator hereby declares that each applicant has confirmed:

- they are fully eligible in accordance with the criteria set out in the specific call for proposals; and	☒
- they have the financial and operational capacity to carry out the proposed action.	☒

The coordinator is only responsible for the correctness of the information relating to his/her own organisation. Each applicant remains responsible for the correctness of the information related to him and declared above. Where the proposal to be retained for EU funding, the coordinator and each beneficiary applicant will be required to present a formal declaration in this respect.

According to Article 131 of the Financial Regulation of 25 October 2012 on the financial rules applicable to the general budget of the Union (Official Journal L 298 of 26.10.2012, p. 1) and Article 145 of its Rules of Application (Official Journal L 362, 31.12.2012, p.1) applicants found guilty of misrepresentation may be subject to administrative and financial penalties under certain conditions.

Personal data protection

The assessment of your grant application will involve the collection and processing of personal data (such as your name, address and CV), which will be performed pursuant to Regulation (EC) No 45/2001 on the protection of individuals with regard to the processing of personal data by the Community institutions and bodies and on the free movement of such data. Unless indicated otherwise, your replies to the questions in this form and any personal data requested are required to assess your grant application in accordance with the specifications of the call for proposals and will be processed solely for that purpose. Details concerning the purposes and means of the processing of your personal data as well as information on how to exercise your rights are available in the privacy statement. Applicants may lodge a complaint about the processing of their personal data with the European Data Protection Supervisor at any time.

Your personal data may be registered in the Early Detection and Exclusion system of the European Commission (EDES), the new system established by the Commission to reinforce the protection of the Union's financial interests and to ensure sound financial management, in accordance with the provisions of articles 105a and 108 of the revised EU Financial Regulation (FR) (Regulation (EU, EURATOM) 2015/1929 of the European Parliament and of the Council of 28 October 2015 amending Regulation (EU, EURATOM) No 966/2012) and articles 143 - 144 of the corresponding Rules of Application (RAP) (COMMISSION DELEGATED REGULATION (EU) 2015/2462 of 30 October 2015 amending Delegated Regulation (EU) No 1268/2012) for more information see the Privacy statement for the EDES Database.

2 - Participants & contacts

#	Participant Legal Name	Country	Action
1	INSTITUT NATIONAL DE RECHERCHE POUR L'AGRICULTURE, L'ALIMENTATION ET L'ENVIRONNEMENT	France	
2	AARHUS UNIVERSITET	DK	
3	AYUNTAMIENTO DE GIRONA	ES	
4	ALCHEMIA-NOVA GMBH	AT	
5	Forum za enakopraven razvoj, drustvo	SI	
6	HELMHOLTZ-ZENTRUM FUR UMWELTFORSCHUNG GMBH - UFZ	DE	
7	Truong Dai hoc Bach Khoa-Dai hoc Quoc Gia Tp Ho Chi Minh	VN	
8	ICLEI EUROPEAN SECRETARIAT GMBH (ICLEI EUROPASEKRETARIAT GMBH)	DE	
9	FUNDACIO INSTITUT CATALA DE RECERCA DE L'AIGUA	ES	
10	INRAE TRANSFERT SAS	France	
11	INSTITUT NATIONAL DES SCIENCES APPLIQUEES DE LYON	FR	
12	IRIDRA SRL	IT	
13	METROPOLE DE LYON	FR	
14	CITTA METROPOLITANA DI MILANO	IT	
15	Montana State University Bozeman	US	
16	NORSK INSTITUTT FOR VANNFORSKNING	NO	
17	OSLO KOMMUNE	NO	
18	RIETLAND BVBA	BE	
19	UNIVERSIDADE FEDERAL DE SANTA CATARINA.	BR	
20	WATER EUROPE	BE	

2 - Administrative data of participating organisations

PIC	***Legal name***
999993274	*INSTITUT NATIONAL DE RECHERCHE POUR L'AGRICULTURE, L'ALIMENTATION ET L'ENVIRON*

Short name: INRAE

Address of the organisation

Street Rue De L'Universite 147

Town PARIS CEDEX 07

Postcode 75338

Country France

Webpage www.inrae.fr

Legal Status of your organisation

Research and Innovation legal statuses

Public body .....yes

Non-profit .....yes

International organisation .....no

International organisation of European interest .....no

Secondary or Higher education establishment .....no

Research organisation .....yes

Legal person .....yes

Industry (private for profit).....no

Enterprise Data

SME self-declared status.....10/07/2018 - no

SME self-assessment ..... unknown

SME validation sme.....25/09/2008 - no

Based on the above details of the Beneficiary Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

Department(s) carrying out the proposed work

Department 1

Department name: REVERSAAL ☐ not applicable

☐ Same as proposing organisation's address

Street: 5 rue de la Doua, CS 20244

Town: Villeurbanne

Postcode: 69625

Country: France

Department 2

Department name: UMR ITAP ☐ not applicable

☐ Same as proposing organisation's address

Street: 361 rue J-F Breton BP 5095

Town: Montpellier

Postcode: 34195

Country: France

Dependencies with other proposal participants

Character of dependence	***Participant***
Controls	INRAE TRANSFERT SAS

Person in charge of the proposal

The name and e-mail of contact persons are read-only in the administrative form, only additional details can be edited here. To give access rights and basic contact details of contact persons, please go back to Step 4 of the submission wizard and save the changes.

Title: Dr. Sex: ○ Male ◉ Female

First name: **Jaime** Last name: **NIVALA**

E-Mail: **jaime.nivala@irstea.fr**

Position in org.: Senior Research Associate

Department: UR REVERSAAL ☐ Same as organisation name

☐ Same as proposing organisation's address

Street: 5 rue de la Doua, CS 20244

Town: Villeurbanne Post code: 69625

Country: France

Website: https://www.inrae.fr/

Phone: +33 636128280 Phone 2: +xxx xxxxxxxxx Fax: +xxx xxxxxxxxx

Other contact persons

First Name	***Last Name***	***E-mail***	***Phone***
Pascal	MOLLE	pascal.molle@irstea.fr	*04 72 20 87 35*
Eva	RISCH	eva.risch@irstea.fr	*04 99 61 22 69*
Elisabeth	GRAF	graf@arttic.eu	*+xxx xxxxxxxxx*
Whitley	KIHANGUILA	whitley.kihanguila@pnoconsultants.com	*+xxx xxxxxxxxx*

PIC	***Legal name***
999997736	*AARHUS UNIVERSITET*

Short name: AU

Address of the organisation

Street NORDRE RINGGADE 1

Town AARHUS C

Postcode 8000

Country Denmark

Webpage www.au.dk

Legal Status of your organisation

Research and Innovation legal statuses

Public body .....yes

Non-profit .....yes

International organisation .....no

International organisation of European interest .....no

Secondary or Higher education establishment .....yes

Research organisation .....yes

Legal person .....yes

Industry (private for profit).....no

Enterprise Data

SME self-declared status.....20/05/2016 - no

SME self-assessment ..... unknown

SME validation sme..... unknown

Based on the above details of the Beneficiary Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

Department(s) carrying out the proposed work

Department 1

Department name: Department of Environmental Science ☐ not applicable

☐ Same as proposing organisation's address

Street: Frederiksborgvej 399

Town: Roskilde

Postcode: 4000

Country: Denmark

Dependencies with other proposal participants

Character of dependence	***Participant***	

Person in charge of the proposal

The name and e-mail of contact persons are read-only in the administrative form, only additional details can be edited here. To give access rights and basic contact details of contact persons, please go back to Step 4 of the submission wizard and save the changes.

Title: Dr. Sex: (•) Male ( ) Female

First name: **Pedro** Last name: **CARVALHO**

E-Mail: **pedro.carvalho@envs.au.dk**

Position in org.: Researcher

Department: Department of Environmental Science ☐ Same as organisation name

☐ Same as proposing organisation's address

Street: Frederiksborgvej 399

Town: Roskilde Post code: 4000

Country: Denmark

Website: https://pure.au.dk/portal/en/pedro.carvalho@envs.au.dk

Phone: +45 87158462 Phone 2: 45 20948446 Fax: *+xxx xxxxxxxxx*

Other contact persons

First Name	***Last Name***	***E-mail***	***Phone***
Toke	PANDURU	toke@envs.au.dk	*+45 87158597*
John	JACOBSEN	jj@envs.au.dk	*+45 93508383*
Jesper	Juel Holst	jjh@au.dk	*+45 30587943*
Ann-Christina	KNUDSEN	aclk@au.dk	*+45 93522209*

PIC	***Legal name***
966594428	*AYUNTAMIENTO DE GIRONA*

Short name: AYUNTAMIENTO DE GIRONA

Address of the organisation

Street PLACA DEL VI 1

Town GIRONA

Postcode 17004

Country Spain

Webpage http://www.girona.cat/web/

Legal Status of your organisation

Research and Innovation legal statuses

Public body .....yes

Non-profit .....yes

International organisation .....no

International organisation of European interest .....no

Secondary or Higher education establishment .....no

Research organisation .....no

Legal person .....yes

Industry (private for profit).....no

Enterprise Data

SME self-declared status.....01/01/1900 - no

SME self-assessment ..... unknown

SME validation sme..... unknown

Based on the above details of the Beneficiary Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

Department(s) carrying out the proposed work

Department 1

Department name: Sustainability ☐ not applicable

☒ Same as proposing organisation's address

Street: PLACA DEL VI 1

Town: GIRONA

Postcode: 17004

Country: Spain

Department 2

Department name: Economic Promotion ☐ not applicable

☒ Same as proposing organisation's address

Street: PLACA DEL VI 1

Town: GIRONA

Postcode: 17004

Country: Spain

Department 3

Department name: Social rights and Cooperation ☐ not applicable

☒ Same as proposing organisation's address

Street: PLACA DEL VI 1

Town: GIRONA

Postcode: 17004

Country: Spain

Dependencies with other proposal participants

Character of dependence	***Participant***	

Person in charge of the proposal

The name and e-mail of contact persons are read-only in the administrative form, only additional details can be edited here. To give access rights and basic contact details of contact persons, please go back to Step 4 of the submission wizard and save the changes.

Title: Mr. Sex: (•) Male ( ) Female

First name: **Marti** Last name: **TERES**

E-Mail: **marti.teres@ajgirona.cat**

Position in org.: City councillor

Department: Sustainability ☐ Same as organisation name

☒ Same as proposing organisation's address

Street: PLACA DEL VI 1

Town: GIRONA Post code: 17004

Country: Spain

Website: http://www.girona.cat

Phone: +34 972 419 000 Phone 2: +34 972 419 042 Fax: *+xxx xxxxxxxxx*

PIC	***Legal name***
926828502	*ALCHEMIA-NOVA GMBH*

Short name: alchemia-nova GmbH

Address of the organisation

Street BAUMGARTENSTRASSE 93

Town WIEN

Postcode 1140

Country Austria

Webpage http://www.alchemia-nova.net/

Legal Status of your organisation

Research and Innovation legal statuses

Public body .....no

Non-profit .....no

International organisation .....no

International organisation of European interest .....no

Secondary or Higher education establishment .....no

Research organisation .....no

Legal person .....yes

Industry (private for profit).....yes

Enterprise Data

SME self-declared status.....31/12/2019 - yes

SME self-assessment .....31/12/2019 - yes

SME validation sme.....31/12/2014 - yes

Based on the above details of the Beneficiary Registry the organisation is an SME (small- and medium-sized enterprise) for the call.

Department(s) carrying out the proposed work

No department involved

Department name: *Name of the department/institute carrying out the work.* ☒ not applicable

☐ Same as proposing organisation's address

Street: *Please enter street name and number.*

Town: *Please enter the name of the town.*

Postcode: *Area code.*

Country: *Please select a country*

Dependencies with other proposal participants

Character of dependence	***Participant***	

Person in charge of the proposal

The name and e-mail of contact persons are read-only in the administrative form, only additional details can be edited here. To give access rights and basic contact details of contact persons, please go back to Step 4 of the submission wizard and save the changes.

Title: Mr. Sex: (•) Male ( ) Female

First name: **Francesco** Last name: **MERCONI**

E-Mail: **menconi@alchemia-nova.net**

Position in org.: CEO

Department: ALCHEMIA-NOVA GMBH ☒ Same as organisation name

☒ Same as proposing organisation's address

Street: BAUMGARTENSTRASSE 93

Town: WIEN Post code: 1140

Country: Austria

Website: https://www.alchemia-nova.net/

Phone: +4318101000 Phone 2: *+xxx xxxxxxxxx* Fax: +4318101000-10

Other contact persons

First Name	***Last Name***	***E-mail***	***Phone***
Maria	WIRTH	maria.wirth@alchemia-nova.net	*+xxx xxxxxxxxx*
Johannes	KISSER	jk@alchemia-nova.net	*+4318101000-1*

PIC	***Legal name***
897056001	*Forum za enakopraven razvoj, drustvo*

Short name: Forum za enakopraven razvoj, drustvo

Address of the organisation

Street Ob dolenjski zeleznici 12

Town Ljubljana

Postcode 1000

Country Slovenia

Webpage www.forumfer.org

Legal Status of your organisation

Research and Innovation legal statuses

Public body .....no

Non-profit .....yes

International organisation .....no

International organisation of European interest .....no

Secondary or Higher education establishment .....no

Research organisation .....no

Legal person .....yes

Industry (private for profit).....no

Enterprise Data

SME self-declared status..... unknown

SME self-assessment ..... unknown

SME validation sme..... unknown

Based on the above details of the Beneficiary Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

Department(s) carrying out the proposed work

No department involved

Department name: *Name of the department/institute carrying out the work.* ☒ not applicable

☐ Same as proposing organisation's address

Street: *Please enter street name and number.*

Town: *Please enter the name of the town.*

Postcode: *Area code.*

Country: *Please select a country*

Dependencies with other proposal participants

Character of dependence	***Participant***	

Person in charge of the proposal

The name and e-mail of contact persons are read-only in the administrative form, only additional details can be edited here. To give access rights and basic contact details of contact persons, please go back to Step 4 of the submission wizard and save the changes.

Title: Ms

Sex: ○ Male ◉ Female

First name: **Ana**

Last name: **KALIN**

E-Mail: **ana.kalin@forumfer.org**

Position in org.: Policy maker and researcher

Department: Forum za enakopraven razvoj, drustvo ☒ Same as organisation name

☒ Same as proposing organisation's address

Street: Ob dolenjski zeleznici 12

Town: Ljubljana Post code: 1000

Country: Slovenia

Website: http://www.forumfer.org/english.html

Phone: +xxx xxxxxxxxx Phone 2: +xxx xxxxxxxxx Fax: +xxx xxxxxxxxx

PIC	***Legal name***
999994632	*HELMHOLTZ-ZENTRUM FUR UMWELTFORSCHUNG GMBH - UFZ*

Short name: UFZ

Address of the organisation

Street PERMOSERSTRASSE 15

Town LEIPZIG

Postcode 04318

Country Germany

Webpage www.ufz.de

Legal Status of your organisation

Research and Innovation legal statuses

Public body .....no

Non-profit .....yes

International organisation .....no

International organisation of European interest .....no

Secondary or Higher education establishment .....no

Research organisation .....yes

Legal person .....yes

Industry (private for profit).....no

Enterprise Data

SME self-declared status.....29/09/2008 - no

SME self-assessment ..... unknown

SME validation sme.....29/09/2008 - no

Based on the above details of the Beneficiary Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

Department(s) carrying out the proposed work

Department 1

Department name: Department of Catchment Hydrology ☐ not applicable

☒ Same as proposing organisation's address

Street: PERMOSERSTRASSE 15

Town: LEIPZIG

Postcode: 04318

Country: Germany

Department 2

Department name: Centre for Environmental Biotechnology (UBZ) ☐ not applicable

☒ Same as proposing organisation's address

Street: PERMOSERSTRASSE 15

Town: LEIPZIG

Postcode: 04318

Country: Germany

Dependencies with other proposal participants

Character of dependence	***Participant***	

Person in charge of the proposal

The name and e-mail of contact persons are read-only in the administrative form, only additional details can be edited here. To give access rights and basic contact details of contact persons, please go back to Step 4 of the submission wizard and save the changes.

Title: Dr. Sex: (•) Male ( ) Female

First name: **Jan** Last name: **FRIESEN**

E-Mail: **jan.friesen@ufz.de**

Position in org.: Research associate

Department: Department of Catchment Hydrology ☐ Same as organisation name

☒ Same as proposing organisation's address

Street: PERMOSERSTRASSE 15

Town: LEIPZIG Post code: 04318

Country: Germany

Website: https://www.ufz.de/index.php?en=36183

Phone: +49 341 235 1082 Phone 2: +49 341 235 45 1082 Fax: *+xxx xxxxxxxxx*

Other contact persons

First Name	***Last Name***	***E-mail***	***Phone***
Annette	SCHMIDT	annette.schmidt@ufz.de	*+49 341 235 1663*

PIC	***Legal name***
985166339	*Truong Dai hoc Bach Khoa-Dai hoc Quoc Gia Tp Ho Chi Minh*

Short name: HCMUT

Address of the organisation

Street LY THUONG KIET ST 268 WARD 14

Town HOCHIMINH CITY

Postcode 0084

Country Vietnam

Webpage www.hcmut.edu.vn

Legal Status of your organisation

Research and Innovation legal statuses

Public body .....yes

Non-profit .....yes

International organisation .....no

International organisation of European interest .....no

Secondary or Higher education establishment .....yes

Research organisation .....yes

Legal person .....yes

Industry (private for profit).....no

Enterprise Data

SME self-declared status.....27/10/1976 - no

SME self-assessment ..... unknown

SME validation sme..... unknown

Based on the above details of the Beneficiary Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

Department(s) carrying out the proposed work

Department 1

Department name: Centre Asiatique de Recherche sur l'Eau (CARE) ☐ not applicable

☒ Same as proposing organisation's address

Street: LY THUONG KIET ST 268 WARD 14

Town: HOCHIMINH CITY

Postcode: 0084

Country: Vietnam

Dependencies with other proposal participants

Character of dependence	***Participant***	

Person in charge of the proposal

The name and e-mail of contact persons are read-only in the administrative form, only additional details can be edited here. To give access rights and basic contact details of contact persons, please go back to Step 4 of the submission wizard and save the changes.

Title: Prof.

Sex: (•) Male ( ) Female

First name: **Dan**

Last name: **NGUYEN PHOC**

E-Mail: **npdan@hcmut.edu.vn**

Position in org.: Scientific Committee Member of CARE

Department: Centre Asiatique de Recherche sur l'Eau (CARE)

☐ Same as organisation name

☒ Same as proposing organisation's address

Street: LY THUONG KIET ST 268 WARD 14

Town: HOCHIMINH CITY

Post code: 0084

Country: Vietnam

Website: http://carerescif.hcmut.edu.vn

Phone: +84 283 6866 1258

Phone 2: +84 903 000 118

Fax: +xxx xxxxxxxxx

Other contact persons

First Name	***Last Name***	***E-mail***	***Phone***
Duc	HO TUAN	hotuanduc@hcmut.edu.vn	*+84 703 220 384*

PIC	***Legal name***
998341364	*ICLEI EUROPEAN SECRETARIAT GMBH (ICLEI EUROPASEKRETARIAT GMBH)*

Short name: ICLEI EURO

Address of the organisation

Street LEOPOLDRING 3

Town FREIBURG IM BREISGAU

Postcode 79098

Country Germany

Webpage www.iclei-europe.org

Legal Status of your organisation

Research and Innovation legal statuses

Public body .....no

Non-profit .....yes

International organisation .....no

International organisation of European interest .....no

Secondary or Higher education establishment .....no

Research organisation .....no

Legal person .....yes

Industry (private for profit).....no

Enterprise Data

SME self-declared status.....26/09/2008 - yes

SME self-assessment ..... unknown

SME validation sme.....26/09/2008 - yes

Based on the above details of the Beneficiary Registry the organisation is an SME (small- and medium-sized enterprise) for the call.

Department(s) carrying out the proposed work

No department involved

Department name: *Name of the department/institute carrying out the work.* ☒ not applicable

☐ Same as proposing organisation's address

Street: *Please enter street name and number.*

Town: *Please enter the name of the town.*

Postcode: *Area code.*

Country: *Please select a country*

Dependencies with other proposal participants

Character of dependence	***Participant***	

Person in charge of the proposal

The name and e-mail of contact persons are read-only in the administrative form, only additional details can be edited here. To give access rights and basic contact details of contact persons, please go back to Step 4 of the submission wizard and save the changes.

Title: Ms

Sex: ○ Male ◉ Female

First name: **Barbara** Last name: **ANTON**

E-Mail: **barbara.anton@iclei.org**

Position in org.: Coordinator

Department: ICLEI EUROPEAN SECRETARIAT GMBH (ICLEI EUROPASEKRETARIAT G ☒ Same as organisation name

☒ Same as proposing organisation's address

Street: LEOPOLDRING 3

Town: FREIBURG IM BREISGAU Post code: 79098

Country: Germany

Website: https://iclei-europe.org/

Phone: 49 761 36 892 0 Phone 2: 49 761 36 892 29 Fax: *+xxx xxxxxxxxx*

Other contact persons

First Name	***Last Name***	***E-mail***	***Phone***
Holger	ROBRECHT	holger.robrecht@iclei.org	*49 761 36 892 0*
Elke	RICK	elke.rick@iclei.org	*49 761 36 892 0*
Kurt	DIACHUN	kurt.diachun@iclei.org	*49 761 36 892 0*
Madeleine	NIMKE	grant.management.es@iclei.org	*49 761 36 892 0*

PIC	***Legal name***
997459052	*FUNDACIO INSTITUT CATALA DE RECERCA DE L'AIGUA*

Short name: ICRA

Address of the organisation

Street CALLE EMILI GRAHIT EDIFICI H20 101

Town GIRONA

Postcode 17003

Country Spain

Webpage http://www.icra.cat

Legal Status of your organisation

Research and Innovation legal statuses

Public body .....no

Non-profit .....yes

International organisation .....no

International organisation of European interest .....no

Secondary or Higher education establishment .....no

Research organisation .....yes

Legal person .....yes

Industry (private for profit).....no

Enterprise Data

SME self-declared status.....30/11/2007 - no

SME self-assessment ..... unknown

SME validation sme..... unknown

Based on the above details of the Beneficiary Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

Department(s) carrying out the proposed work

Department 1

Department name: Technologies and evaluation ☐ not applicable

☒ Same as proposing organisation's address

Street: CALLE EMILI GRAHIT EDIFICI H20 101

Town: GIRONA

Postcode: 17003

Country: Spain

Dependencies with other proposal participants

Character of dependence	***Participant***	

Person in charge of the proposal

The name and e-mail of contact persons are read-only in the administrative form, only additional details can be edited here. To give access rights and basic contact details of contact persons, please go back to Step 4 of the submission wizard and save the changes.

Title: Prof.

Sex: (•) Male ( ) Female

First name: **Joaquim**

Last name: **COMAS**

E-Mail: **jcomas@icra.cat**

Position in org.: Research Professor

Department: Technologies and evaluation

☐ Same as organisation name

☒ Same as proposing organisation's address

Street: CALLE EMILI GRAHIT EDIFICI H20 101

Town: GIRONA

Post code: 17003

Country: Spain

Website: http://www.icra.cat

Phone: 34 972 183380

Phone 2: 34 615831769

Fax: +xxx xxxxxxxxx

Other contact persons

First Name	***Last Name***	***E-mail***	***Phone***
Laura	BERTOLINI	project@icra.cat	*34 972 183380*
Lluis	COROMINAS	lcorominas@icra.cat	*34 972 183380*

PIC	***Legal name***
999793260	*INRAE TRANSFERT SAS*

Short name: IT

Address of the organisation

Street RUE DU DOCTEUR FINLAY 28

Town PARIS

Postcode 75015

Country France

Webpage www.inra-transfert.fr

Legal Status of your organisation

Research and Innovation legal statuses

Public body .....no

Non-profit .....no

International organisation .....no

International organisation of European interest .....no

Secondary or Higher education establishment .....no

Research organisation .....no

Legal person .....yes

Industry (private for profit).....yes

Enterprise Data

SME self-declared status.....11/07/2018 - no

SME self-assessment ..... unknown

SME validation sme.....23/01/2009 - no

Based on the above details of the Beneficiary Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

Department(s) carrying out the proposed work

Department 1

Department name: EUROPEAN PROJECTS DEPARTMENT ☐ not applicable

☐ Same as proposing organisation's address

Street: 3 rue de Pondichery

Town: Paris

Postcode: 75015

Country: France

Dependencies with other proposal participants

Character of dependence	***Participant***	
Is controlled by	INSTITUT NATIONAL DE RECHERCHE POUR L'AGRICULTURE, L'ALIMENTATI	

Person in charge of the proposal

The name and e-mail of contact persons are read-only in the administrative form, only additional details can be edited here. To give access rights and basic contact details of contact persons, please go back to Step 4 of the submission wizard and save the changes.

Title: Ms

Sex: ○ Male ◉ Female

First name: **Angela**

Last name: **BAKER**

E-Mail: **angela.baker@inra.fr**

Position in org.: Director of European Projects Department

Department: EUROPEAN PROJECTS DEPARTMENT ☐ Same as organisation name

☐ Same as proposing organisation's address

Street: 3 Rue de Pondichéry

Town: Paris Post code: 75015

Country: France

Website: https://www.inra-transfert.fr/fr/

Phone: +33 6 17 91 43 12 Phone 2: 33 176 21 61 95 Fax: *+xxx xxxxxxxxx*

Other contact persons

First Name	***Last Name***	***E-mail***	***Phone***
Bénédicte	Bard	benedicte.bard@inrae.fr	*+xxx xxxxxxxxx*
Cloé	Paul-Victor	cloe.paul-victor@inrae.fr	*+xxx xxxxxxxxx*

PIC	***Legal name***
999886089	*INSTITUT NATIONAL DES SCIENCES APPLIQUEES DE LYON*

Short name: INSA LYON

Address of the organisation

Street 20 AVENUE ALBERT EINSTEIN

Town VILLEURBANNE CEDEX

Postcode 69621

Country France

Webpage www.insa-lyon.fr

Legal Status of your organisation

Research and Innovation legal statuses

Public body .....yes

Non-profit .....yes

International organisation .....no

International organisation of European interest .....no

Secondary or Higher education establishment .....yes

Research organisation .....yes

Legal person .....yes

Industry (private for profit).....no

Enterprise Data

SME self-declared status.....15/05/2014 - no

SME self-assessment ..... unknown

SME validation sme..... unknown

Based on the above details of the Beneficiary Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

Department(s) carrying out the proposed work

Department 1

Department name: DEEP (Waste, Water, Environment, Pollutions) laboratory ☐ not applicable

☐ Same as proposing organisation's address

Street: 11 rue de la Physique, Bâtiment Carnot

Town: Villeurbanne

Postcode: 69621

Country: France

Dependencies with other proposal participants

Character of dependence	***Participant***	

Person in charge of the proposal

The name and e-mail of contact persons are read-only in the administrative form, only additional details can be edited here. To give access rights and basic contact details of contact persons, please go back to Step 4 of the submission wizard and save the changes.

Title: Ms

Sex: ○ Male ◉ Female

First name: **Hélène**

Last name: **CASTEBRUNET**

E-Mail: **helene.castebrunet@insa-lyon.fr**

Position in org.: Associate professor

Department: DEEP ☐ Same as organisation name

☒ Same as proposing organisation's address

Street: 20 AVENUE ALBERT EINSTEIN

Town: VILLEURBANNE CEDEX Post code: 69621

Country: France

Website: https://www.insa-lyon.fr/

Phone: 33 4 72 43 76 24 Phone 2: +xxx xxxxxxxxx Fax: +xxx xxxxxxxxx

Other contact persons

First Name	***Last Name***	***E-mail***	***Phone***
Gislain	LIPEME-KOUYI	gislain.lipeme-kouyi@insa-lyon.fr	*33 (0)4 72 43 82 77*
Marie-Cécile	BARRAS	marie-cecile.barras@insavalor.fr	*33 (0)4 72 43 64 51*
Natalia	Loete	natalia.loete@insavalor.fr	*+xxx xxxxxxxxx*

PIC	***Legal name***
989813803	*IRIDRA SRL*

Short name: IRIDRA

Address of the organisation

Street Via la Marmora 51

Town Firenze

Postcode 50121

Country Italy

Webpage www.iridra.com

Legal Status of your organisation

Research and Innovation legal statuses

Public body .....no

Non-profit .....no

International organisation .....no

International organisation of European interest .....no

Secondary or Higher education establishment .....no

Research organisation .....no

Legal person .....yes

Industry (private for profit).....yes

Enterprise Data

SME self-declared status.....11/03/1999 - yes

SME self-assessment ..... unknown

SME validation sme.....11/03/1999 - yes

Based on the above details of the Beneficiary Registry the organisation is an SME (small- and medium-sized enterprise) for the call.

Department(s) carrying out the proposed work

Department 1

Department name: IRIDRA ☐ not applicable

☒ Same as proposing organisation's address

Street: Via la Marmora 51

Town: Firenze

Postcode: 50121

Country: Italy

Dependencies with other proposal participants

Character of dependence	***Participant***	

Person in charge of the proposal

The name and e-mail of contact persons are read-only in the administrative form, only additional details can be edited here. To give access rights and basic contact details of contact persons, please go back to Step 4 of the submission wizard and save the changes.

Title: Dr. | Sex: (•) Male ( ) Female

First name: **Fabio** | Last name: **MASI**

E-Mail: **fmasi@iridra.com**

Position in org.: R&D Manager

Department: IRIDRA SRL ☒ Same as organisation name

☒ Same as proposing organisation's address

Street: Via la Marmora 51

Town: Firenze | Post code: 50121

Country: Italy

Website: http://www.iridra.eu/en/

Phone: +393355728893 | Phone 2: +39055470729 | Fax: +39055475593

Other contact persons

First Name	*Last Name*	*E-mail*	*Phone*
Anacleto	RIZZO	rizzo@iridra.com	*+393290759732*

PIC	***Legal name***
924429401	*METROPOLE DE LYON*

Short name: METROPOLE DE LYON

Address of the organisation

Street 20 RUE DU LAC

Town LYON

Postcode 69003

Country France

Webpage grandlyon.fr

Legal Status of your organisation

Research and Innovation legal statuses

Public body .....yes

Non-profit .....yes

International organisation .....no

International organisation of European interest .....no

Secondary or Higher education establishment .....no

Research organisation .....no

Legal person .....yes

Industry (private for profit).....no

Enterprise Data

SME self-declared status..... unknown

SME self-assessment ..... unknown

SME validation sme..... unknown

Based on the above details of the Beneficiary Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

Department(s) carrying out the proposed work

Department 1

Department name: Direction Eaux et déchets ☐ not applicable

☒ Same as proposing organisation's address

Street: 20 RUE DU LAC

Town: LYON

Postcode: 69003

Country: France

Dependencies with other proposal participants

Character of dependence	***Participant***	

Person in charge of the proposal

The name and e-mail of contact persons are read-only in the administrative form, only additional details can be edited here. To give access rights and basic contact details of contact persons, please go back to Step 4 of the submission wizard and save the changes.

Title: Mr.

Sex: (•) Male ( ) Female

First name: **Hervé**

Last name: **MATTHIEU**

E-Mail: **mherve@grandlyon.com**

Position in org.: Responsable unité études stratégie et recherche

Department: Direction Eaux et déchets

☐ Same as organisation name

☒ Same as proposing organisation's address

Street: 20 RUE DU LAC

Town: LYON

Post code: 69003

Country: France

Website: https://www.grandlyon.com/

Phone: *+xxx xxxxxxxxx*

Phone 2: *+xxx xxxxxxxxx*

Fax: *+xxx xxxxxxxxx*

PIC	***Legal name***
929454292	*CITTA METROPOLITANA DI MILANO*

Short name: CMM

Address of the organisation

Street VIA VIVAIO 1

Town MILANO

Postcode 20122

Country Italy

Webpage www.cittametropolitana.milano.it

Legal Status of your organisation

Research and Innovation legal statuses

Public body .....yes

Non-profit .....yes

International organisation .....no

International organisation of European interest .....no

Secondary or Higher education establishment .....no

Research organisation .....no

Legal person .....yes

Industry (private for profit).....no

Enterprise Data

SME self-declared status..... unknown

SME self-assessment ..... unknown

SME validation sme..... unknown

Based on the above details of the Beneficiary Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

Department(s) carrying out the proposed work

Department 1

Department name: Environment and land protection ☐ not applicable

☐ Same as proposing organisation's address

Street: Viale Piceno 60

Town: Milan

Postcode: 20142

Country: Italy

Dependencies with other proposal participants

Character of dependence	***Participant***	

Person in charge of the proposal

The name and e-mail of contact persons are read-only in the administrative form, only additional details can be edited here. To give access rights and basic contact details of contact persons, please go back to Step 4 of the submission wizard and save the changes.

Title: Dr. | Sex: (•) Male ( ) Female

First name: **Emilio** | Last name: **DE VITA**

E-Mail: **segreteria.devita@cittametropolitana.mi.it**

Position in org.: Executive manager

Department: Environment and land protection ☐ Same as organisation name

☒ Same as proposing organisation's address

Street: VIA VIVAIO 1

Town: MILANO | Post code: 20122

Country: Italy

Website:

Phone: +390277402286 | Phone 2: *+xxx xxxxxxxxx* | Fax: *+xxx xxxxxxxxx*

Other contact persons

First Name	***Last Name***	***E-mail***	***Phone***
Antonietta	ESPOSTO	an.esposto@cittametropolitana.mi.it	*+390277404280*
Cinzia	DAVOLI	c.davoli@cittametropolitana.mi.it	*+390277403060*

PIC	***Legal name***
996281860	*Montana State University Bozeman*

Short name: Montana State University Bozeman

Address of the organisation

Street Montana Hall 309

Town Bozeman

Postcode 59717

Country United States

Webpage

Legal Status of your organisation

Research and Innovation legal statuses

Public body .....no

Non-profit .....unknown

International organisation .....unknown

International organisation of European interest .....unknown

Secondary or Higher education establishment .....yes

Research organisation .....unknown

Legal person .....yes

Industry (private for profit).....unknown

Enterprise Data

SME self-declared status..... unknown

SME self-assessment ..... unknown

SME validation sme..... unknown

Based on the above details of the Beneficiary Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

Department(s) carrying out the proposed work

Department 1

Department name: Department of Civil Engineering ☐ not applicable

☒ Same as proposing organisation's address

Street: Montana Hall 309

Town: Bozeman

Postcode: 59717

Country: United States

Dependencies with other proposal participants

Character of dependence	***Participant***	

Person in charge of the proposal

The name and e-mail of contact persons are read-only in the administrative form, only additional details can be edited here. To give access rights and basic contact details of contact persons, please go back to Step 4 of the submission wizard and save the changes.

Title: Dr.

Sex: (•) Male ( ) Female

First name: **Otton**

Last name: **STEIN**

E-Mail: **ottos@montana.edu**

Position in org.: Professor

Department: Department of Civil Engineering

☐ Same as organisation name

☒ Same as proposing organisation's address

Street: Montana Hall 309

Town: Bozeman

Post code: 59717

Country: United States

Website: https://www.montana.edu/

Phone: +1 406-994-6121

Phone 2: +1 406 570 2179

Fax: +1 406 994 6105

PIC	***Legal name***
997826585	*NORSK INSTITUTT FOR VANNFORSKNING*

Short name: NORWEGIAN INSTITUT FOR WATER RESEARCH NIVA

Address of the organisation

Street GAUSTADALLEEN 21

Town OSLO

Postcode 0349

Country Norway

Webpage www.niva.no

Legal Status of your organisation

Research and Innovation legal statuses

Public body .....no

Non-profit .....yes

International organisation .....no

International organisation of European interest .....no

Secondary or Higher education establishment .....no

Research organisation .....yes

Legal person .....yes

Industry (private for profit).....no

Enterprise Data

SME self-declared status.....16/01/1986 - no

SME self-assessment ..... unknown

SME validation sme..... unknown

Based on the above details of the Beneficiary Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

Department(s) carrying out the proposed work

No department involved

Department name: *Name of the department/institute carrying out the work.* ☒ not applicable

☐ Same as proposing organisation's address

Street: *Please enter street name and number.*

Town: *Please enter the name of the town.*

Postcode: *Area code.*

Country: *Please select a country*

Dependencies with other proposal participants

Character of dependence	***Participant***	

Person in charge of the proposal

The name and e-mail of contact persons are read-only in the administrative form, only additional details can be edited here. To give access rights and basic contact details of contact persons, please go back to Step 4 of the submission wizard and save the changes.

Title: Dr.

Sex: (•) Male ( ) Female

First name: **Sondre**

Last name: **MELAND**

E-Mail: **sondre.meland@niva.no**

Position in org.: Senior Research Scientist

Department: NORSK INSTITUTT FOR VANNFORSKNING ☒ Same as organisation name

☒ Same as proposing organisation's address

Street: GAUSTADALLEEN 21

Town: OSLO Post code: 0349

Country: Norway

Website: https://www.niva.no/en

Phone: 47 970 37 586 Phone 2: *+xxx xxxxxxxxx* Fax: *+xxx xxxxxxxxx*

Other contact persons

First Name	***Last Name***	***E-mail***	***Phone***
Merete	GRUNG	merete.grung@niva.no	*47 920 34 014*
Stale	MYGLAND	stale.mygland@niva.no	*47 470 15 757*

PIC	***Legal name***
994216051	*OSLO KOMMUNE*

Short name: OSLO KOMMUNE

Address of the organisation

Street RADHUSET

Town OSLO

Postcode 0037

Country Norway

Webpage www.oslo.kommune.no

Legal Status of your organisation

Research and Innovation legal statuses

Public body .....yes

Non-profit .....yes

International organisation .....no

International organisation of European interest .....no

Secondary or Higher education establishment .....no

Research organisation .....no

Legal person .....yes

Industry (private for profit).....no

Enterprise Data

SME self-declared status.....07/06/1995 - no

SME self-assessment ..... unknown

SME validation sme..... unknown

Based on the above details of the Beneficiary Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

Department(s) carrying out the proposed work

Department 1

Department name: Office of the Governing Mayor ☐ not applicable

☒ Same as proposing organisation's address

Street: RADHUSET

Town: OSLO

Postcode: 0037

Country: Norway

Department 2

Department name: Agency for the Urban Environment ☐ not applicable

☐ Same as proposing organisation's address

Street: Karvesvingen 3

Town: Oslo

Postcode: 0579

Country: Norway

Dependencies with other proposal participants

Character of dependence	***Participant***	

Person in charge of the proposal

The name and e-mail of contact persons are read-only in the administrative form, only additional details can be edited here. To give access rights and basic contact details of contact persons, please go back to Step 4 of the submission wizard and save the changes.

Title: Not applicable

Sex: ○ Male ◉ Female

First name: **Tiina Johanna**

Last name: **RUOHONEN**

E-Mail: **tiina.ruohonen@byr.oslo.kommune.no**

Position in org.: Senior Adviser, H2020 Coordinator and Project Developer

Department: Office of the Governing Mayor

☐ Same as organisation name

☒ Same as proposing organisation's address

Street: RADHUSET

Town: OSLO

Post code: 0037

Country: Norway

Website:

Phone: +4790983161

Phone 2: +xxx xxxxxxxxx

Fax: +xxx xxxxxxxxx

Other contact persons

First Name	***Last Name***	***E-mail***	***Phone***
Per Arne	Selmer	perarne.selmer@bym.oslo.kommune.no	+xxx xxxxxxxxx
James	Greatorex	james.greatorex@bym.oslo.kommune.no	+xxx xxxxxxxxx

PIC	***Legal name***
952153650	*RIETLAND BVBA*

Short name: RIETLAND BVBA

Address of the organisation

Street VAN AERTSELAERSTRAAT 70

Town MINDERHOUT

Postcode 2322

Country Belgium

Webpage www.rietland.com

Legal Status of your organisation

Research and Innovation legal statuses

Public body .....no

Non-profit .....no

International organisation .....no

International organisation of European interest .....no

Secondary or Higher education establishment .....no

Research organisation .....no

Legal person .....yes

Industry (private for profit).....yes

Enterprise Data

SME self-declared status.....07/11/2012 - yes

SME self-assessment ..... unknown

SME validation sme.....07/11/2012 - yes

Based on the above details of the Beneficiary Registry the organisation is an SME (small- and medium-sized enterprise) for the call.

Department(s) carrying out the proposed work

No department involved

Department name: *Name of the department/institute carrying out the work.* ☒ not applicable

☐ Same as proposing organisation's address

Street: *Please enter street name and number.*

Town: *Please enter the name of the town.*

Postcode: *Area code.*

Country: *Please select a country*

Dependencies with other proposal participants

Character of dependence	***Participant***	

Person in charge of the proposal

The name and e-mail of contact persons are read-only in the administrative form, only additional details can be edited here. To give access rights and basic contact details of contact persons, please go back to Step 4 of the submission wizard and save the changes.

Title: Mr.

Sex: (•) Male ( ) Female

First name: **Dion**

Last name: **VAN OIRSCHOT**

E-Mail: **dion@rietland.com**

Position in org.: Director

Department: RIETLAND BVBA ☒ Same as organisation name

☒ Same as proposing organisation's address

Street: VAN AERTSELAERSTRAAT 70

Town: MINDERHOUT Post code: 2322

Country: Belgium

Website: https://rietland.com/

Phone: 32 3 294 02 65 Phone 2: 32 495 272180 Fax: *+xxx xxxxxxxxx*

PIC	***Legal name***
999871733	*UNIVERSIDADE FEDERAL DE SANTA CATARINA.*

Short name: UFSC

Address of the organisation

Street CAMPUS UNIVERSITARIO TRINDADE

Town FLORIANOPOLIS

Postcode 88040-900

Country Brazil

Webpage www.propesq.ufsc.br

Legal Status of your organisation

Research and Innovation legal statuses

Public body .....yes

Non-profit .....yes

International organisation .....no

International organisation of European interest .....no

Secondary or Higher education establishment .....yes

Research organisation .....yes

Legal person .....yes

Industry (private for profit).....no

Enterprise Data

SME self-declared status.....16/10/2018 - no

SME self-assessment ..... unknown

SME validation sme..... unknown

Based on the above details of the Beneficiary Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

Department(s) carrying out the proposed work

Department 1

Department name: Sanitary and Environmental Engineering Department ☐ not applicable

☒ Same as proposing organisation's address

Street: CAMPUS UNIVERSITARIO TRINDADE

Town: FLORIANOPOLIS

Postcode: 88040-900

Country: Brazil

Dependencies with other proposal participants

Character of dependence	***Participant***	

Person in charge of the proposal

The name and e-mail of contact persons are read-only in the administrative form, only additional details can be edited here. To give access rights and basic contact details of contact persons, please go back to Step 4 of the submission wizard and save the changes.

Title: Dr. | Sex: (•) Male ( ) Female

First name: **Pablo Heleno** | Last name: **SEZERINO**

E-Mail: **pablo.sezerino@ufsc.br**

Position in org.: Adjunct Professor

Department: Sanitary and Environmental Engineering Department ☐ Same as organisation name

☒ Same as proposing organisation's address

Street: CAMPUS UNIVERSITARIO TRINDADE

Town: FLORIANOPOLIS | Post code: 88040-900

Country: Brazil

Website: https://ufsc.br/

Phone: +55 (48) 37212722 | Phone 2: +55 (48) 996444663 | Fax: *+xxx xxxxxxxxx*

Other contact persons

First Name	***Last Name***	***E-mail***	***Phone***
Maria Elisa	MAGRI	maria.magri@ufsc.br	*+55 (48) 37219324*

PIC	***Legal name***
952516430	*WATER EUROPE*

Short name: WE

Address of the organisation

Street BOULEVARD A. REYERS 80

Town BRUXELLES

Postcode 1030

Country Belgium

Webpage www.watereurope.eu

Legal Status of your organisation

Research and Innovation legal statuses

Public body .....no

Non-profit .....yes

International organisation .....no

International organisation of European interest .....no

Secondary or Higher education establishment .....no

Research organisation .....no

Legal person .....yes

Industry (private for profit).....no

Enterprise Data

SME self-declared status.....12/10/2012 - no

SME self-assessment ..... unknown

SME validation sme..... unknown

Based on the above details of the Beneficiary Registry the organisation is not an SME (small- and medium-sized enterprise) for the call.

Department(s) carrying out the proposed work

Department 1

Department name: WATER EUROPE ☐ not applicable

☒ Same as proposing organisation's address

Street: BOULEVARD A. REYERS 80

Town: BRUXELLES

Postcode: 1030

Country: Belgium

Dependencies with other proposal participants

Character of dependence	***Participant***	

Person in charge of the proposal

The name and e-mail of contact persons are read-only in the administrative form, only additional details can be edited here. To give access rights and basic contact details of contact persons, please go back to Step 4 of the submission wizard and save the changes.

Title: Mr. Sex: (•) Male ( ) Female

First name: **Durk** Last name: **KROL**

E-Mail: **durk.krol@watereurope.eu**

Position in org.: Executive Director

Department: WATER EUROPE ☒ Same as organisation name

☒ Same as proposing organisation's address

Street: BOULEVARD A. REYERS 80

Town: BRUXELLES Post code: 1030

Country: Belgium

Website: https://watereurope.eu/

Phone: +xxx xxxxxxxxx Phone 2: +xxx xxxxxxxxx Fax: +xxx xxxxxxxxx

Other contact persons

First Name	***Last Name***	***E-mail***	***Phone***
Ana	DE LEON	ana.deleon@watereurope.eu	*34655060042*

3 - Budget

No	Participant	Country	(A) Direct personnel costs/€	(B) Other direct costs/€	(C) Direct costs of sub-contracting/€	(D) Direct costs of providing financial support to third parties/€	(E) Costs of inkind contributions not used on the beneficiary's premises/€	(F) Indirect Costs / € (=0.25(A+B-E))	(G) Special unit costs covering direct & indirect costs / €	(H) Total estimated eligible costs / € (=A+B+C+D+F+G)	(I) Reimburse-ment rate (%)	(J) Max.EU Contribution / € (=H*I)	(K) Requested EU Contribution/ €
1	Institut National De Recherche	FR	560305	156050	0	0	0	179088,75	0	895443,75	100	895443,75	895443,75
2	Aarhus Universitet	DK	522878	91784	0	0	0	153665,50	0	768327,50	100	768327,50	768327,50
3	Ayuntamiento De Girona	ES	64207	24500	0	0	0	22176,75	0	110883,75	100	110883,75	110883,75
4	Alchemia-nova Gmbh	AT	175000	22000	0	0	0	49250,00	0	246250,00	100	246250,00	246250,00
5	Forum Za Enakopraven Razvoj,	SI	69700	16900	0	0	0	21650,00	0	108250,00	100	108250,00	108250,00
6	Helmholtz-zentrum Fur Umweltforschu	DE	452245	26250	0	0	0	119623,75	0	598118,75	100	598118,75	598118,75
7	Truong Dai Hoc Bach Khoa-dai Hoc	VN	24000	5750	0	0	0	7437,50	0	37187,50	100	37187,50	0,00
8	Iclei European Secretariat Gmbh (Iclei	DE	177600	18300	0	0	0	48975,00	0	244875,00	100	244875,00	244875,00
9	Fundacio Institut Catala De Recerca	ES	213000	45000	4000	0	0	64500,00	0	326500,00	100	326500,00	326500,00
10	Inrae Transfert Sas	FR	162000	30000	0	0	0	48000,00	0	240000,00	100	240000,00	240000,00

11	Institut National Des Sciences	FR	139467	14000	0	0	0	38366,75	0	191833,75	100	191833,75	191833,75
12	Iridra Srl	IT	99936	44250	0	0	0	36046,50	0	180232,50	100	180232,50	180232,50
13	Metropole De Lyon	FR	72204	8000	0	0	0	20051,00	0	100255,00	100	100255,00	100255,00
14	Citta Metropolitana Di Milano	IT	72107	18000	0	0	0	22526,75	0	112633,75	100	112633,75	112633,75
15	Montana State University Bozeman	US	73440	14250	0	0	0	21922,50	0	109612,50	100	109612,50	0,00
16	Norsk Institutt For Vannforskning	NO	206472	72000	0	0	0	69618,00	0	348090,00	100	348090,00	348090,00
17	Oslo Kommune	NO	97600	21000	0	0	0	29650,00	0	148250,00	100	148250,00	148250,00
18	Rietland Bvba	BE	86800	30950	0	0	0	29437,50	0	147187,50	100	147187,50	147187,50
19	Universidade Federal De Santa	BR	15187	3000	0	0	0	4546,75	0	22733,75	100	22733,75	0,00
20	Water Europe	BE	147000	39000	0	0	0	46500,00	0	232500,00	100	232500,00	232500,00
	Total		3431148	700984	4000	0	0	1033033,00	0	5169165,00		5169165,00	4999631,25

4 - Ethics

1. HUMAN EMBRYOS/FOETUSES		Page
Does your research involve Human Embryonic Stem Cells (hESCs)?	○ Yes ◉ No	
Does your research involve the use of human embryos?	○ Yes ◉ No	
Does your research involve the use of human foetal tissues / cells?	○ Yes ◉ No	
2. HUMANS		**Page**
Does your research involve human participants?	○ Yes ◉ No	
Does your research involve physical interventions on the study participants?	○ Yes ◉ No	
3. HUMAN CELLS / TISSUES		**Page**
Does your research involve human cells or tissues (other than from Human Embryos/ Foetuses, i.e. section 1)?	○ Yes ◉ No	
4. PERSONAL DATA		**Page**
Does your research involve personal data collection and/or processing?	◉ Yes ○ No	36-50
Does it involve the collection and/or processing of sensitive personal data (e.g: health, sexual lifestyle, ethnicity, political opinion, religious or philosophical conviction)?	◉ Yes ○ No	36-50
Does it involve processing of genetic information?	○ Yes ◉ No	
Does it involve tracking or observation of participants?	○ Yes ◉ No	
Does your research involve further processing of previously collected personal data (secondary use)?	○ Yes ◉ No	
5. ANIMALS		**Page**
Does your research involve animals?	○ Yes ◉ No	
6. THIRD COUNTRIES		**Page**
In case non-EU countries are involved, do the research related activities undertaken in these countries raise potential ethics issues?	○ Yes ◉ No	
Do you plan to use local resources (e.g. animal and/or human tissue samples, genetic material, live animals, human remains, materials of historical value, endangered fauna or flora samples, etc.)?	○ Yes ◉ No	
Do you plan to import any material - including personal data - from non-EU countries into the EU?	○ Yes ◉ No	

Do you plan to export any material - including personal data - from the EU to non-EU countries?	◯ Yes ◉ No	
In case your research involves low and/or lower middle income countries, are any benefits-sharing actions planned?	◯ Yes ◉ No	
Could the situation in the country put the individuals taking part in the research at risk?	◯ Yes ◉ No	
7. ENVIRONMENT & HEALTH and SAFETY		Page
Does your research involve the use of elements that may cause harm to the environment, to animals or plants?	◉ Yes ◯ No	36-40
Does your research deal with endangered fauna and/or flora and/or protected areas?	◯ Yes ◉ No	
Does your research involve the use of elements that may cause harm to humans, including research staff?	◉ Yes ◯ No	36-40
8. DUAL USE		Page
Does your research involve dual-use items in the sense of Regulation 428/2009, or other items for which an authorisation is required?	◯ Yes ◉ No	
9. EXCLUSIVE FOCUS ON CIVIL APPLICATIONS		Page
Could your research raise concerns regarding the exclusive focus on civil applications?	◯ Yes ◉ No	
10. MISUSE		Page
Does your research have the potential for misuse of research results?	◯ Yes ◉ No	
11. OTHER ETHICS ISSUES		Page
Are there any other ethics issues that should be taken into consideration? Please specify	◯ Yes ◉ No	

I confirm that I have taken into account all ethics issues described above and that, if any ethics issues apply, I will complete the ethics self-assessment and attach the required documents. ☒

How to Complete your Ethics Self-Assessment

5 - Call specific questions

Declarations on stage-2 changes

The full stage-2 proposal must be consistent with the short outline proposal submitted to the stage-1- in particular with respect to the proposal characteristics addressing the concepts of excellence and impact.

Are there substantial differences compared to the stage-1 proposal?	○ Yes	◉ No

Extended Open Research Data Pilot in Horizon 2020

If selected, applicants will by default participate in the Pilot on Open Research Data in Horizon 2020[1] , which aims to improve and maximise access to and re-use of research data generated by actions.

However, participation in the Pilot is flexible in the sense that it does not mean that all research data needs to be open. After the action has started, participants will formulate a Data Management Plan (DMP), which should address the relevant aspects of making data FAIR – findable, accessible, interoperable and re-usable, including what data the project will generate, whether and how it will be made accessible for verification and re-use, and how it will be curated and preserved. Through this DMP projects can define certain datasets to remain closed according to the principle "as open as possible, as closed as necessary". A Data Management Plan does not have to be submitted at the proposal stage.

Furthermore, applicants also have the possibility to opt out of this Pilot completely at any stage (before or after the grant signature). In this case, applicants must indicate a reason for this choice (see options below).

Please note that participation in this Pilot does not constitute part of the evaluation process. Proposals will not be penalised for opting out.

We wish to opt out of the Pilot on Open Research Data in Horizon 2020.	○ Yes	◉ No

Further guidance on open access and research data management is available on the participant portal: http://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/open-access-dissemination_en.htm and in general annex L of the Work Programme.

[1] *According to article 43.2 of Regulation (EU) No 1290/2013 of the European Parliament and of the Council, of 11 December 2013, laying down the rules for participation and dissemination in "Horizon 2020 - the Framework Programme for Research and Innovation (2014-2020)" and repealing Regulation (EC) No 1906/2006.*

MULTISOURCE
enhanced natural treatment solutions

Mod**UL**ar **T**ools for **I**ntegrating enhanced natural treatment **SO**lutions in **UR**ban water **C**ycl**E**s

No.	Participant organisation name (acronym)	Country
1	INSTITUT NATIONAL DE RECHERCHE POUR L'AGRICULTURE, L'ALIMENTATION ET L'ENVIRONNEMENT (INRAE)	FR
2	AARHUS UNIVERSITET (AU)	DK
3	AJUNTAMENT DE GIRONA (GIRONA)	ES
4	ALCHEMIA-NOVA GMBH (ALCN)	AT
5	FORUM ZA ENAKOPRAVEN RAZVOJ, DRUŠTVO (FER)	SI
6	HELMHOLTZ-ZENTRUM FUR UMWELTFORSCHUNG GMBH (UFZ)	DE
7	TRUONG DAI HOC BACH KHOA_DAI HOC QUOC GIA TP HO CHI MINH (HCMUT)	VN
8	ICLEI EUROPASEKRETARIAT GMBH (ICLEI)	DE
9	FUNDACIO INSTITUT CATALA DE RECERCA DE L'AIGUA (ICRA)	ES
10	INRA TRANSFERT SAS (IT)	FR
11	INSTITUT NATIONAL DES SCIENCES APPLIQUEES DE LYON (INSA)	FR
12	IRIDRA SRL (IRIDRA)	IT
13	METROPOLE DE LYON (GLYON)	FR
14	CITTA METROPOLITANA DI MILANO (CMM)	IT
15	MONTANA STATE UNIVERSITY BOZEMAN (MSU)	US
16	NORSK INSTITUTT FOR VANNFORSKNING (NIVA)	NO
17	OSLO KOMMUNE (OSLO)	NO
18	RIETLAND BVBA (RIETLAND)	BE
19	UNIVERSIDADE FEDERAL DE SANTA CATARINA (UFSC)	BR
20	WATER EUROPE (WE)	BE

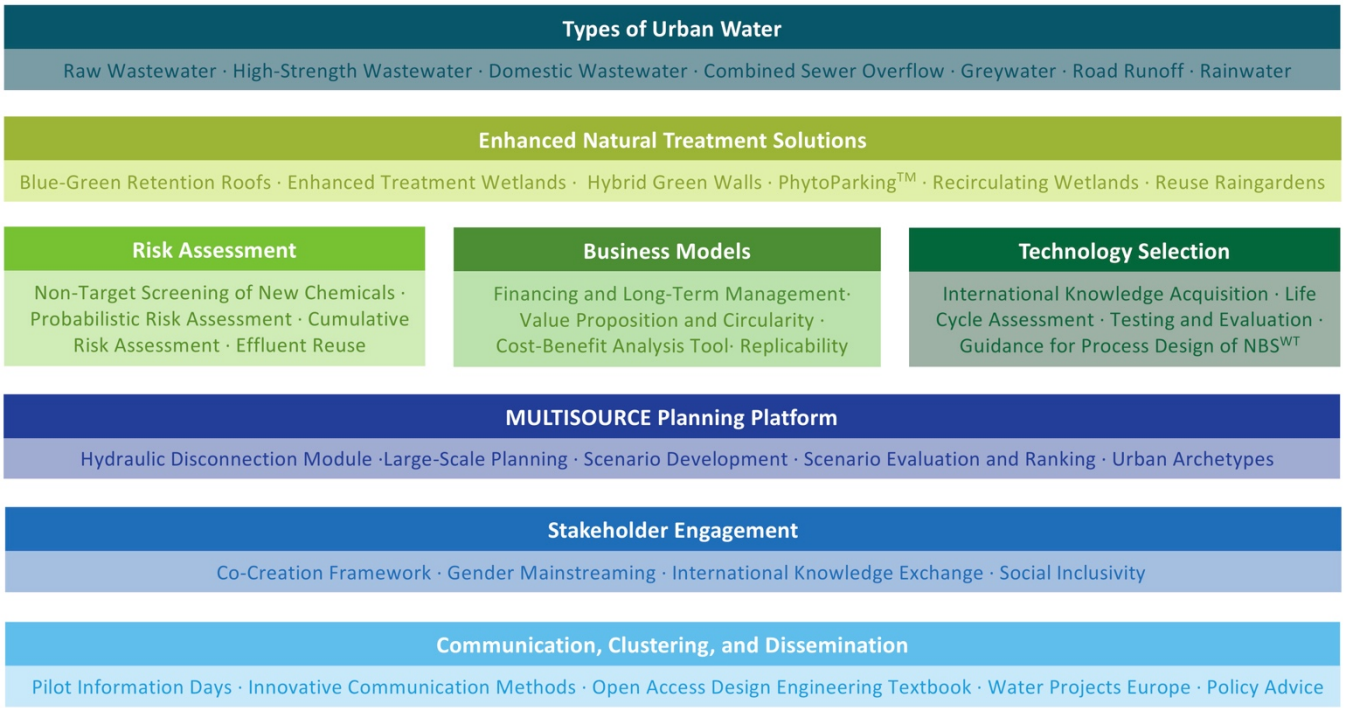
Table of Contents

1 Excellence

1.1 Objectives

The overall objective of MULTISOURCE is to **facilitate the systematic, citywide planning of nature-based solutions for urban water treatment, storage and reuse**. MULTISOURCE will deliver new knowledge about Enhanced Natural Treatment Solutions (ENTS) and their ability to remove waterborne contaminants and provide effective risk reduction for chemical and biological hazards, as well as their capacity to be integrated into the urban landscape and contribute to the overall improvement of urban habitats. The project includes **seven ENTS pilots in seven different countries, each treating a different type of urban water**. MULTISOURCE integrates **effective and inclusive methodologies and formats** for **engaging stakeholders** in each of its key components: ENTS pilots, risk assessment, business models, technology selection and design of Nature-Based Solutions for Water Treatment (NBS^{WT}), the MULTISOURCE Planning Platform, and communication, clustering and dissemination (Figure 1.1). MULTISOURCE will **strengthen international collaboration** through the integration of **university partners from Brazil, United States, and Vietnam** and an **International Advisory Board of high-level experts**. This unique approach provides the knowledge, business models, and modular tools that will **enable stakeholders to conduct fit-to-purpose, large-scale planning in their local region** and, in doing so, overcome barriers to **widespread uptake of NBS^{WT} and promoting circularity and sustainable development in the urban water sector**.

Figure 1.1. Key components of MULTISOURCE.



1.1.1 Rationale

Increasing urbanization poses a range of challenges worldwide, including water scarcity, water insecurity, human health issues, and loss of ecosystem services such as clean air, water and soil. It is estimated that by 2050, half of the world population will live in cities. To satisfy their water demand, many cities rely on extensive supply infrastructure to transfer water over long distances. This infrastructure approach limits the resilience of cities against the effects of climate change because the infrastructure cannot be easily or cost-effectively adapted, expanded, or repaired. In light of the increasing pressure on water resources worldwide, the integration of decentralized approaches into existing centralized infrastructure is essential for achieving sustainable, efficient, and affordable water resource management[1], increased water reuse[2], and establishing a circular water economy[3].

Surface and groundwater in urban areas are polluted by point and nonpoint sources that harm the quality of life, ecology, and land values in cities. The chemical and biological hazards stemming from release of inadequately treated water (such as during extreme rain events) can no longer be ignored, especially with the increasing concerns surrounding priority substances and contaminants of emerging concern such as micropollutants and microplastics. Nature-Based Solutions for Water Treatment (NBS^{WT}) are green infrastructure components that can complement existing grey infrastructure for water, stormwater, and wastewater management in urban environments. NBS^{WT}

[1] Water Europe (2017) Water Europe Vision 2030. Brussels.
[2] European Commission (2018) Regulation on minimum requirements for water reuse.
[3] Circular Economy Package http://ec.europa.eu/environment/circular-economy/index_en.htm

provide improved water quality, reduced flood risks, and increased ecological connectivity, while serving as attractive components of the urban landscape, providing important ecosystem services[4] and contributing to the creation of a circular water economy[5]. The EU Research and Innovation agenda for NBS recognizes that nature-based approaches are an essential component to achieving sustainable development in urban areas[6]. Cities that want to become more climate-resilient are making it a top priority to increase investments in NBS to address the social, economic, and environmental challenges they are facing[7]. That said, decision-makers still need a better understanding of what NBS^{WT} can deliver in terms of water quality improvement, risk abatement, and co-benefits, and what are the capital and operational costs of NBS^{WT} compared to conventional infrastructure options.

Despite the recognized potential of NBS^{WT} for increasing urban resilience, there is an overall lack of large-scale integration of NBS^{WT} into urban environments, as reflected in the recent European Green Deal[8]. Decision-makers at all levels of government (particularly at local level) often simply lack the tools to conduct large-scale strategic simply lack the tools to conduct large-scale strategic decision-making for integrating NBS^{WT} in different geographical and economic conditions. On a technical level, there is a knowledge gap regarding the performance of these systems and their response to variations in pollutant and hydraulic fluctuations due to climatic events such as storms or droughts. From an economic perspective, financing to stimulate rapid uptake of NBS^{WT} must look beyond private sector investment and towards spatial planning, regulation, and tax incentives[9]. Analysis of NBS-related EU projects suggests a need for new methods of co-created research that not only bring together academic researchers with non-academic local experts and a need to define a framework in which stakeholders can work together effectively and productively[9]. The widespread uptake of NBS^{WT} is in part hindered by an inability to identify and prioritize implementation strategies on a significant scale. Improved cross-sectoral communication, stakeholder engagement, and awareness of issues related to equitable development and water are needed to accelerate the uptake and integration of NBS^{WT} into urban water cycles. In order to compete with classic water management approaches such as centralized wastewater management, NBS^{WT} must be economically feasible. Urban water management scenarios for different combinations of NBS^{WT} must be tailor-made, account for site-specific conditions and needs, and be complemented by a framework that can help private sector stakeholders formulate successful business models for NBS^{WT} implementation on a city-wide scale.

1.1.2 Goal, objectives and targeted results

The overall goal of MULTISOURCE is to, together with local, national, and international stakeholders, demonstrate a variety of enhanced natural treatment systems treating a wide range of urban waters, and to develop innovative tools, methods, and business models that support citywide planning of nature-based solutions for water treatment, storage, and reuse in urban areas. To this end, MULTISOURCE aims to:

- **deliver new knowledge** about enhanced natural treatment systems for removing waterborne contaminants (including pathogens, micropollutants and microplastics), providing effective reduction of chemical and biological risks, and contributing to the improvement of urban habitats;
- **co-create demand-driven tools and business models** to guide technology selection, design, large-scale spatial planning, and sustainable financing of NBS^{WT};
- **develop evidence-based policy recommendations** for safe water reuse in urban water cycles;
- **mainstream gender and inclusivity** in research on and implementation of NBS^{WT};
- **overcome** the barriers to trans-sectoral growth and sustainable development in urban water management

In doing so, MULTISOURCE will:

- **demonstrate** the pollutant removal and risk abatement capacities of enhanced natural treatment systems, as well as the ecosystem benefits and values they provide;
- **enable** stakeholders in developed and developing countries, including local municipality and metropolitan areas government staff, to reduce pressure on existing infrastructure and freshwater resources by using MULTISOURCE tools to plan, finance, and implement NBS^{WT} in their region;
- **accelerate** the uptake of nature-based solutions in urban water management worldwide;
- **normalize** social equality as an integral target of green infrastructure and smart urban development;
- **enhance** cross-sectoral international collaboration among governmental staff (both practitioners and policy makers), educators, researchers, and the general public.

[4] Oral H.O. *et al*. A Review of Nature Based Solutions for Urban Water Management in European Circular Cities: A critical assessment based on case studies and literature. Blue-Green Systems 2020, 2(1):112–136
[5] UN-Water (2018) The United Nations World Water Development Report 2018: Nature-Based Solutions for Water.
[6] European Commission (2015) Towards an EU R&I policy agenda for NBS & Re-Naturing Cities.
[7] UN-HABITAT (2018) City Resilience Profiling Tool Guide.
[8] European Commission (2019) The European Green Deal.
[9] European Commission (2020) Nature-based Solutions: Improving Water Quality & Waterbody Conditions: Analysis of EU-funded projects.

MULTISOURCE is a four-year project with 20 partners from 12 countries. The project has the following objectives:

Scientific Objectives (SO)

- **SO1**: Demonstrate and qualify the removal of conventional pollutants, pathogens, priority substances, and pollutants of emerging concern for seven ENTS pilots in operational environments, treating a range of urban water types under various climatic and operational conditions.
- **SO2**: Perform cumulative and probabilistic risk assessments for the seven ENTS pilots.
- **SO3**: Optimize the treatment efficacy of the ENTS pilots for removal of pollutants and reduction of chemical and biological risks.
- **SO4**: Assess the environmental impacts of the ENTS pilots with a holistic, whole-system Life Cycle Analysis (LCA) in order to capture the multifunctionality of the technologies.
- **SO5**: Conduct a comprehensive literature review on NBS^{WT} in order to establish a solid knowledge base of at least 500 successful case studies worldwide.
- **SO6**: Strengthen international collaboration between the EU and Brazil, Vietnam, and the United States through (i) seeking parallel and/or complementary funding for related NBS^{WT} projects, and (ii) through clustering and dissemination activities in Europe and abroad.

Technical Objectives (TO)

- **TO1**: Create an open-source Geographic Information System (GIS) mapping module that identifies (i) locations in existing infrastructure where pressure can be relieved by integrating NBS^{WT} into an urban water cycle, and (ii) provides estimates of the water quantity and water quality to be treated.
- **TO2**: Develop an open-source tool that (i) identifies best-fit NBS^{WT} for a given context, considering socio-economic and environmental aspects as well as intended reuse purpose, and (ii) provides preliminary design information (e.g. required area and costs), risk assessment and ecosystem services for the selected technologies.
- **TO3**: Establish an open-source planning platform that enables systematic assessment of scenarios with and without NBS^{WT} for various urban archetypes and dynamic situations (including climate change and population growth), and provides a ranking of proposed solutions by cost and by qualitative benefits (effluent risk assessment, Life Cycle Cost Analysis (LCCA) and socio-cultural ecosystem services).
- **TO4**: Publish open access guidance for the process design, implementation and management, operation and maintenance (MOM) of NBS^{WT} worldwide.

Economic Objectives (EO):

- **EO1**: Provide robust evidence for high technical performance, cost-competitiveness and diverse applicability of ENTS, and provide practical guidance on implementation both in formal and informal settlements to unlock increased investments in NBS^{WT} and ENTS implementation worldwide.
- **EO2**: Together with stakeholders, co-create new partnership models and inclusive business models for construction, operation and long-term management and maintenance of ENTS, replicable across varying climate, water (re)use, socio-economic and infrastructure conditions.
- **EO3**: Demonstrate multifunctional benefits of ENTS and new business opportunities for MULTISOURCE SMEs and other ENTS providers within a circular economy of urban resources.

Social or Regulatory Objectives (SRO):

- **SRO1**: Demonstrate the implementation of ENTS and effluent reuse for urban purposes within different regulatory frameworks.
- **SRO1**: Establish a framework for effective and inclusive stakeholder engagement in the monitoring of co-benefits for the ENTS pilots, as well as in the development of NBS^{WT} business models and planning tools.
- **SRO2**: Raise gender awareness among MULTISOURCE project partners and ensure gender equality in project meetings, activities and interactions with stakeholders.
- **SRO3**: Maximize the visibility, awareness, and impact of MULTISOURCE outcomes using traditional and innovative communication and dissemination channels.
- **SRO4**: Create recommendations for mainstreaming gender into urban water management.
- **SRO5**: Provide policy recommendations, informed by the most recent and innovative risk-assessment approaches, for increased uptake of urban NBS^{WT} in a wide range of governance frameworks.

1.2 Relation to the work programme

MULTISOURCE addresses the following components of the SC5-27-2020 topic:

Actions should identify and review examples of innovative natural water treatment systems in Europe and beyond to develop understanding of their functioning, the ecological processes involved and their capacity and performance in treating pollution under diverse and uncertain conditions, such as maximum/minimum loads, uncertainties on composition of the pollution entering the system, necessary time for treatment, capacity to cope with temporal variation in rainfall, etc.: MULTISOURCE will conduct a thorough review of literature on NBS^{WT} operating in outdoor, relevant conditions worldwide as well as review results from existing H2020 projects on NBS^{WT} to establish a solid knowledge base of at least 500 successful case studies, which will subsequently be integrated into the MULTISOURCE Technology Selection Tool. A secondary literature review on the nexus between NBS^{WT}, community participation and social inclusion, and gender equality will also be conducted. This information, combined with data generated by the seven pilots and data shared by MULTISOURCE international partners in Brazil, the United States, and Vietnam, will provide unique insight on the capacity and costs of NBS^{WT} for a range of polluted waters under a wide variety of climatic, socio-economic, and environmental conditions.

They [actions] *should develop methodologies and guidance for the design and implementation of urban enhanced natural treatment systems and their integration into the urban water cycle, the urban landscape and the receiving waters to enhance the circularity and hence sustainability of the overall system:* MULTISOURCE will identify key stakeholders and establish and facilitate their engagement in the monitoring of the ENTS pilots and the co-design of the business models and tools, ensuring the inclusion and integration of a wide range of perspectives from local, national, and international viewpoints and from different groups of society. The tool includes a disconnection module that will enable decision-makers responsible for water management to identify where they can reduce pressure on existing water infrastructure and promote local treatment, storage and reuse of water by implementing nature-based solutions. The MULTISOURCE Planning Platform will enable a stakeholder to perform a comparison of different urban water management scenarios, both with and without NBS^{WT}, for a selected local region. The tool will provide spatial planning information and cost ranking for different scenarios. The approach is Geographic Information System (GIS)-based to define on a large scale where NBS^{WT} can be integrated into local urban water cycles and landscapes. The MULTISOURCE Technology Selection Tool is a complementary tool that can be used alone or in conjunction with the MULTISOURCE Planning Platform. The Technology Selection tool enables stakeholders such as staff at municipalities, water utilities, or companies to plan urban NBS^{WT} at a more refined level. The Technology Selection Tool is composed of two tiers. The first tier provides technology selection decision support for local constraints (land availability, proximity to receiving surface water) and other environmental and socio-economic water reuse contexts. The second tier provides estimates for effluent quality, area and energy requirements, preliminary construction and operational costs, environmental impacts, ecosystem services and co-benefits, as well as specific operational and maintenance requirements, with risk management plans where water reuse is considered.

They [actions] *should develop new business models for their construction, operation and long-term management and maintenance, and standards for the treatment processes and the different uses for which the effluent may be used within different regulatory frameworks:* MULTISOURCE business models will be co-developed by local actors involved with planning and permits, management, financing, and operations and maintenance (O&M) of NBS^{WT}. New business models will be based on cost-benefit assessments and identifying additional value, including non-monetary value, provided by NBS^{WT}. Opportunities for resource recovery will be considered in economic calculations and pricing systems, as well as other natural assets provided by nature-based solutions for water treatment. Because of the direct engagement of local, national, and international stakeholders from the start, the co-developed business models will be applicable across a variety of operational settings and regulatory frameworks. MULTISOURCE business models will assist public authorities and other stakeholders in developing strategies to accelerate the adoption and integration of NBS^{WT} in their local urban settings. The business modelling methodologies will also include a value-identification stage to assess cultural and social benefits of NBS^{WT}, and to identify complementary sources of co-financing. An economic assessment element will be developed and tested in the business modelling process that will enable various users to assess the benefits and costs of NBS^{WT} relative to traditional solutions, differentiated by private for-profit entities (narrow cost-revenue accounting) and public entities (welfare-oriented accounting, including externalities). To ensure these aspects are provided in a user-friendly format, simplified cost-benefit functions for construction and operation as well as long-term maintenance plans will be integrated into the MULTISOURCE Technology Selection Tool.

Actions should include pilots/demonstrations for testing innovative approaches or the use of established solutions under new conditions and monitoring from baseline through construction and for a period of time, to establish the functionality of the system and assess the physical, social and economic benefits of the deployed solutions. A total of seven ENTS pilots will demonstrate innovative, compact, and effective treatment of a wide range of urban waters (raw wastewater, primary-treated wastewater, combined sewer overflow, greywater, runoff, and rainwater). The pilots are located in seven different countries (BE, DE, ES, FR, IT, NO, US), and are either recently constructed or

construction will be finished early in the project. The pilots selected represent established solutions, in the sense that their Technology Readiness Levels at the beginning of the project are TRL5-7 and are expected to reach TRL7-9 by the end of the project. All pilots are constructed at a scale for validation and demonstration in relevant and/or operational environments (20 m^2 to 5,500 m^2). **All pilots have been constructed and financed separately from MULTISOURCE**. Pilots will be monitored with conventional as well as innovative digital tools from start-up, when possible, in order to establish the dynamic functionality over time (intensive monitoring: two years; followed by optimization and longer term monitoring over the remainder of the project) and during variations in flow, pollutant loads and climate conditions. The stakeholder engagement framework created within MULTISOURCE includes workshops with local stakeholders in order define which co-benefits are relevant for their pilot, and how those co-benefits can be measured and assessed over the course of the project.

Appropriate methodologies for public/social engagement in the implementation of such solutions should be developed. The tools and business models will be co-developed with the involvement of relevant stakeholders, including end-users, from the start to ensure widespread applicability and useability. The early establishment of stakeholder engagement frameworks for key groups (municipalities and their communities, private companies involved in water infrastructure operation, civil society, international partners, and the International Advisory Board) will integrate a wider range of needs and interests into the early design of the tools (with special attention to gender parity and social inclusion). The GIRONA pilot will enable the exploration of the effects ENTS have on human well-being, and how these effects are distributed according to gender and other socio-demographic factors, as related to urban water management. MULTISOURCE will also explore the use of digital tools to engage stakeholders in the monitoring of selected pilots. Stakeholder engagement throughout the entire course of the project will result in increased interest in and ownership of the pilots. Tailor-made local engagement strategies, ranging from end-user group consultations to fully developed Living Labs[10], will be established via multi-stakeholder partnerships for each pilot. Individual municipality partners (GIRONA, OSLO) and metropolitan municipality partners (GLYON, CMM) will be able to provide input data from their region and apply the developed tools to local urban areas.

Actions should envisage clustering activities with other relevant ongoing and future nature-based solutions relevant projects funded under previous and current H2020 Work Programmes for cross-projects co-operation, consultations and joint activities on cross-cutting issues and share of results as well as participating in joint meetings and communication events. To this end, proposals should foresee a dedicated work package and /or task and earmark the appropriate resources accordingly. MULTISOURCE partners will liaise with relevant EU and international networks to broaden its geographic scope and place the EU at the forefront of innovative natural water treatment concepts and solutions. MULTISOURCE will include clustering activities and liaising with other NBS-related H2020 projects as well as sister projects, and efforts will be made to create joint meetings and communication events. MULTISOURCE will participate in the newly created Water Europe event "Water Projects Europe" (WPE) which aims at clustering water-related projects by thematic areas, allowing them to interact, mutually build on their combined experiences and outcomes, and foster market outreach. Similarly, MULTISOURCE will organize targeted meetings with IWA Specialist Groups on NBS and Resource Recovery, the Water Europe NBS working group, as well as networks such as BiodivERsA, CLEVERCities, ICT4water, Eklipse, URBINAT, Grow Green, Women for Water Partnership, and NetworkNature. MULTISOURCE partners AU, INRAE, NIVA, UFZ represent four of the eight European environmental centres which comprise the PEER partnership, whose vision is to be a world leader in integrating knowledge and expertise for sustainable development. The strong connection of MULTISOURCE to the PEER network will provide additional key clustering and communication opportunities.

In line with the strategy for EU international cooperation in research and innovation (COM(2012)497), international cooperation is strongly encouraged. International participants should explore the possibility to apply for co-funding under their national governments: International collaboration will be strengthened via the contributions of and interactions between project partners in the European Economic Area (EEA) (AT, BE, DE, DK, ES, FR, IT, NO, SI), international partners (BR, VT, US), and members of the International Advisory Board (DK, TH, SA, SW, US). The advisory board includes individuals from leading international environmental organizations such as the International Water Association (IWA), the International Union for the Conservation of Nature (IUCN), and The Nature Conservancy (TNC). Partners HCMUT, MSU, and UFSC will seek parallel funding as it is available (Section 1.3.3).

To ensure coverage of geographic, socio-economic and cultural diversity (including possible gender differences in the use/management of water) as well as sharing innovative solutions across the EU, pilot actions/demonstrations must be implemented in at least 3 cities situated in different Member States or Associated Countries that are committed to implement the proposed innovative actions/schemes during the project and assess their impacts and cost-efficiency. **MULTISOURCE pilot actions are implemented in six different EEA countries (BE, DE, ES, FR, IT, NO) and one international country (US).** These locations cover a **range of geographic conditions** (temperate oceanic, warm summer continental, hot summer Mediterranean, and humid subtropical). The stakeholder

[10] Water Europe (2019) Atlas of the EU Water-Oriented Living Labs. https://watereurope.eu/wp-content/uploads/2019/07/Atlas-of-the-EU-Water-Oriented-Living-Labs.pdf

framework developed by partners ICLEI and FER will ensure **effective and inclusive methodologies and formats for engaging stakeholders across different socio-economic and cultural backgrounds, including identification of women's organizations for engagement.** MULTISOURCE individual municipalities GIRONA (ES) and OSLO (NO) and metropolitan municipalities GLYON (FR) and CMM (IT) are highly committed to increasing the use of nature-based solutions for water treatment in their local regions. The mayors of Girona, Oslo, Grand Lyon, and Milan have signed the Covenant of Mayors for Climate and Energy. Municipality partners from Spain, Norway, France, and Italy, international partners from Brazil, the United States, and Vietnam, and the International Advisory Board members based in Denmark, Thailand, South Africa, Switzerland, and the United States will contribute to the development and evaluation of MULTISOURCE tools and approaches (begin TRL3-5; end TRL5-7) in order to remove the barriers between research and implementation, using local data to shape the tools and their design, and to create examples to demonstrate, evaluate, and apply the tools in a diverse array of conditions. Targeted, socially inclusive stakeholder engagement is planned in the monitoring of pilots and co-design of tools, with a focus on identifying and addressing the needs of diverse social groups. Specific gender-related water management issues and opportunities will be identified by conducting a cross-cutting gender equality analysis (see Section 1.3.5).

The innovation challenge is therefore how to design enhanced natural treatment systems that will provide effective ecological services of water purification and storage: MULTISOURCE will demonstrate and qualify seven ENTS pilots treating a wide range of urban waters (raw wastewater, pre-treated wastewater, combined sewer overflow, greywater, runoff, rainwater) in seven countries. Six of the seven pilots have the primary function of providing water treatment, while four of them also include storage and reuse. All pilots operate in outdoor, operational settings, and will be evaluated under dynamic conditions (extreme rain events, droughts, abnormally hot weather, freezing and thawing where applicable) over the four-year course of the project. Pilots that have the operational flexibility and capacity to do so will be optimized. The authoritative textbook on treatment wetland process design, implementation and operations and maintenance[11] will be updated with the multitude of advancements in research and implementation of NBS^{WT} over the last 10 years and published as an open access textbook with complimentary electronic content.

[…]as well as valuable habitats, constitute integral part of the overall urban water cycle and attractive components of the urban landscape […]: The MULTISOURCE Planning Platform will enable citywide planning of NBS^{WT} in urban environments. The disconnection module, developed by partner INSA, will enable city planners to identify points where NBS^{WT} could be used to alleviate pressure on the existing water infrastructure network. The MULTISOURCE Technology Selection Tool will specify which NBS^{WT} technologies can provide the most value in terms of increased treatment, storage and safe reuse of polluted water as well as qualitative co-benefits. The resulting increased uptake of NBS^{WT} will contribute to increased water reuse and green space in cities, therefore increasing valuable habitats and other important social and cultural ecosystem services in urban landscapes worldwide.

[…]and ensure that in closing the water cycle challenges […]with chemical and biological hazards are properly addressed through well-defined and validated risk assessment methodologies and implemented in relation to the final water use: MULTISOURCE will conduct comprehensive monitoring and risk assessment on seven ENTS pilots. The pilots will be monitored for the removal of conventional pollutants, pathogens (*E. coli,* SARS-CoV-2), priority substances (heavy metals, polyaromatic hydrocarbons (PAH), biocides such atrazine and diuron) and contaminants of emerging concern (pharmaceuticals, neonicotinoid insecticides, and microplastics) using state-of-the-art methods. MULTISOURCE will pair pilot monitoring with computational toxicology for combined hazard identification and risk assessment, enabling the risk assessment of ENTS effluent for individual compounds and complex mixtures of compounds, on different levels of biological complexity (e.g. molecular, cellular, individual and population). The developed monitoring and risk assessment methodologies will be used to inform policy recommendations related to NBS^{WT} and urban water reuse. The outcomes of the risk assessment will be integrated into the MULTISOURCE Planning Platform to demonstrate how NBS^{WT} can reduce pressure on existing infrastructure, protect aquatic ecosystems and receiving waters, and promote reuse of treated water in urban areas.

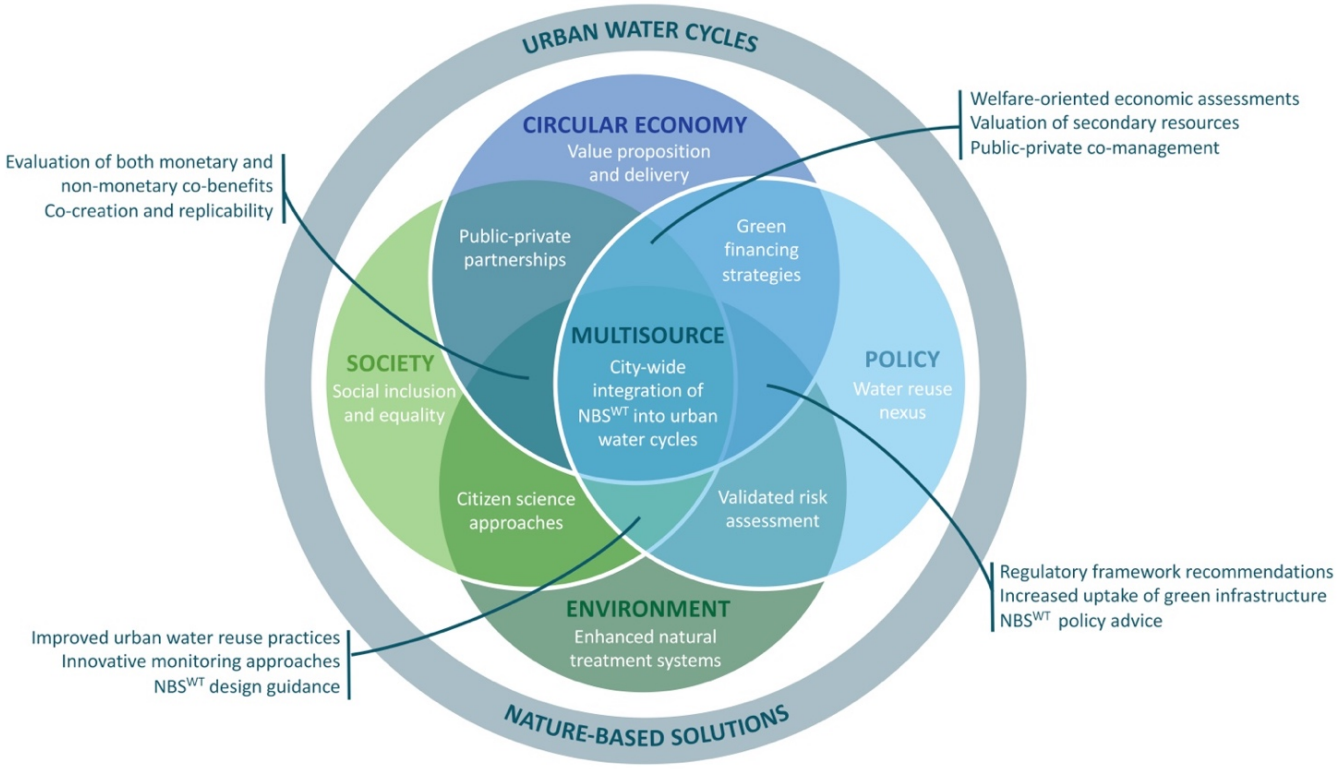
1.3 Concept and methodology

1.3.1 Overall concept

The overall concept of MULTISOURCE focusses on the intersection of NBS^{WT} with the four key areas of environment, circular economy, society and policy (Figure 1.2). Stakeholder engagement is a key element of MULTISOURCE. Effective and inclusive stakeholder engagement methodologies will be used in the definition of co-benefits for each pilot, as well as for the development of business models and planning tools. **Enhanced Natural Treatment Solution (ENTS)** are, for the purpose of this proposal, defined as a **sub-group of NBS^{WT}** that have an **increased treatment capacity, lower cost, and/or smaller environmental footprint** in comparison to conventional NBS^{WT}. ENTS provide primary benefits of increased water quality, water storage, reuse, but also contribute to the creation of valuable urban habitats and provide other important ecosystem services.

[11] Kadlec R.H. and Wallace S.D. (2009) Treatment Wetlands, Second Edition. CRC Press: Boca Raton, Florida, USA. 1046 pages.

Figure 1.2. Overall concept of MULTISOURCE.



MULTISOURCE includes seven ENTS pilots in seven different countries. All pilot systems have been or will be constructed and financed separately from MULTISOURCE, meaning pilot monitoring can start without delay. The pilots will be intensively monitored over a period of two years, in line with the EU Water Framework Directive[12] and recent EU water reuse legislation[13], for conventional water quality parameters, environmental parameters, priority substances and contaminants of emerging concern. Additionally, the pilots will be monitored for optimization and/or longer-term monitoring in the last two years of the project. The pilots will undergo a screening process to determine an individualized monitoring program that will maximize the value of the data collected. Using the most recent developments in water-based risk assessment, the chemical water quality data from the pilots will be used to conduct a **comprehensive risk assessment** to determine appropriate reuse options for treated effluent, including discharge to nearby water bodies. Pilots that have the operational flexibility for optimization will be optimized after the two-year baseline monitoring period. The construction and operational costs of the ENTS pilots, as well as the ecosystem services they provide will be used as inputs to **an innovative territorial Life Cycle Analysis (LCA)**. The specific design information, treatment performance, and **LCA for each ENTS pilot** will be integrated into the **MULTISOURCE Technology Selection Tool**, thus providing decision-makers with access to the newest developments in enhanced natural treatment solutions.

MULTISOURCE tools are modular: they can be used **individually or together to provide information for estimated scenarios based on the interests and needs of the user**. The MULTISOURCE Planning Platform will include a Geographic Information System (GIS)-based **Hydraulic Disconnection Module** that will enable end-users to define locations in existing urban water networks where pressure on existing infrastructure could be reduced by using NBS^{WT} for treatment, storage and reuse water on a local scale. The module will identify the quantity and estimated quality of water for each identified pressure point. The ENTS pilots will be evaluated using an **innovative Life Cycle Analysis**-based approach that enables (i) the accounting of a breadth of environmental impacts over the life-cycle of a product/service (classical LCA approaches are multicriteria and account for all life stages of the product/service, not just operation), and (ii) the accounting of ecosystem services (for which there are still ongoing method developments). **MULTISOURCE will assess the environmental impacts of the ENTS pilots with a holistic, whole-system method which captures their multifunctionality.** The outcomes of the LCA are integrated into the **MULTISOURCE Technology Selection Tool**. This tool enables end-users to evaluate the **best fit NBS^{WT} for the given water quantity and quality based on local constraints**, including land availability, cost, life cycle analysis, ecosystem services, and intended water reuse. The Technology Selection Tool provides design and cost information for the selected technology (or technologies). That information can either be used by the end-user for preliminary planning or used in the **MULTISOURCE Planning Platform** for a detailed scenario evaluation.

[12] European Parliament (2000) EU Water Framework Directive 2000/60/EC.
[13] European Commission (2020) Regulation of the European Parliament and of the council on minimum requirements for water reuse.

Potential end-users will contribute to the co-creation of the **urban archetypes** to be used in the MULTISOURCE Planning Platform. In the context of urban water management, cities vary in size and density, topography, degree of connection to centralized sewer, amount and location of public and private green space, and proximity to water bodies. Specific regional situations, such as the predominant types of roof (sloped vs. flat), can also be considered, thus enabling specific technologies (such as green roofs) to be automatically included (or removed) from the scenario development for a given city. The concept of archetypes, when applied to city planning, can improve decision-making, mitigate risk, and forecast probable future scenarios. The use of archetypes has been developed for urban mobility[14], but has not so far been applied to urban water management. **The use of archetypes in MULTISOURCE will enable end-users to quickly classify which regions are suitable for the application of a specific nature-based technology**. For example, regions that are comprised of buildings with flat roofs may be interested in evaluating green roofs in their scenario ranking (ENTS technology in Leipzig); areas with large green spaces may be interested in open-water wetlands that provide treatment, storage, increased biodiversity and public amenity (ENTS technology in Italy); urban areas with little available space may opt to explore archetypes that utilize NBS^{WT} that provide both water treatment and parking space for cars (ENTS technology in Belgium).

To complement the tools, **demand-driven business models** will be developed for post-project continuation and replication based on circular urban resource use and ecosystem services. The **business models will be co-created with a diverse group of stakeholders** (e.g. public authorities, water companies, property developers), within the project consortium and from the greater local networks of consortium partners, as well as from an International Advisory Board of high-level experts based in Denmark, South Africa, Switzerland, Thailand, and the United States. Stakeholders are defined as individuals or institutions that may, in regards to the project, i) be impacted (negatively or positively), ii) have information that can usefully support an informed decision, iii) be interested in the outcomes, and/or iv) have influence over the outcomes. **Business models will include a regulatory framework with guidelines and check lists designed to minimize potential negative gendered impacts.** The co-development process will be facilitated by ALCN, ICLEI, FER, and the MULTISOURCE municipal partners (GIRONA, OSLO) and metropolitan partners (CMM, GLYON).

1.3.2 Positioning of the project and Technology Readiness Levels (TRLs)

MULTISOURCE project outputs will move from TRL 3-6 to TRL 5-7 over the course of the project. The building blocks of MULTISOURCE include the Hydraulic Disconnection Module, MULTISOURCE Planning Platform, MULTISOURCE Technology Selection Tool, the Territorial Life Cycle Analysis (LCA) approach, and the NIVA Risk Assessment database (NIVA RAdb). The Technology Readiness Levels of the components are presented in Table 1.1. MULTISOURCE focuses on the development and integration of these tools into a planning platform large-scale planning of NBS^{WT} in urban water cycles worldwide.

Table 1.1. Technology Readiness Levels of MULTISOURCE components.

MULTISOURCE component	Begin TRL	End TRL
Hydraulic Disconnection Module	3	5
Territorial Life Cycle Analysis	3	5
MULTISOURCE Planning Platform	4	6
NIVA Risk Assessment Database	5	6
MULTISOURCE Technology Selection Tool	6	7

The ENTS pilots will be demonstrated and qualified in operational environments (Begin TRL 5-7; End TRL 7-9). The monitoring/technical activities planned and ethe details of each pilot and are provided in Section 1.3.4, Table 1.3 and Table 1.4, respectively. The results from the pilots will be used as inputs to the NIVA RAdb, the territorial Life Cycle Analysis, the MULTISOURCE Technology Selection Tool, and the MULTISOURCE Planning Platform. Building on existing business model innovations for NBS^{WT} and water management, MULTISOURCE will develop practical stepwise guidelines for cost-benefit analyses, business model co-creation for long-term management and co-financing, specifically for NBS^{WT}. The developed business models and tools will reflect the specific characteristics of the water sector, tackling (co-)governance challenges of decentralised systems, and for application in developed and developing urban contexts, including systems applicable to informal settlements. Cost-benefit analyses will allow welfare-oriented and profitability-oriented accounting to allow a variety of users to assess financial viability and highlight circular economy opportunities for value creation.

1.3.3 Links to other national and international research activities

MULTISOURCE builds on recent initiatives in many fields related to nature-based solutions and sustainable urban water management. Consortium partner contributions to recent related projects and the associated inputs relevant to MULTISOURCE are presented in Table 1.2.

[14] Institute for Mobility Research (2019) City Archetypes: How might specific needs of cities be best addressed in considering urban mobility?

Table 1.2. Main innovation actions contributing to MULTISOURCE. C: Coordinator; P: Partner.

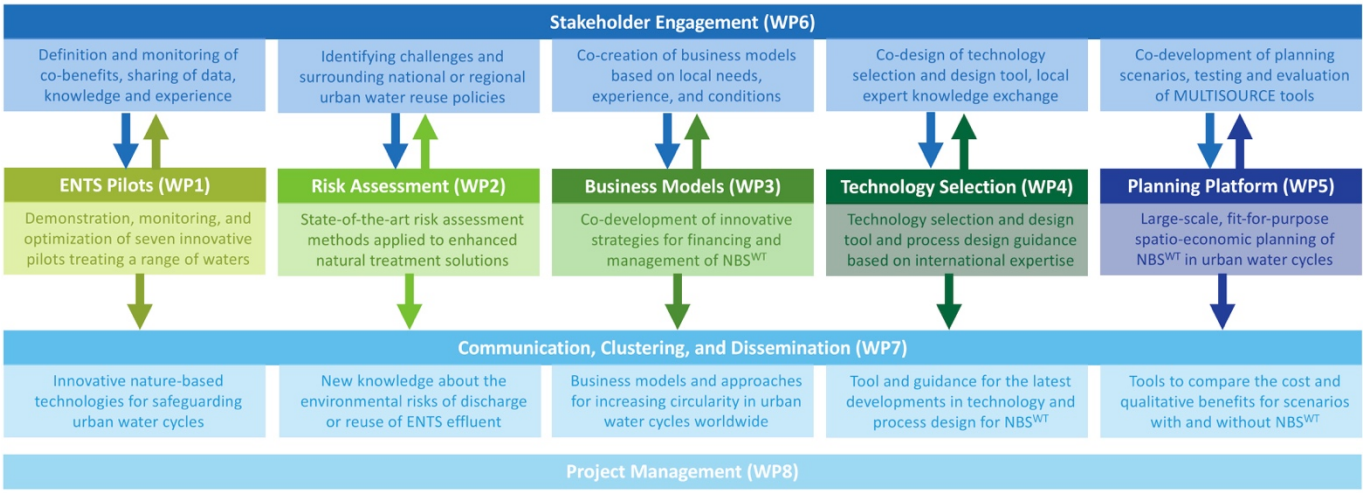
Project/Funding/Years	Contributions	Inputs to MULTISOURCE
CircularCity COST Action CA17133 2018-2022	ICRA(P), ALCN(P), AU(P): NBS for circular cities, working group on resource recovery, working group on urban water	Catalogue of urban NBS for resource recovery and circular economy possibilities.
ECORISK2050 H2020-MSCA-ITN-2018 2018-2022	NIVA(P) Risk assessment of complex mixtures and multiple stressors and subsequent mitigation	Bayesian network modelling approach to probabilistic risk assessment of ENTS under various spatial and temporal conditions.
EdiCitNet H2020-SCC-2016-2017 2018-2023	OSLO(P) Frontrunner City; ICRA(P) Development of tools to facilitate implementation for edible NBS for more resilient and socially inclusive cities	Database of NBS for food production, to be included in technology selection tool; web-based applications and tools.
Houseful H2020-CIRC-1-2017 2018-2022	ALCN(P) Co-design of circular business cases, involving stakeholder participation and acquisition of institutional and blended financing for replication	Stakeholder engagement approaches, methods for financing and replication.
HYDROUSA H2020-CIRC-2017 2018-2022	IRIDRA(P), ALCN(P) NBS for wastewater and stormwater treatment, nutrient capture and reuse and agroforestry. ICRA(P) analyses of micropollutants in NBS, evaluation of their food uptake, and assessment of associated risks.	Regenerative business models for urban water management; definition of water loops in the context of the EU Green Deal.
IATI-WW TRC/CRP/15/002 2015-2020	UFZ(C) Decentralized wastewater treatment decision support development and infrastructure planning	Development of water management scenarios for urban areas and inclusion of global data sources.
SNAPP The Nature Conservancy 2018-2020	ICRA(P) Decision support for selection of best-fit NBS for sanitation. IRIDRA(P) innovative NBS for wastewater treatment	Prototype decision support system, initial data and knowledge base to be expanded with NBS^{WT} & ENTS.
SMART-MOVE BMBF FKZ02WM1355B 2015-2018	UFZ(P) Development of geographic information system (GIS)-based approach Assessment of Local Lowest-Cost Wastewater Solutions (ALLOWS)	Planning tool that will be expanded to include urban regions and further developed into a platform to compare scenarios with and without NBS^{WT} on a city-wide scale.
SOLUTIONS FP7-ENV-2013 2013-2018	UFZ(C), NIVA(P) Combined toxicity and cumulative risk assessment of European Rivers	NIVA Cumulative Risk Analysis as framework for developing ENTS risk assessment and treatment performance evaluation.
TONIC French Water Agencies 2020-2024	INRAE(C) NBS technology selection to treat wastewater overflows. INSA(P) optimizing stormwater disconnection strategy from sewer network in urban areas	Methodology for disconnection from sewer network; prediction of dynamic pollutant loads in urban water systems.

Links with international NBS-related repositories and databases will be established, and will add value to platforms such as the Nature-based Solutions Evidence Platform of the University of Oxford, which currently lacks projects and information on NBS for urban water management. MULTISOURCE activities will include clustering, liaising, and joint events with other NBS-related H2020 projects. The coordinator of the H2020 HYDROUSA project already confirms their interest in clustering activities with MULTISOURCE (see Annex 2, letter of support from Daniel Maimas, Greece). UFSC will seek parallel financing via a local co-funding mechanism for H2020 projects from the Fundação de Amparo à Pesquisa e Inovação do Estado de Santa Catarina – FAPESC in Brazil. UFSC will also host a workshop for the dissemination of MULTISOURCE business models and tools to a network of over 200 municipalities in the state of Santa Catarina (see Annex 2, letters of support from ARIS and CASAN). MSU has funding from the Montana Department of Environmental Quality and City of Bozeman, Montana (US) for a related project that will pilot three ENTS in operational conditions and provide additional inputs to MULTISOURCE activities related to technology design, cost, and O&M requirements. The MSU project will also create a direct dissemination link between MULTISOURCE, MSU, and the City of Bozeman (letter of support US: City of Bozeman, Annex 2). HCMUT, INSA, and INRAE are partners in a related project on alternative water management tools in the large metropolitan areas Lyon (FR) and Ho Chi Minh City (VT), providing a range of opportunities to capitalize on knowledge exchange, clustering, and creating synergies between European and Vietnamese universities, research organizations, metropolitan municipalities, and companies.

1.3.4 Methodology

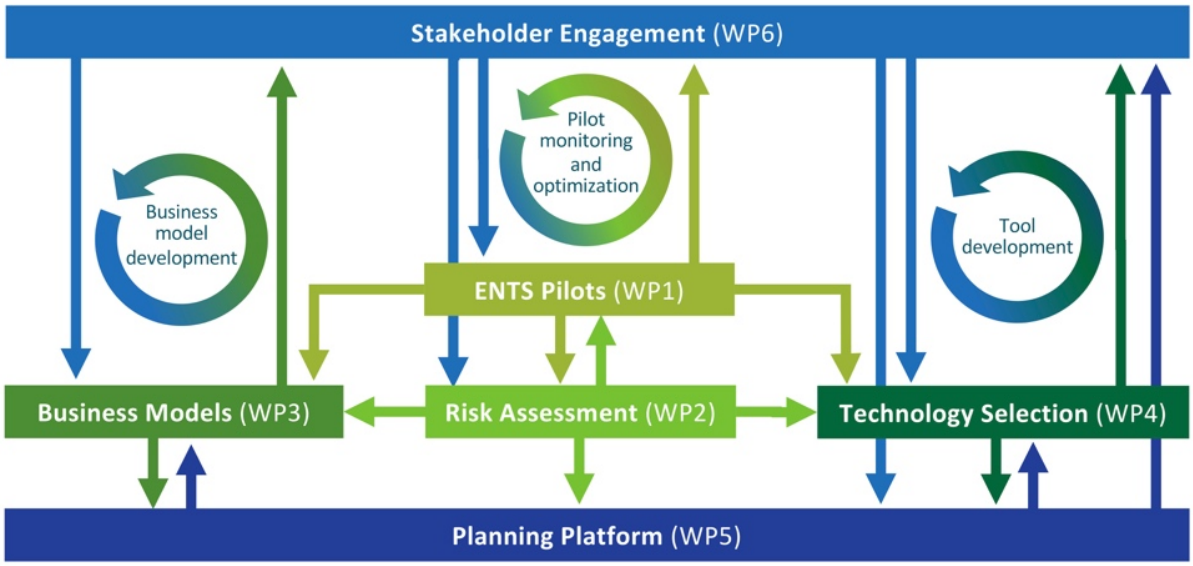
MULTISOURCE will create customizable, open-source tools to facilitate decision support for selection, design, large-scale planning and investment in NBS^{WT} in urban settings. The project is organized into eight Work Packages (WPs): five technical WPs, one devoted to stakeholder engagement, one on communication, clustering and dissemination, and one WP for coordination and management. The WPs are presented in Figure 1.3.

Figure 1.3. MULTISOURCE Work Packages (WPs).



In order to ensure applicability across a vast range of urban situations, input from a wide variety of stakeholders, including governmental organizations, private sector, research, and civil society, will shape the development, validation, and demonstration of the tools. Stakeholder Engagement (WP6) is strongly linked to ENTS Pilots (WP1), Risk Assessment (WP2), Business Models (WP3), Technology Selection (WP4) and the Planning Platform (WP5). Stakeholder engagement activities will be *inclusive*, i.e. designed to enable the active participation of people from a range of diverse income levels, ethnic backgrounds, abilities, and genders.[15] **Feedback loops** between stakeholders and WP1, WP2, WP3, WP4, and WP5 ensure MULTISOURCE outcomes meet the needs and expectations of the intended end-users, and that input from a range of geographical, socio-economic, and cultural perspectives are accounted for in the co-creation of ENTS pilot monitoring, as well as MULTISOURCE business models and tools (Figure 1.4). The variety of data collected reflects the inter- and trans-disciplinarity of the consortium and ensures the efficient development of the business models and tools. Data collected or generated in the project can be qualitative or quantitative. A Data Management Team has been established to ensure FAIR (Findable, Accessible, Interoperable, and Reusable) data management practices and make the data as open as possible and as closed as necessary (see Section 2.2.4).

Figure 1.4. Feedback loops for incorporating stakeholder input into MULTISOURCE activities.



[15] Narayan, A.S., Lüthi, C., 2019. Citywide inclusive sanitation – old wine in new bottle? Sandec News 20, 21–22. https://www.eawag.ch/fileadmin/Domain1/Abteilungen/sandec/publikationen/news/news_20.pdf

ENTS Pilots: A total of seven pilots will demonstrate innovative approaches for compact and effective treatment of different urban waters in European cities spanning a range of climatic geographical conditions and governance contexts. Each pilot has been (or will be) implemented in cooperation with local stakeholders in each country and addresses a specific challenge in urban water management. The construction of each pilot has been financed via public or public-private sources, not from MULTISOURCE itself, thus minimizing the risk of delays and maximising the use of EU funding and maximising the time that the pilots can be monitored within MULTISOURCE. MULTISOURCE will create synergies by complementing existing monitoring programs for the seven pilots with additional analysis for pathogens, priority substances, and contaminants of emerging concern using state-of-the-art target and non-target screening methods and approaches. The analyses, methods, and assessments for each pilot are shown in Table 1.3 (to be detailed more precisely for each pilot before monitoring begins). A tailored monitoring programme will be developed for each pilot (according to its primary function) at the beginning of the project in order to maximize usefulness of the data collected, innovation and potential for effluent reuse. Innovative approaches including Information Communication Technology (ICT), real-time monitoring, and digitalization tools will improve data monitoring and management. Commercially available low-cost sensors for monitoring water quantity and quality will be benchmarked against established sensor technology. Implementation of sensor technology will be pilot-specific. Sensors for Chemical Oxygen Demand (COD) and Dissolved Oxygen (DO) will be used to optimize online process control of pilots with aeration (France, Belgium, Italy, Germany), while Turbidity sensors are planned for the pilot in Norway. Citizen-science techniques and stakeholder participation will enable the identification of co-benefits such as biodiversity, equality and well-being, as well as potential disservices (e.g. gentrification). Quantification methods, including real-time monitoring, will be co-developed with the local partners of each pilot (Table 1.4). Monitoring will be conducted from system start-up (where possible) through steady state in order to establish the limits and capacity of each treatment system and assess their ability to abate environmental risks.

Table 1.3. Analyses, methods and assessments planned for the MULTISOURCE ENTS pilots.

Pilot Location	France	USA	Belgium	Italy	Spain	Norway	Germany
Function							
Water treatment	●●●	●●●	●●●	●●●	●●●	●●●	●
Water storage	n/a	n/a	●	●●	n/a	●●●	●●
Water reuse	n/a	●	●●●	●●●	●●●	●●●	●
Optimization	●●●	●●	●●	●●	●●●	●●	●
Water quality							
Conventional pollutants[1]	●●●	●●●	●●●	●●●	●●●	●●	●
Environmental parameters[2]	●●●	●●●	●●●	●●●	●●●	●●●	●●●
Priority substances[3,5]	●●●	●●●	●●●	●●●	●●●	●●●	●
Emerging contaminants[4,5]	●●●	●●●	●●●	●●●	●●●	●●●	●
Pathogens (*E. coli*, SARS-CoV-2)	●●●	●●	●●	●●●	●●●	●	●
Data acquisition							
Online sensors	●●	●	●	●●	●●●	●●	●●
Low-cost sensors	●●	●	●	●	●	●	●●
ICT[6]	●	●	●	●	●●●	●	●
Citizen science	●	●●	●●	●	●●●	●●	●
Stakeholder participation	●	●●	●●●	●	●●●	●●	●●
Co-benefits							
Aesthetics	n/a	●	●	●	●●	●●	●
Biodiversity	n/a	●	●	●	●●	●	●●
Disservices and constraints	●●	●●	●	●	●●●	●●	●
Education	n/a	n/a	●	●●●	●●●	●●●	●●●
Flood peak reduction	●	●	●●●	●●	n/a	●	●
Increased green areas	n/a	●	●	●	●●	●●	n/a
Resource efficiency	●	●	●●	●	●●	●	●●
Thermal regulation	n/a	n/a	●	n/a	●●	n/a	●●
Urban farming	n/a	n/a	n/a	n/a	●●	n/a	n/a

[1]Chemical Oxygen Demand, Total Suspended Solids, Total Nitrogen, NH_4-N, NO_x-N, Total Phosphorus, PO_4-P, Turbidity
[2]Water Temperature, Dissolved Oxygen, pH, Electrical Conductivity, Oxidation Reduction Potential
[3]Heavy metals, polyaromatic hydrocarbons (PAH), biocides (including atrazine and diuron)
[4]Pharmaceuticals, neonicotinoid insecticides, microplastics
[5]As defined in the Water Framework Directive 200/60/EC
[6]Information Communication Technology
Investigations: ●●● = Highly detailed ●● = Moderately detailed ● = Basic n/a = not applicable

Table 1.4. Characteristics of the seven MULTISOURCE ENTS pilots.

Wastewater Type	**Raw Wastewater**	**High-strength wastewater**	**Pre-treated domestic wastewater**	**Combined Sewer Overflow**	**Greywater**	**Road Runoff**	**Rainwater**
Country	France	USA	Belgium	Italy	Spain	Norway	Germany
City	Lyon	Bozeman	Ypres	Merone	Girona	Oslo	Leipzig
Climate*	Temperate oceanic	Warm summer continental	Temperate oceanic	Humid subtropical	Hot summer Mediterranean	Warm summer continental	Temperate oceanic
Avg. air temp*	11.6°C	6.0°C	9.6°C	12.1°C	15.4°C	6.3°C	8.9°C
Avg. rainfall*	763 mm/y	465 mm/y	800 mm/y	1171 mm/y	729 mm/y	740 mm/y	518 mm/y
Size	20 m^2	380 m^2	112.5 m^2	5,500 m^2	4 × 25 m^2	3 × 90 m^2	5 × 25 m^2
PE**	30	660	150	13,000	20	n/a	n/a
Construction	2020	2018	2020	2020	2020	2020-2021	2019
Begin/End TRL	5/8	7/9	7/9	7/9	5/7	6/9	6/8
Technology***	Hybrid aerated-French VF treatment wetland	VF wetland with recycle and partial saturation	green parking + treatment + rainwater storage	VF aerated wetland + free water surface wetland	WetWall: Hybrid living wall + community garden	Raingarden with infiltration, storage + irrigation	Green roof for rainwater capture + storage
Challenge addressed	Simultaneous treatment of solids and wastewater; extreme rain events	Cold-climate wastewater treatment in the mountains for a ski resort	Wastewater treatment, storage and reuse where no net land is available	Sewer systems unable to cope with extreme rain events	Safe water reuse, food sovereignty, social cohesion, climate adaptation	Improved water quality for local sea-trout habitat, reuse for irrigation	Rainwater retention, storm-water reduction for buildings
Main innovation	Compact (<1m^2/PE*), new design guidance; innovative/ICT monitoring approaches	Seasonal operation, recirculation for increased nutrient removal of high-strength WW	Compact (<1m^2/PE*), can be retrofit in parking lots, provide secondary use for parking	Increase resilience to extreme events, reduce pressure on sewers; new NBS^{WT} market opportunities	Hybrid system, use of digital tools to promote community engagement and ecosystem service assessment	Demonstrating alternative methods for treatment and reuse of runoff for irrigating urban green areas	Improvement of evaporation efficiency and biodiversity via vegetation selection and management
Optimization	Online control of aeration	Increased nutrient removal	Pathogen removal + disinfection	Online control of aeration	Configure for best pollutant removal	Filtration material for pollutant removal	Maximize storage or evapotranspiration
Water treated	1,825 m^3/y	13,900 m^3/y	1,500 m^3/y	565,000 m^3/y	730 m^3/y	1,250 m^3/y	n/a
Water reused	n/a	13,900 m^3/y	500 m^3/y	562,000 m^3/y	730 m^3/y	625 m^3/y	n/a
Reuse purpose	n/a	Indirect aquifer recharge	Toilet flushing	Creation of natural habitat	Irrigation of edible plants	Irrigation of plants and trees	n/a
Water storage	n/a	n/a	minimal	3,600 m^3	n/a	62.5 m^3	12.5 m^3

*en.climate-data.org **Population Equivalent ***VF = Vertical Flow

Risk Assessment: The treatment performance of the ENTS pilots will be risk-assessed by expanding upon the recently developed NIVA Risk Assessment Database (NIVA RAdb), thus applying for the first time the most recent advances in risk assessment of aquatic environments to ENTS treating urban water sources. The use of real-time monitoring for risk assessment (e.g. using turbidity as a proxy for particle-bound contaminants) will be explored. This comprehensive approach will consider temporal variability and uncertainties in the performance of the ENTS pilots. The current version of NIVA RAdb (v.1.2) has over 2.5 million unique chemical compounds, 386,000 toxicity data and more than 10 million QSAR toxicity estimates. The monitoring data for the ENTS pilots will be used in the NIVA RAdb to estimate environmental risks of individual chemicals as well as complex mixtures of chemicals. The output in Risk Quotients (RQ) can be displayed in various formats such as text, graphics and interactive maps. The tool compiles data from experimental studies and data-assisted models that cover effects from molecular and/or cellular responses to effects on the individual and population levels. This holistic data-based approach can point out which chemical or mixture of chemicals are most detrimental to specific species in aquatic environments. The potential reuse of treated water will be risk-assessed when applicable using a similar approach and also by comparing concentrations of priority pollutants defined in the EU Water Framework Directive[16] (WFD) with existing WFD and water reuse regulations (such as the recently approved regulation EU 2020/741 on minimum requirements for water reuse) as well as future regulatory scenarios. Risk assessment outcomes will inform future reuse guidance and policy recommendations for urban water treatment and reuse. Interaction and communication with pilot owners and local stakeholders such as environmental authorities, water utilities, municipalities, and private companies will be important to have their perspectives on issues related to urban water reuse. Outcomes from the risk analysis will act as inputs to MULTISOURCE business models and tools. Pilot optimization will also be informed by the outcomes of the risk assessments conducted on the pilot data.

Business Models: The ENTS pilots and their ability to produce treated water that is safe for reuse and/or discharge to water bodies will inform the co-development of new, stakeholder-involved business models for the long-term financing, operation and maintenance of urban NBS^{WT} across different regulatory frameworks. The business models will address identified barriers and drivers to NBS^{WT} in urban water-oriented NBS projects and provide strategies for leveraging public-private partnerships, innovative blended financing, and promoting circular economy of urban resources. The replicability of the business models in varying conditions will be ensured via input from two individual municipalities (GIRONA, OSLO) and two groups of municipalities (GLYON, CMM), international partners (HCMUT, MSU, UFSC) and an International Advisory Board. The business models will contain a self-assessment and optimization component to help stakeholders develop socially inclusive and gender-equitable investment cases that align with public objectives. An economic assessment component will enable public and private (non-profit, for-profit) users to assess costs and benefits relative to conventional (grey infrastructure) solutions based on narrow economic perspectives (for-profit accounting) as well as wider (e.g., welfare-oriented) perspectives that account for true costs (including externalities) and multifunctional co-benefits, differentiating between costs and benefits impacting feasibility for private and public entities. Economic assessment methods will help users identify opportunities for secondary resource valorisation (water, nutrients, materials, energy) and to implement circular economy principles into product and service design. Guidelines for long-term management, operation and maintenance (MOM) of NBS^{WT} will also be developed, including replication guidance for public-private co-financing and co-management highlighting successful reference cases of community-based MOM. Participatory value-mapping combined with learning from existing innovative financing approaches will provide the basis for the co-development of public-private blended finance strategies and the mobilization of private funds from water utility companies, investment funds such as green finance and pension funds, private/community-based asset pools, as well as revenue generated from secondary products and green infrastructure services.

Technology Selection: The MUTLISOURCE Technology Selection Tool will build off an existing prototype developed by ICRA within the SNAPP project (see Table 1.2). The knowledge base for the tool will include information from existing international and European NBS databases (e.g. PlanteDefi, Nature4Cities, NATURVATION, UNaLaB, URBAN GreenUP) data generated from the ENTS pilots, data from international partners in different climate regions, and expert elicitation workshops. The tool will integrate both mathematical models and Artificial Intelligence techniques (i.e. knowledge-based systems) and be structured in two levels: Tier One for the selection of the most suitable NBS^{WT} for given economic and environmental and water reuse contexts, and Tier Two for the preliminary design of the selected NBS^{WT} (effluent quality, land and energy requirements, the skill level of manpower required for operation, preliminary investment and operation costs), as well as a qualitative assessment of co-benefits (flood mitigation, temperature regulation, storm peak mitigation, carbon sequestration, biomass production, aesthetic value, recreation, pollination, food source, water reuse, benefits to flora and fauna, and social benefits, such as economic opportunities, enhanced societal interactions, and human well-being).

[16] European Parliament (2000) EU Water Framework Directive 2000/60/EC.

A module on whole-system cradle-to-grave Life Cycle Assessment (LCA) of NBS^{WT} will allow comparisons of systems in terms of construction materials, system operation, performance, and waste/by-product management, and will be based on ISO 14040/14044 standards. Whereas most conventional LCAs fail to address the multifunctionality of nature-based solutions, MULTISOURCE will develop an innovative application of territorial LCAs[17] in order to consider the inherent multifunctionality of NBS^{WT}. Guidance for long-term management, operation and maintenance, including risk management plans to minimize chemical and biological hazards depending on the final water use will be also provided by this tool.

Planning Platform: The MULTISOURCE Planning Platform is a GIS-based platform that will enable stakeholders to assess and compare different spatial and economic urban water management scenarios with and without NBS^{WT}. The platform is the expansion and further development of a recently developed methodology for decentralized wastewater treatment in rural areas[18]. In MULTISOURCE, the methodology will be adapted and tailored for water management scenarios in urban settings taking into account MULTISOURCE outcomes, stakeholder input, and GIS-processed inputs (Figure 1.5).

Figure 1.5. Inputs to the MULTISOURCE Planning Platform.

In the MULTISOURCE Planning Platform, information on the local sewer network (when available) will be coupled with hydraulic modelling in order to locate the pressure points in existing centralized sewer networks and identify possible disconnection strategies at the city scale. In order to accurately simulate the quantitative hydrological processes in a given urban watershed, the tool will define water quantity and potential pollutant loads to be treated locally under dynamic conditions such as extreme weather events, temperature increase, and population densification. Accommodating a wide variety of urban settings is not achieved with the use of a generic tool. Especially in cities, detailed planning is often required to assess the effects of different water treatment and management solutions. To overcome this issue, MULTISOURCE will identify urban archetypes that span a wide range of possible urban settings and, at the same time, can be used to generalize spaces such as urban suburbs. Based on the defined archetypes, scenarios will be developed, using the MULTISOURCE Planning Platform and compared using Life Cycle Cost Analysis (LCCA). The MULTISOURCE Planning Platform will be coupled with components of the Business Models in the scenario development and the scenario comparison stages to ensure sustainability and adaptability of the tool.

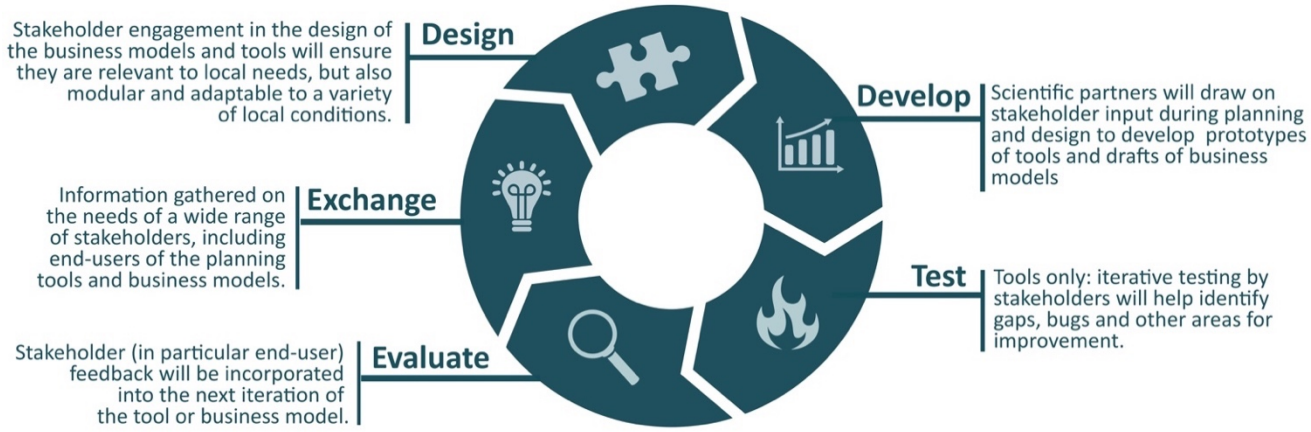
Stakeholder Engagement: To meet the urban water planning needs of the intended end-users, the business models and tools will be co-created with various kinds of stakeholders, including individual municipalities (GIRONA, OSLO), metropolitan municipalities (GLYON, CMM), international project partners in Brazil, USA, and Vietnam, and members of the IAB. Other groups of stakeholders, which may include architecture and landscape development firms, property developers, civil society organisations, and partners involved in the existing pilots, will contribute to the co-creation of business models. Stakeholders will cover a range of geographic locations, and socio-economic and cultural backgrounds, to ensure applicability of the tools in urban settings in various locations.

Individual municipalities GIRONA and OSLO and metropolitan municipalities GLYON and CMM will assemble local community stakeholders with an interest in, or formal responsibility for, urban water management in a specific local region or district via tailor-made local engagement strategies, ranging from end-user group consultations to a fully developed Living Lab in Girona, considering gamification strategies such as those provided in the UNaLaB toolkit for stakeholder engagement. The process for incorporating stakeholder feedback into the development of MULTISOURCE tools and business models is shown in Figure 1.6, adopted from the agile software development approach. The process will vary according to the tool or model in question, and specific processes may vary.

[17] Loiseau, E. *et al*. (2018) Territorial Life Cycle Assessment (LCA): What exactly is it about? A proposal towards using a common terminology and a research agenda. *Journal of Cleaner Production*, 176: 474–485. https://doi.org/10.1016/J.JCLEPRO.2017.12.169

[18] van Afferden M. *et al*. (2015) A new approach to implementing decentralized wastewater treatment concepts. Water Science & Technology 72(11) 1923-1924. https://doi.org/10.2166/wst.2015.393

Figure 1.6. Indicative process for incorporating feedback into MULTISOURCE tools and business models.



Each group or Living Lab will investigate their local legal and regulatory frameworks for implementing urban NBS[WT], identify drivers and barriers to large-scale planning of NBS[WT] in their region, and evaluate social co-benefits of NBS[WT], including the distribution of these within the community according to factors such as income, ethnicity, age and gender. The municipality partners will test and evaluate the tools. In addition, members of established groups and/or Living Labs will participate in the implementation, monitoring, and evaluation for selected local pilots, with an emphasis on engaging diverse social groups (especially vulnerable and under-represented groups) and people of all genders. Groups of local stakeholders already involved in the pilots who will be invited to participate in MULTISOURCE (Table 1.5).

Table 1.5. Local stakeholders already involved in the ENTS pilots.

ENTS Pilot	MULTISOURCE partners	Local stakeholders
France	GLYON, INRAE	University of Lyon, SYNTEA (private company)
USA	MSU	City of Bozeman*, Montana Department of Environmental Quality, Bozeman Water Reclamation Facility, Bridger Bowl Ski Resort
Belgium	RIETLAND	Recreat (tourism trade organisation), De Watergroep (water utility), Ghent University, Flanders sewage consultation platform (VLARIO), Flanders water centre (VLAKWA), Bosaq (private company)
Italy	CMM, IRIDRA	Municipality of Merone, ComoAcqua Spa (water utility), Parco Regionale della Valle del Lambro (Park in which the project is located)
Spain	GIRONA, ICRA	University of Girona, Neighbourhood associations, Associacio artistica La Volta* (cultural society), Consorci Costa Brava* and Consorci Besòs Tordera (municipal water organizations), Catalan Water Partnership*
Norway	OSLO, NIVA	Norwegian University of Life Sciences*, Public Road Administration*, Norwegian Environment Agency*, BASAL AS*, Multiconsult*
Germany	UFZ	University of Leipzig, City of Leipzig, Botanical Garden of Leipzig

*see letters of support, Annex 2

MULTISOURCE will promote gender equality in research and innovation in urban water management in line with Horizon 2020 Gender by involving consortium partners in gender awareness training and including gender mainstreaming in stakeholder engagement, as well as by developing guidelines for improving social equity more broadly (and gender mainstreaming specifically), of use for not only the project team, but also researchers and practitioners engaged in future similar work.

Communication, Clustering and Dissemination: MULTISOURCE will foster connection and interaction with past, current and future European H2020 NBS Projects and disseminate project outcomes and results to increase the exchange of capacity, expertise and know-how among local, national, European and international stakeholders. To maximize the impact of the project outcomes and results, MULTISOURCE will develop a strong and a well-defined plan for clustering activities, including connection to already existing platforms for NBS-related projects such as Oppla and Nature4Cities. MULTISOURCE will also build a policy impact strategy defining channels at regional/municipal, national, EU and international levels to impact policy-level visions and policy instruments.

1.3.5 Gender dimension

MULTISOURCE includes a Gender Expert (FER) who will play a key role in its governance structure (see Section 3.2.2). FER will promote and monitor gender mainstreaming throughout the project, including providing advice on relevant thematic issues, guidance on gender responsive events, and review of dissemination and communication materials to ensure that inclusive language is used. To sensitise partners on gender equality and women rights, FER will conduct a workshop for partners at the launch of the project. FER will also carry out a gender-sensitive analysis (literature review, possibly supported by interviews) at the outset of the project to gather relevant literature and identify key issues for partners to consider when engaging with stakeholders, as well as developing tools and business models. For example, there is evidence that public-private-partnerships may exacerbate gender inequality, hence guidelines and checklists will be developed to prevent negative impacts on gender equality[19]. This analysis will consider existing guidance and checklists such as Stanford University's Gendered Innovations Engineering Checklist. FER will sensitise project partners to the findings of this analysis and provide guidance to inform gender mainstreaming within their work.

In addition to sensitising partners to gender issues in water related NBS (in the context of wider social equality), improving the understanding of gender issues in water management is a valuable broader contribution to a field lacking this type of analysis (particularly within an EU context). In the Living Lab in Girona (WP1), regular local stakeholder meetings are planned, aiming to analyse and maximise the social co-benefits of the ENTS. The approach taken will be in line with the Framework for Constructive Engagement[20], which will analyse issues of consent, context (decision-making, and socio-ecological), and the range of ecosystem services, benefits and values. To ensure gender is mainstreamed, efforts will be made to reach and engage local women's organisations, which will among others assist in obtaining gender disaggregated data. This research will not only serve as input for WP3, WP4, WP6 and WP7, but also for formulating key messages on mainstreaming gender into NBS^{WT}. The findings from the literature review will be combined with stakeholder input to the monitoring and evaluation of pilots and the development of tools, with a view to developing recommendations for mainstreaming gender and ensuring inclusive and participatory communal participation in NBS^{WT} projects.

1.4 Ambition

1.4.1 Progress beyond the state of the art

MULTISOURCE addresses knowledge gaps on nature-based solutions for urban water management. **Main advancements beyond the state of the art are highlighted in bold.**

Pilot Monitoring: It is critical to obtain a better understanding of how nature-based solutions for water treatment respond to dynamic events and how rainfall and runoff impacts the water quality and quantity treated by these systems[21,22,23]. **MULTISOURCE will enable a comprehensive assessment of the ability of ENTS to respond to storm events and to remove micropollutants, priority substances listed in the WFD, pathogens included in the new EU water reuse legislation, and microplastics**. MULTISOURCE marks a significant advancement in the characterization, understanding and potential need for new Environmental Quality Standards (EQS) for NBS^{WT} being implemented in the urban environment[24],[25].Additionally, **MULTISOURCE will set a new standard for assessing urban NBS^{WT} co-benefits and increasing citizen science engagement.** NBS^{WT} and urban water management lack a holistic, integrative and water circularity assessment framework[26]. The participatory approach for the identification and quantification of co-benefits in the ENTS pilots is expected to increase available knowledge on co-benefits and methods to measure them. The quantification of co-benefits will be critical to improve monetization and valuing[27].

Risk Assessment: **MULTISOURCE will be the first European H2020 project to fully utilize the NIVA RAdb™ which facilitates rapid and consistent hazard and cumulative risk assessment of single chemicals and mixtures**

[19] Romero M.J. (2019) Can public-private partnerships deliver gender equality? Eurodad Briefing Paper, GA CSO-LA/2018/401-870

[20] Chan K.M.A. et al. (2012) Where are Cultural and Social in Ecosystem Services? A Framework for Constructive Engagement. BioScience, 62(8):744–756.

[21] European Commission (2020) Nature-based Solutions: Improving Water Quality & Waterbody Conditions: Analysis of EU-funded projects.

[22] Rizzo, A. et al. (2020) Constructed wetlands for combined sewer overflow treatment: A state-of-the-art review. The Science of The Total Environment 727:138618. https://doi.org/10.1016/j.scitotenv.2020.138618

[23] Wang, H. et al. (2017) Are green roofs a source or sink of runoff pollutants? Ecological Engineering. https://doi.org/10.1016/j.ecoleng.2017.06.035

[24] Menger, F. (2021) Suspect screening based on market data of polar halogenated micropollutants in river water affected by wastewater. Journal of Hazardous Materials. https://doi.org/10.1016/j.jhazmat.2020.123377

[25] Lin, X. et al. (2020) Occurrence and risk assessment of emerging contaminants in a water reclamation and ecological reuse project. The Science of The Total Environment. https://doi.org/10.1016/j.scitotenv.2020.140977

[26] Nika C.E. et al. (2020) Nature-based solutions as enablers of circularity in water systems: A review on assessment methodologies, tools and indicators. Water Research. https://doi.org/10.1016/j.watres.2020.115988

[27] Hamann F. (2020) Valuing the Multiple Benefits of Blue-Green Infrastructure for a Swedish Case Study: Contrasting the Economic Assessment Tools B£ST and TEEB. Journal of Sustainable Water in the Built Environment. https://doi.org/10.1061/jswbay.0000919

of chemicals (www.niva.no/radb). The platform, which was originally developed for risk assessment of surface waters, will be applied for the first time on water treated by MULTISOURCE pilots in urban environments. **Bayesian Network (BN) modelling[28] will be utilised to identify and communicate uncertainties in risk assessment of the ENTS pilots under varying conditions.** This method has been recommended for ecological risk assessment[29] but is not yet widely used. Hence, MULTISOURCE will demonstrate a methodology that is more cost-efficient than standard toxicity tests as the NIVA RAdb utilises existing exposure and effect data. In addition, use of the NIVA RAdb and BN modelling will provide a much more comprehensive and innovative way of assessing treatment performance (i.e. assessing probabilistic risk reduction) than traditional approaches.

Business Models: The advantages of NBS have often been argued from a welfare economic perspective with an emphasis on the common good ecosystem services such as water retention, biodiversity, air quality, and carbon storage. There is, unfortunately, no market for these services. **MULTISOURCE will co-create business models with NBS^{WT} stakeholders to address their needs and focus on financial viability by locating alternative sources of value from secondary water, nutrients, energy and materials as well as specific ecosystem services that can generate real economic value in a socially equitable manner**. **Business models will consider public sector cost-reduction potential of non-marketable values provided by NBS such as air quality, flood and erosion control, urban wellbeing and health that can be measured by established economic valuation methods.** Major catalysts for wider replication of NBS^{WT} include new concepts such as community-based O&M, to integrate with municipal-level centralized control, and innovative blended financing approaches.

Technology Selection: **The MULTISOURCE Technology Selection Tool will incorporate the most updated knowledge on design, operation and performance of NBS^{WT} and ENTS.** The knowledge base will integrate new knowledge identified in monitoring the ENTS pilots and combine it with data and information coming from scientific literature and the most relevant online databases (e.g. http://www.susana.org/en/ or www.globalwettech.com). Special emphasis will be given to the new knowledge that will be generated to provide safe water reuse plans, circular economy schemes, and quantification of co-benefits provided by NBS[30],[31]. **Artificial Intelligence (AI) will enable end-users will be able to contribute additional data beyond the duration of the project** (after an adequate validation and screening process) and enable the tool to remain up to date without risk of becoming obsolete[32]. **Artificial Intelligence will provide the tool with data mining and learning capabilities.**

Life Cycle Analysis: In terms of LCA advancements, most efforts to perform LCA on NBS^{WT} focus on classical comparative analysis and average nominal operating conditions[33], thus neglecting specificities of climate change such more frequent and intense rain events, and the multifunctionality of NBS^{WT}. **MULTISOURCE advances LCA modelling by accounting for dynamics related to the increased frequency of extreme climatic events and developing a novel LCA approach to account for the functionalities of the ecosystem services provided**.

Urban planning: **The MULTISOURCE approach is highly innovative as integrates urban archetypes, spatio-economic planning, business models, LCCA and risk assessment into an open-source planning platform of modular tools.** In order to stimulate accelerated uptake of NBS, financial models may need to consider longer-term public sector investment combined with spatial planning, regulation, land value capture and tax incentives[34]. MULTISOURCE will develop an open-source, user-friendly platform that enables stakeholders to conduct spatio-economic planning to compare scenarios both with and without NBS^{WT} in a clear and systematic, at different scales of decentralization. The hydraulic disconnection module will use local spatial data (sewer network, topography, hydrology) to identify optimal points in existing networks where water could be treated, stored and reused locally. The scenario ranking will include cost data as well as co-benefits and other qualitative benefits, including LCA. The economic component of the platform will include new cost comparison metrics beyond specific treatment costs (e.g., cost per m^3 of water treated), and explore aspects such as insurance and property prices. **The use of urban archetypes is a new advancement that will enable the generalization of urban settings at different levels and compare NBS^{WT} to standard urban water management.**

---

[28] Carriger J.F. *et al*. (2016) Bayesian Networks Improve Causal Environmental Assessments for Evidence-Based Policy. Environmental Science & Technology 2016 50 (24), 13195-13205. https://pubs-acs-org.ezproxy.uio.no/doi/abs/10.1021/acs.est.6b03220

[29] Hart B.T. and Pollino C.A. (2008) Increased Use of Bayesian Network Models Will Improve Ecological Risk Assessments, Human and Ecological Risk Assessment: 14(5), 851-853 https://www.tandfonline.com/doi/abs/10.1080/10807030802235037

[30] Giordano *et al*. (2020) Enhancing nature-based solutions acceptance through stakeholders' engagement in co-benefits identification and trade-offs analysis. Science of the Total Environment 713, 136552. https://doi.org/10.1016/j.scitotenv.2020.136552

[31] Garcia X. *et al*. (2106) Placing ecosystem services at the heart of urban water systems management. Science of the Total Environment, 563-564, 1078-1085. https://doi.org/10.1016/j.scitotenv.2016.05.010

[32] Poch M. *et al*. (2017) Crossing the Death Valley to transfer environmental decision support systems to the water market. Global Challenges 1, 1700009. https://doi.org/10.1002/gch2.201700009

[33] Corominas L. *et al*. (2020) The application of life cycle assessment (LCA) to wastewater treatment: A best practice guide and critical review. Water Research 184, 116058. https://doi.org/10.1016/j.watres.2020.116058

[34] European Commission (2020) Nature-based Solutions: Improving Water Quality & Waterbody Conditions: Analysis of EU-funded projects.

Regulatory advancements: Closing the water cycle by increasing local water reuse remains a challenge, and the uptake of water reuse solutions remains limited in comparison with their potential[35]. Technical limitations must be overcome, in parallel with adaptation to current regulatory framework conditions and anticipated future regulations. **MULTISOURCE risk assessment will guide policy recommendations for surface water discharge and the potential for reuse of treated water, taking into account existing regulations, specifically the Environmental Quality Standards (EQS) for priority substances and River-Basin Specific Pollutants (RBSP) in the WFD and the new EU requirements for water reuse[36] .** Water reuse regulations should reflect both the type of water being treated and the final usage of the treated water. However, the current EU regulatory framework only considers treated wastewater for agriculture irrigation. To catalyse this needed change, MULTISOURCE will provide science-based recommendations for future regulations for NBS^{WT} and safe water reuse in urban areas.

Stakeholder engagement: In order to produce a useful legacy for policy makers and practitioners who are instrumental for a stronger uptake of tested NBS^{WT} **MULTISOURCE will tailor stakeholder engagement activities** to each of the pilots, in particular through participatory monitoring and the quantification of NBS^{WT} co-benefits that they entail. The same applies for the co-creation and validation of the different business models and the tools that are to be easily accessible and applicable beyond the duration of the project.

1.4.2 Project Innovation Potential

MULTISOURCE provides significant knowledge advancements as well as technical and methodological innovations in technology, risk assessment, business models, urban planning tools, and stakeholder engagement.

In terms of knowledge advancements:
ENTS Technologies: MULTISOURCE brings innovation in the form of a tailor-made monitoring program for each ENTS pilot, for a wide range of pollutants (pathogens, priority substances, and contaminants of emerging concern) that would be cost-prohibitive for local stakeholders to conduct on their own. The expertise and access to analytical equipment and scientific infrastructure will enable new knowledge about the pollutant removal capacity of ENTS, as well as their response to dynamic storm events, to be collected, synthesised and shared. This new knowledge will be integrated into the MULTISOURCE tools, published in open-access papers and an open-access engineering textbook, and provide valuable marketing material for the SMEs involved in design and implementation of ENTS technologies.
Risk Assessment: The state-of-the-art risk assessment approaches presented in MULTISOURCE have been applied to runoff containing pesticides[37], centralised wastewater treatment plant effluent, and surface water[38] but have not yet been applied to nature-based solutions for water treatment, marking an important advancement in the knowledge of how ENTS provide risk abatement. The outcomes of the ENTS risk assessment will provide insights for water reuse policy recommendations.

In terms of technical and methodological innovations:
ENTS Technologies: The ENTS technologies provide increased multifunctionality and/or compact treatment compared to other NBS^{WT} technologies. Advantages of ENTS technologies include: secondary use of urban infrastructure such as parking lots, increased urban resilience to extreme events by reducing pressure on local sewer networks; new market opportunities for multifunctional and compact technologies, demonstrating alternative water sources for irrigating urban green areas, improvement of evapotranspiration efficiency and biodiversity via vegetation selection and management (Table 4). In terms of monitoring, MULTISOURCE marks a methodological advancement with the use of ICT monitoring and digital tools. Business Models: Existing models and tools for planning NBS do not consider specific characteristics of the water sector (e.g. long-lived assets, the significant energy and chemical usage of conventional wastewater treatment plants, the capital-intensive and continuous need for maintenance and renewal[39]). They are also generally conceptualised for developed countries, while contexts in developing countries are not reflected. MULTISOURCE tackles a number of remaining challenges[40], including i) return-on-investment is unclear and, while NBS are generally considered beneficial to cities, their potential to enhance public urban infrastructure and generate direct revenue is insufficiently recognized; ii) the interests of (and impacts on) external stakeholders (including impacts differentiated by gender) are often unexplored; iii) NBS implemented by public and private initiatives are fragmented; and iv) coverage of costs beyond the capital investment phase are often not considered. Technology Selection: MULTISOURCE advances beyond previous NBS decision support efforts by

[35] JRC Science for Policy Report: Minimum quality requirements for water reuse in agricultural irrigation and aquifer recharge. https://ec.europa.eu/environment/water/pdf/water_reuse_JRC_report.pdf
[36] European Commission (2018) Regulation on minimum requirements for water reuse.
[37] Tollefsen K.E. *et al*. (2020) Cumulative Hazard and Risk Assessment of Pesticides from agricultural activities. SETAC Europe 30th Annual Meeting, 3-7 May 2020 (virtual conference).
[38] Ruus A. *et al*. (2020) Characterisation of cumulative risk of contaminants to organisms exposed to stormwater in Oslo, Norway. SETAC SciCon, SETAC Europe 30th Annual Meeting 3-7 May 2020 (virtual conference).
[39] Müller *et al*. (2016) Business model in the context of Sustainable Urban Water Management - A comparative assessment between two urban regions in Australia and Germany, Utilities Policy 41: 148-159. https://doi.org/10.1016/j.jup.2016.07.003
[40] Connecting Nature, EU Grant Agreement 730222: https://connectingnature.eu/financing-and-business-models

including the potential for water reuse, storage and circular economy schemes in urban settings. The Technology Selection Tool will directly address the lack of a holistic water circularity assessment methodology[41]. It will be the most comprehensive existing tool for NBS selection since it will include many functionalities in a single tool[42]. Apart from selecting the most adequate technology (and discarding those which are not feasible), the tool will provide the end-user with preliminary design and cost details, operation and risk management plans as well as an assessment of the environmental and socio-economic co-benefits provided. There is no other decision support tool that provides all these functionalities for NBS^{WT} and ENTS in a single platform. Urban planning: MULTISOURCE enables municipal staff to assess urban scenarios with NBS^{WT} against standard wastewater management scenarios without NBS^{WT}. Using the MULTISOURCE Planning Platform, communities and municipalities will be able to develop different scenarios and conduct a cost ranking. Paired with auxiliary rankings of ecosystem services and risk assessments (a "sustainability ranking" of sorts), the Planning Platform offers comprehensive guidance for selecting the most appropriate wastewater management solution for their local situation and conditions. Gender awareness and social inclusion: MULTISOURCE will develop a framework for stakeholder engagement that considers the impact of NBS^{WT} on gender equality. The project will also provide recommendations for practitioners on how to replicate this practice in their work to further social inclusion and socially equitable outcomes.

Potential application markets and areas for project results

Potential application markets for the ENTS technologies validated in MULTISOURCE include: expanded EU market for SMEs IRIDRA and RIETLAND, as well as the consulting network of Global Wetland Technology, which represents three continents, nine countries in total, including the USA, Brazil and China (see letter of support, Annex 2). Vietnam is a technology forerunner in the Asian market for nature-based solutions, and thus also expected to benefit from wider application of ENTS and NBS^{WT}. There is a potential application market for the NIVA RAdb and BN in urban water management where environmental risk assessment of urban stormwater is a key challenge to identify risk drivers, relevant toxic endpoints, susceptible species and species sensitivity distributions for a given aquatic exposure scenario. Relevant markets include the public sector (e.g. environmental authorities, city planners, water managers), consulting companies and NBS^{WT} engineering companies. The MULTISOURCE business models, cost-benefit methodologies, and developed tools are expected to be applicable to urban development, real estate, and building sectors worldwide (including tourism and other water-use intensive sectors), as well as the water sector itself (public and private customers and business partners), where innovative financing models will accelerate and unlock investments in nature-based solutions for water treatment and valorisation.

2 Impact

2.1 Expected impact

2.1.1 Contribution to the achievement of the impacts

Contribution to achieve the expected impacts listed in the work programme under the relevant topic

MULTISOURCE will address each of the expected impacts listed in the call text. Impacts are given in terms of within the project (immediate impact), five years post-project, and ten years post-project. Implementation of NBS^{WT} will vary according to type of water, cost and ease of implementation, and local acceptance. Stormwater (rainwater + runoff) will be a priority for cities, because local management of stormwater directly and immediately reduces the burden on sewer networks and systems treating combined sewer overflows. NBS^{WT} for stormwater management will be the easiest systems for cities to implement due because i) they contain lower pollutant loads compared to other urban water fluxes, ii) pathogens are not a predominant concern, and iii) rainwater and runoff NBS^{WT} have relatively low capital (and maintenance) costs. Thus, uptake of **stormwater NBS^{WT}** will be fastest. Even if MULTISOURCE business models, tools, and technologies give a push for **NBS^{WT} for domestic wastewater and greywater treatment**, uptake will occur more slowly, as the systems are still not widely accepted, and they have higher capital and operational costs (compared to rainwater and runoff NBS^{WT}). **NBS^{WT} for combined sewer overflow treatment** will occur the slowest, because these systems, which have high capital costs, are necessary only where NBS^{WT} for stormwater cannot reduce the pressure on combined sewers; priority should be given to improving upstream management of stormwater. **Some basic estimations for the nine MULTISOURCE-related cities are provided** using annual rainfall and estimations of impervious surface area (for stormwater) and population (for wastewater). Calculations do not consider cities other than these nine listed in Table 2.1, although the widespread use of MULTISOURCE tools approaches in other cities is expected. The aim of GLYON is to capture the first 15 mm of rainwater of each storm event (which represents 90% of the annual rainfall) and disconnect 5% of the population

[41] Nika C.E. et al. (2020) Nature-based solutions as enablers of circularity in water systems: A review on assessment methodologies, tools and indicators. Water Research 183, 115988. https://doi.org/10.1016/j.watres.2020.115988

[42] Katsou E. *et al*. (2020) Transformation tools enabling the implementation of nature-based solutions for creating a resourceful circular city. Blue Green Systems 2(1), 188-213. https://doi.org/10.2166/bgs.2020.929

from centralized sewer for local treatment and reuse. Calculations are based on extremely conservative estimates in order to demonstrate the great potential for NBS^{WT} implementation that MULTISOURCE will allow.

Table 2.1. MULTISOURCE-related cities and the basis of calculations.

City	Bozeman US	Ypres BE	Leipzig DE	Oslo NO	Girona ES	Lyon FR	Milan IT	Florianop-olis BR	Ho Chi Minh VT
Population (million)	0.05	0.11	0.56	0.68	0.76	1.37	4.34	0.48	8.99
Stormwater (million m^3/y)	123	71	922	2,353	199	3,052	13,818	3,801	21,588
% stormwater treated by NBS^{WT}	5 years post-project: 2.5% 10 years post-project: 4.5%							5 y post-project: 0.1% 10 y post-project: 0.5%	
% wastewater treated by NBS^{WT}	5 years post-project: 0.5% 10 years post-project: 2.5%								
% greywater treated by NBS^{WT}	5 years post-project: 0.15% 10 years post-project: 0.75%								

Expected Impact #1: Increased use of innovative natural water treatment measures as Nature-based solutions, integrated into the overall urban water cycle and constituting attractive components of the urban landscape […].

Immediate impact: Via dissemination and communication measures, MULTISOURCE will promote the widespread replication of NBS^{WT} and ENTS in local water cycles, using case studies generated within the project to demonstrate the wide applicability of the tools and business models in both developed and developing countries, in a range of climatic, geographic, and socio-economic conditions. MULTISOURCE will enable large-scale planning for NBS^{WT} in a wide range of urban situations, thus accelerating uptake of NBS^{WT} (including ENTS technologies validated within the project), thus maximizing the impact. ***Impact indicator*:** Replications of ENTS within the project timeframe: **180 systems treating stormwater** (rainwater and/or runoff) **5 systems treating domestic wastewater**, **5 systems treating greywater**, **5 systems treating combined sewer overflow**. As MUTLISOURCE cities are involved in a transformation process towards more resilient, liveable cities, there will be likely be even more immediate opportunities for NBS^{WT} to be implemented.

5 years post-project: the validated MULTISOURCE Technology Selection Tool and Planning Platform will include new information from the ENTS pilots. The tools will enable stakeholders to plan on a city-wide scale the integration of NBS^{WT} into urban water management practices (wide application of NBS^{WT} and ENTS is only possible by a city-wide planning strategy that provides a systematic comparison the economic, environmental and societal benefits of each scenario). ***Impact indicator:*** The roll-out of the MULTISOURCE business models and planning platform will accelerate uptake of NBS^{WT} and ENTS in MULTISOURCE cities and beyond. Based on Table 2.1, realisation of **4,000 stormwater systems** (rainwater and/or runoff) **100 domestic wastewater systems**, **100 greywater systems**, and **50 CSO systems** is envisioned by five years post-project. The knowledge transfer to the Global Wetland Technology network (see letter of support, Annex 2), a group of 10 SMEs actively working on NBS^{WT} and ENTS projects in over 30 countries (with over 1,500 projects implemented), will accelerate the implementation of urban NBS^{WT} well beyond the EU.

10 years post-project: Policy and regulations will provide even wider support for nature-based solutions for urban water management. MULTISOURCE tools will be widely used, expanded, and further developed. ***Impact indicator:*** A an estimated **10,000 stormwater systems** (rainwater and/or runoff) **500 domestic wastewater systems**, **250 greywater systems**, and **100 CSO systems** have been constructed by 10 years post-project (based on Table 2.1).

Expected Impact #2: Enhanced water availability with reduced pressure on existing freshwater resources through treatment, remediation, reclamation and reuse of polluted water and wastewater streams.

Immediate impact: Based on the assumptions in Table 2.1, **6.4 million m^3/y of stormwater could be captured and infiltrated locally**. ***Impact indicator:*** The **seven ENTS pilots alone provide treatment of over 585,000 m^3/y** (based on data in Table 1.4), representing **2.3 million m^3 of water treated by the pilots over the course of the project**. The ENTS pilots provide **576,000 m^3/y of water for reuse** (Table 1.4), which amounts to **2.3 million m^3 of water available for reuse** over the duration of the project.

5 years post-project: The guidance developed by MULTISOURCE will contribute to NBS^{WT} treating 2.5% of stormwater in developed MULTISOURCE cities (0.1% in the two developing cities); 0.5% of wastewater and 0.15% of greywater (Table 2.1). ***Impact indicator:*** **64 million m^3/y of stormwater**, **4.8 million m^3/y of domestic wastewater and 1.0 million m^3/y of greywater treated by NBS^{WT}.** Investments in upgrading CSO infrastructure using NBS^{WT} and ENTS result in an additional 50 CSO systems results in an additional **5 million m^3/y of CSO treated by NBS^{WT}**.

10 years post-project: Increased implementation of NBS^{WT} (Table 2.1) results in NBS^{WT} treating 4.5% of stormwater in developed MULTISOURCE cities (0.5% in the two developing cities); 2.5% of wastewater and 0.75% of greywater (Table 2.1). ***Impact indicator:*** **157 million m^3/y of stormwater**, **24 million m^3/y of wastewater and 4.7 million m^3/y of greywater treated by NBS^{WT}.** The continued uptake and implementation of NBS^{WT} for CSO treatment represent **10 million m^3/y of CSO treated by NBS^{WT}**.

Expected Impact #3: Increased investments into natural water treatment solutions from urban authorities, water companies or property developers through evidence of the benefits for deploying such "systemic" approaches as opposed to alternative water treatment systems.

MULTISOURCE will analyse different funding strategies for widespread planning and uptake of NBS^{WT}. Globally, some US$10 trillion will be invested to maintain and upgrade water resources infrastructure between 2013 and 2030[43], which will include investments from cities, Green Climate Fund, development banks and water companies.

Immediate impact: MULTISOURCE will enable public and private urban stakeholders to locate additional sources of value (such as cost reductions and revenues), to develop new co-governance business models and new gender aware NBS^{WT} co-financing schemes (private, public and mixed) for capital investment and long-term financing. ***Impact indicator:*** Four new blended potential financing solutions co-developed as part of business models for replication of ENTS in each MULTISOURCE municipality partner: CMM, GIRONA, GLYON, and OSLO. ***Impact indicator:*** With a replication of five systems each for the four main types of urban water (Table 2.2), a total of **€7.5 million** is expected within the timeframe of the project.

Table 2.2. Investment costs in ENTS within the timeframe of the project.

	Domestic Wastewater	Combined Sewer Overflow	Greywater	Stormwater (Rainwater + Runoff)	Total
Average cost (€/m^2)*	300	500	200	50	—
Average size (m^2)	250	1,000	100	500	—
Number of systems	5	5	5	180	195
Investment cost	€375,000	€2,500,000	€100,000	€4,500,000	€7,475,000

*based on cost information from MULTISOURCE ENTS pilots

5 years post-project: MULTISOURCE will reduce perceived risks related to NBS^{WT} and increase the ease and speed with which urban authorities and stakeholders evaluate tangible economic, social and environmental benefits associated with wide-scale, systemic implementation of NBS^{WT}. By demonstrating cost-competitiveness of NBS^{WT} with conventional systems, targeted practical business modelling guidelines and sharing on-the-ground co-design experiences to urban authorities and water companies in Europe, the Americas, Africa and Asia through partner networks and via the International Advisory Board, MULTISOURCE can locate a significant share of investment for maintenance, renewal and new urban service infrastructure in cities. Adoption of MULTISOURCE tools and business models will enable access to innovative financing sources. ***Impact indicators:*** **€133.5 million in NBS^{WT} investments within five years post-project** (Table 2.3); two MULTISOURCE solutions financed by alternatives such as the Green Climate Fund or international development banks.

Table 2.3. Investment costs in ENTS within the five years post project.

	Domestic Wastewater	Combined Sewer Overflow	Greywater	Stormwater (Rainwater + Runoff)	Total
Number of systems	100	50	50	4,000	4,200
Investment cost	€7,500,000	€25,000,000	€1,000,000	€100,000,000	€133,500,000

10 years post-project: Continued uptake of NBS^{WT} based on significant and numerous successful projects. ***Impact indicators:*** Even an extremely modest percentage (0.04%) of US$10 trillion (€8.5 trillion) invested in NBS^{WT} would represent **€342.5 million in NBS^{WT} investments within five years post-project** (Table 2.4). Ten MULTISOURCE solutions financed by innovative funding approaches.

Table 2.4. Investment costs in ENTS within the ten years post project.

	Domestic Wastewater	Combined Sewer Overflow	Greywater	Stormwater (Rainwater + Runoff)	Total
Number of systems	500	100	250	10,000	10,850
Investment cost	€37,500,000	€50,000,000	€5,000,000	€250,000,000	€342,500,000

[43] Dobbs R. *et al.* (2013) Infrastructure Productivity: How to Save $1 Trillion a Year. McKinsey Global Institute.

Expected Impact #4: Sharing and cross-fertilization of capacity, expertise and know-how among European and international partners on new innovative natural water treatment concepts and solutions for enhanced opportunities for up-taking, upscaling and business in the European and global markets.

Immediate impact: MULTISOURCE-initiated local stakeholder groups will serve as interactive, international water-oriented platforms with a cross-sector nexus approach and where knowledge is developed and shared among scientists, students, practitioners, representatives of the public and private sectors and the general public. Stakeholders at national, European and international levels will contribute to the development, testing, validation and market outreach for MULTISOURCE tools, business models and policy recommendations.

Impact indicator: At least 1,000 users of MULTISOURCE Planning Platform and/or tools. ***Impact indicator:*** Open-access publication of Treatment Wetlands, Third Edition engineering textbook (700 pp.). ***Impact indicator:*** Creation of two new university-level teaching modules on NBS^{WT}, one for undergraduate level (partner MSU) and one graduate-level students (partner AU). These modules aim to increase international knowledge exchange between university partners AU, HCMUT, INSA, MSU, and UFSC. The course by AU is a one-week intensive summer course held every two years, aimed at international students working in NBS^{WT}. Interest from other universities in Greece (National Technical University of Athens), Italy (Politecnico Milano, Universita di Venezia), and Norway (Norwegian University of Life Sciences) is already confirmed via letters of support (Annex 2).

5 years post-project: Increased international collaboration will be facilitated via clustering activities and enable the roll-out of MULTISOURCE tools in international markets. Hosting the tools on a platform such as Oppla or NetworkNature will ensure the long-term availability of the tools and support synergies with other NBS projects. GWT will be a key channel for utilizing MULTISOURCE business models, tools and technologies internationally.

Impact indicator: At least 5,000 users of the MULTISOURCE Planning Platform and/or tools. ***Impact indicator:*** Membership of IRIDRA and RIETLAND in Global Wetland Technology[44] (GWT) will facilitate market access for including ENTS technologies in at least 20 international tenders involving MULTISOURCE ENTS technologies.

10 years post-project: Continued international reach of MULTISOURCE tools and business models. As experience with NBS^{WT} and ENTS grows, and as MULTISOURCE business models and tools continue to evolve post-project, new projects will be larger as confidence in nature-based solutions increase.

Impact indicator: At least 100 international tenders in 10 countries involving MULTISOURCE ENTS technologies. ***Impact indicator:*** Individuals from at least 30 countries using the MULTISOURCE Planning Platform.

Expected Impact #5: increased business opportunities for the design, development and installation of natural water treatment measures in cities.

5 years post-project: An estimated increased turnover of €4 million for MULTISOURCE SME partners and entry of tools and pilot technologies-into EU and international markets is expected to be achieved through new co-developed business models and replication across direct partner cities as well as direct connection to markets through international partners and indirect partners in Europe, Africa, Asia and the Americas.

Impact indicator: Co-creation of one new business model each for RIETLAND and IRIDRA that leverages public-private co-management and co-financing best-practices identified in MULTISOURCE.

Impact indicator: 5 ENTS replications for domestic wastewater, 5 for greywater, 5 for CSO, and 180 for stormwater (Table 2.2), projects designed and implemented by MULTISOURCE SMEs and local partners in Europe, Africa, Asia and the Americas, total turnover: €7.4 m.

Impact indicator: RIETLAND has a current annual turnover of 530,000 €; 1.5 Full Time Equivalents (FTE)) estimated to grow to 1,500,000 € annual turnover and 3 FTE by five years post-project.

Impact indicator: IRIDRA has a current average turnover of €300,000 (six senior staff and three junior staff) all company owners and in-house consultants. A possible business exploitation based on the assumption to provide consulting services for NBS^{WT} design of similar size and type as the one studied in MULTISOURCE (capital cost: €1,500,000), considering an increasing trend five years post-project. IRIDRA plans to exploit the MULTISOURCE results to increase the current staff by 20% (add one junior full position and half a position for a senior position), generating revenue able to increase the current turnover by 35% and generating margins of about 30%.

Impact indicator: ALCN: The marketing of circular economy and NBS consultancy services and products and the results of years of intensive research and development projects, is an integral part of ALCN's business model. Within MULTISOURCE, the co-development of business models and planning tools, the extensive treatment performance monitoring as well as increased awareness and investment readiness on the demand side will provide the company with direct access to stakeholders and decision makers which will translate into greater consultancy requests and

[44] https://www.globalwettech.com/en/

product sales. Participation in MULTISOURCE will permit the employment and expansion of project management (+1), sales (+1), and consultancy (+2) by up to 4 FTE, with additional sales turn-over of €450,000 over the five-year period after project implementation.

10 years post-project: MULTISOURCE SME membership in the global partnership Global Wetland Technology (GWT), as well as the support of Water Market Europe and Water Europe's International Dialogues programmes will facilitate entry of MULTISOURCE pilot technologies into new and international markets. As the tools and business models gain traction, and policy recommendations are integrated into review processes and policy updates, direct project-initiated investment and international replication cases could reach €342.5 million (Table 2.4); a modest assumption that companies in GWT secure 10% of that market would indicate €34 million increase in business opportunities for this group of 10 companies.

Impact indicator: RIETLAND grows to 4 m€ turnover and 5 to 7 FTE by 10 years post-project.

Environmental impacts for local stakeholders

Girona, Spain: Girona is currently involved in a transformation process towards a more resilient, liveable and sustainable city. There will soon be more opportunities for NBS^{WT} to be implemented for greywater treatment, as well as for CSO treatment and flooding minimization. MULTISOURCE ENTS technology in Spain can easily be integrated as part of a NBS^{WT} for local food production, which is also of interest to many forward-thinking cities.

Metropolitan Lyon, France*:* Lyon metropole focusses on three types of actions to increase implementation of NBS^{WT}

Oslo, Norway: The use nature-based solutions is gaining popularity in Norway (see letters of support from the Norwegian Environment Agency and Norwegian Public Roads Administration, Annex 2), especially for runoff. Space is limited in densely built urban areas, rendering traditional sedimentation ponds out of the question. Hence, innovative and compact NBS^{WT} for treatment of road runoff in densely built urban areas is important. Successful demonstration of the MULTISOURCE Norway pilot will thus be important to increase the use of innovative NBS^{WT}.

and thus decrease the amount of untreated sewage released to surface water: i) technologies that enable capture and reuse of rainwater; ii) technologies to treat combined sewer overflow; and iii) disconnect parts of the city from the centralized sewer in order to treat and reuse domestic wastewater locally using NBS^{WT} (goal: 5% of the population). The increased use of NBS^{WT} will decrease the negative impacts on the receiving environment and create local treated water sources for reuse (goal: > 25,000 m^3/d).

Metropolitan Milan, Italy: There are more than 5,000 Combined Sewer Overflow (CSO) networks in the local province that need a technical upgrade. The first reference realisations of NBS^{WT} for CSO treatment are appearing locally as a valid and often most convenient and sustainable solution. The direct effects of a wide application of NBS^{WT} on the water quality of the receiving water bodies can be estimated, and reduction in the local indexes of flooding risk can be modelled with good approximation. The design of the MULTISOURCE ENTS pilot in Italy reduces the area required for treatment and therefore increases the potential of replication for such configuration even in difficult urban scenarios with low availability of usable land. Often, the effluent of these systems is discharged to a river, but the improvement of the river health status contributes to enhancing the availability of freshwater downstream for different purposes.

Ypres, Belgium: Decentralized wastewater treatment system that provides a secondary function as green parking, enabling a portion of treated wastewater (30%) to be reused onsite for toilet flushing.

Bozeman, United States Water demand within the city is predicted to exceed supply by 2040 thus innovative solutions for reuse are necessary. MSU is at the forefront of NBS^{WT} technology transfer, adaptation, and implementation in cold-climate regions in the United States, and the City Bozeman profits directly from the knowledge transfer.

Leipzig, Germany: The green roofs at the MULTISOURCE pilot in Germany will have a positive impact on local biodiversity as well as enabling stormwater reduction and cooling for buildings (and with replication, citywide).

Socio-Economic impacts for participating municipalities

The push towards the use of NBS^{WT} for creating resilient cities and circular economies (both within the EU and internationally) is a real driver for the business market. MULTISOURCE pilot partners and municipality partners expect to gain socio-economic benefits even in the short-term. These benefits will be highlighted and promoted within the MULTISOURCE communication and dissemination material to promote the MULTISOURCE business models, tools, and ENTS technologies to other cities and countries in order to achieve the target replication rates and maximize impacts. A few examples of how the MULTISOURCE partners will benefit include:

GIRONA: Girona, Spain: The MULTISOURCE ENTS pilot in Spain provides new ways for cities and communities to achieve improved resource recovery and reuse. Such "green wall" technologies can be implemented in different types of buildings, on empty vertical spaces, in touristic installations (including hotels, see Annex 2 for a letter of support); private residences, and commercial/public/industrial facilities. Therefore, NBS^{WT} have a great potential to

diversify current business models of private companies and to facilitate the transition of public water companies towards more circular and decentralized water urban management systems.

CMM: Milan, Italy: Many European countries have recently carried out a census of the status of the combined sewer overflows in the sewer networks of their major cities, so there already exist estimates of the possible market exploitation potential. Just as an example: in the greater Milan metropolitan area, several thousands of CSOs are not properly working and need to be upgraded. Considering an average capital cost of €500,000 NBS^{WT} installed (one-third the size of the MULTISOURCE pilot), the green economy potential of this single region is over €2.5 billion (see letters of support from Regione Lombardia and Gruppo CAP, Annex 2).

GLYON: Lyon, France: A primary local objective is to treat and reuse domestic wastewater and combined sewer overflow locally. Considering the goal of having 5% of the population of Grand Lyon (1.3 million inhabitants) served by NBS^{WT}, choosing a compact technology (such as the ENTS pilot in France, which requires 1 m^2 footprint per inhabitant) at a capital cost of 200 €/m^2, there is a potential estimated market in of €13 million in the local region alone. The expected market at a national level at medium term is considerably larger. Support from Rhone Mediterranean Corsica Water Agency, the French Ministry of Ecological Transition, and the French Ministry of the Environment (see Annex 2 for letters of support) will facilitate the accelerated uptake of NBS^{WT} at a national level.

Contribution to address other climate change, environment and societal important issues

MULTISOURCE activities contribute in supporting the **UN's Sustainable Development Goals** (SDGs). The ENTS pilots (WP1) contribute to: **Target 6.2** ([…] *access to adequate and equitable sanitation*); **Target 6.3** ([…] *improve water quality by reducing pollution* […]*and halving the proportion of untreated wastewater and substantially increase recycling and safe reuse globally*). The risk assessment (WP2) contributes to **Target 6.6** (*Protect and restore water-related ecosystems*[…]), The MULTISOURCE tools support achieving **Target 9.4** ([…] *upgrade infrastructure* […] *with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies*), **Target 11.3** ([…] *enhance inclusive and sustainable urbanisation*) and **Target 11.6** ([…] *reduce the adverse per capita environmental impact of cities, including*[…] *municipal and other waste management*). The activities in WP3 (business models) and WP6 (stakeholder engagement) contribute towards **Target 17.17** (*Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships*). MULTISOURCE supports the **EU Green Deal** by helping cities and communities in their transition towards sustainability and resiliency. MULTISOURCE provides reduced emissions of waterborne pollutants, and thus safeguarding and contributing to the preservation of urban ecosystems and creating innovative and sustainable financing partnerships to ensure equitable and inclusive access to clean water.

2.1.2 Conditions to achieve the expected impacts: Obstacles/barriers and framework conditions

Expected Impact #1: Increased use of innovative natural water treatment measures as Nature-based solutions, integrated into the overall urban water cycle and constituting attractive components of the urban landscape […]:

Identified obstacles and/or barriers:

- Existing legislation limits the adoption of NBS^{WT}; decision-makers' resistance to options that are not conventional grey infrastructure; sectoral silos cause confusion about who should provide long-term operations and maintenance of NBS^{WT}; multiple uncertainties and the lack of comprehensive information/knowledge regarding the creation, implementation and management of NBS^{WT}, particularly by the public, can lead to conflict among actors; knowledge on NBS^{WT} has remained largely academic and a low level of acceptance by the public.

MULTISOURCE enablers (facilitated by WP6 and WP7)

- Comprehensive monitoring efforts coupled with risk assessment and holistic quantification of the pilots
- Demonstration and quantification of co-benefits of NBS opposed to grey infrastructure.
- MULTISOURCE Technology Selection Tool and Planning Platform providing decision support.

Expected Impact #2: Enhanced water availability with reduced pressure on existing freshwater resources through treatment, remediation, reclamation and reuse of polluted water and wastewater streams:

Identified obstacles and/or barriers:

- National, regional and city building regulations; the "yuck factor" associated with the reuse of wastewater.

MULTISOURCE enablers (facilitated by WP6 and WP7)

- MULTISOURCE Technology Selection Tool and Planning Platform offers a way for systematic comparison between urban water management scenarios with and without NBS^{WT} and will support cities in selecting the most economic and sustainable options for their local situation.
- Demonstration of safety in wastewater reuse and highlight benefits of the wastewater reuse, including citizen acceptance making references to countries such as Singapore where wastewater reuse is broadly implemented.

Expected Impact #3: Increased investments into natural water treatment solutions from urban authorities, water companies or property developers through evidence of the benefits for deploying such "systemic" approaches as opposed to alternative water treatment systems:

Identified obstacles and/or barriers:

- Municipalities have limited resources and autonomy to invest in NBS^{WT}; a lack of law enforcement/appropriate regulations can limit the uptake of solutions as related regulation is scattered and/or existing legislation does not permit such infrastructure; limited available space (rising property prices), especially in urban areas; long-term investments are required but policy and decision-makers have short-term agendas; lack of engagement of private investors, lack of knowledge on business models and benefits.

MULTISOURCE enablers (facilitated by WP6 and WP7)

- Promote NBS^{WT} benefits with a longer-term perspective and provide information on NBS^{WT} benefits
- Several MULTISOURCE pilots are compact and/or or integrated in urban infrastructure: high applicability.
- Involvement of real-estate owners and related actors in programmes supported by national regulators.
- An edition of Water Market Europe will be organized aiming at seizing business opportunities for NBS^{WT} by bringing together potential treatment system owners, solution providers and investors.

Expected Impact #4: Sharing and cross-fertilization of capacity, expertise and know-how among European and international partners on new innovative natural water treatment concepts and solutions for enhanced opportunities for up-taking, upscaling and business in the European and global markets

Identified obstacles and/or barriers:

- Insufficient awareness about MULTISOURCE tools, business models, and technologies; perceived competition from existing initiatives; language barriers for tools and results presented only in English.

MULTISOURCE enablers (facilitated by WP6 and WP7)

- Early involvement of stakeholders and end-users in co-creation of the tools and business models.
- Gamification techniques to engage stakeholders in workshops and meetings in new ways.
- International workshops and partners existing international connections (See Section 3.3) and engaging with international initiatives via the IAB to ensure no perceived competition.
- Organisation of meetings between MULTISOURCE and other existing and similar initiatives/projects (clustering) to leverage efforts through networking and enhance the impact of MULTISOURCE.
- Hosting selected MULTISOURCE national events in the local language (support from local partners).
- MULTISOURCE Technology Selection tool published in the local language (support from local partners).

Expected Impact #5: increased business opportunities for the design, development and installation of natural water treatment measures in cities.

Identified obstacles and/or barriers:

- Lack of demand, reliance on conventional (known) technologies; resistance to decentralized systems, unaware of new reuse regulations; resistance at a regulatory level.

MULTISOURCE enablers (facilitated by WP6 and WP7)

- Consulting companies are key and will be targeted and involved in expert groups
- MULTISOURCE Planning Platform demonstrates advantages of green infrastructure approaches
- Specific national meetings will be organized with regulators in each MULTISOURCE pilot country (BE, DE, ES, FR, IT, NO, US) to refine recommendations for policy advice and regulations.

Other Impact #1: Social-ecological resilience - increased access to NBS in low income areas, increased participation of vulnerable or under-represented groups

Identified obstacles and/or barriers:

- Some technological solutions can be cost-prohibitive; resistance of real estate owners to invest in solving problems that could be left for others to deal with; municipalities fail to follow participatory and inclusive approach or fail to reach and engage target groups.

MULTISOURCE enablers (facilitated by WP6 and WP7)

- Municipal campaigns and public funding schemes: work with municipal staff early on to understand needs and interests, and obstacles to enabling participation, then provide targeted advice and support.
- Provide support to undertake stakeholder mapping (WP6), as well as targeted communications support (WP7) to develop and deliver key messages according to the needs and interests of various groups.
- Mapping the groups and organizations based on low-income areas and establishing links with them can help create community connections, reaching out to vulnerable and under-represented groups of each target area.
- Organization of workshops and dissemination events in the local language to attract local stakeholders.

2.2 Measures to maximize impact

2.2.1 Plan for the dissemination and exploitation of the project results

Table 2.5. Exploitation and dissemination of the main MULTISOURCE outcomes.

MULTISOURCE Business Models	Exploitation	The cost-benefit analysis (CBA) methodologies and business models will be incorporated into the Technology Selection Tool and Planning Platform. ALCN and AU will facilitate further testing during and after the project and provide upgrades to user interface and integration into other major platforms and tools and promote them among multipliers.
	Related IPR	ALCN and AU will agree on a share of IPR for the CBA methodology and business modelling guidelines developed.
	Target end-users and benefits	**Public authorities, entrepreneurs:** New investment (co-financing) strategies for mobilizing private funds via public-private blended finance between water utility companies, investment funds and pension funds, green bonds, private/community-based asset pools, as well as long-term financing strategies with capturing cross-sectoral revenue streams (e.g. circular economy, property development). **End-users of MULTISOURCE tools**: Guidelines for long-term management, operation and maintenance of NBS^{WT} including replication guidance for public-private co-management. **Researchers, policy makers**: Strategies for leveraging public-private partnerships and promoting circular economy of urban resources
	Dissemination	NetworkNature and Oppla networks, ICLEI and Water Europe websites
MULTISOURCE Planning Platform (including Hydraulic Disconnection Module)	Exploitation	UFZ plans to further develop the scenario planning and assessment beyond the project, including a software package (graphical user interface, stand-alone software) for end users. The Hydraulic Disconnection Module will be further developed by means of Hydrobox (the NBS module implemented in Canoe Software), owned and exploited by INSA.
	Related IPR	The Planning Platform will be owned by UFZ made available via an open source repository. The disconnection tool will be owned by INSA. A free version will be made available with limited disconnection options (as part of the Planning Tool) and another "advanced" version will be licensed (except for project partners who will have free licenses).
	Target end-users and benefits	**Local authorities, city planners, water and technology companies:** Able to locate pressure points in existing centralized sewer networks and identify possible disconnection strategies at city scale to optimize sewer efficiencies and water reuse. Able to define water quantity and potential pollutant loads to be treated locally under dynamic conditions such as extreme weather events, temperature increase, and population densification
	Dissemination	GitHub.com (independent open source platform), Oppla and/or NetworkNature
ENTS Technologies	Exploitation	ENTS are new NBS^{WT} technologies piloted in MULTISOURCE applied in urban context for water management and reuse. SME partners and 2 outside the consortium own the technologies and will develop them in the urban context. These SME belong to the Global Wetland Technology consortium who will enable these patented ENTS to be available worldwide, and those not patented available by all NBS related companies.
	Related IPR	Three of seven ENTS technologies are patented by partner SMEs or outside the consortium. ENTS technology in France co-patented by RIETLAND to be exploited with GWT (see Annex 2, letter of support). ENTS technology in Belgium patented by RIETLAND who will also exploit the technology. ENTS technology in Germany patented by Zinco and Optigruen who will also exploit/sell their technology.
	Target end-users and benefits	**Utility companies and NBS-related companies:** Able to treat locally different kind of urban water for different reuse purposes. **SMEs in the consortium and GWT:** Validate compact NBSWT to be fully adapted for any urban context. **Researchers:** Define the limits and operation mode to guarantee outlet quality and any risk.

Table 2.5 (continued). Exploitation and dissemination of the main MULTISOURCE outcomes.

MULTISOURCE Technology Selection Tool	Exploitation	ICRA will provide maintenance post-project.
	Related IPR	Web-based and open source tool. The tool is based on a tool developed in the "SNAPP-NCEAS" project (with IPR shared 50% between ICRA and The Nature Conservancy, the funders of the previous project) TNC is a member of the MULTISOURCE International Advisory Board (see letter of support, Annex 1). Once finalized, the MULTISOURCE tool will be open source, and IPR will be negotiated and distributed among partners; a preliminary proposal is: 50–60% for ICRA, 10% for TNC, and 30–40% shared amongst MULTISOURCE partners.
	Target end-users and benefits	**Public authorities**: Decision support on selecting and assessing the most adequate NBS^{WT}. **Utility companies**: Savings (€) in time and resources (unique tool with many functionalities). **NBS-related companies and consultants:** Comparisons of NBS^{WT} in terms of surface required, construction materials, system performance, capital and O&M costs, environmental and socio-economic co-benefits provided, and opportunities for circularity schemes (e.g. safe water reuse plans. **SMEs in the consortium & Global Wetland Technologies (GWT):** Guidelines for design and for financing long-term management, operation and maintenance. Facilitate NBS design and implementation. Quantitative assessment of co-benefits (ecosystem services) provided. **Researchers:** Comprehensive database of full scale NBS^{WT} case studies. **Students:** Consolidated knowledge for a new NBS^{WT} curriculum. Engagement in NBS^{WT} design and monitoring. Raising awareness. **Communities:** (indirect) improved quality of life, well-being in urban areas.
	Dissemination	Web-based tool accessible through web and downloadable via standard browsers, hosted on ICRA servers, Oppla (interoperable with Oppla, the EU Repository and Marketplace for NBS), software developed will be made accessible via GitHub.com; linked and/or promoted by international channels including: linked to websites of IWA Specialist Groups, COST Actions, Water Environment Federation, The Nature Conservancy. Potential online competition where competitors "solve" a water management challenge using MULTISOURCE tools.
NIVA RAdb	Exploitation	NIVA will exploit this database enhanced as regards treatment performance enabling the assessment of any risk reduction between inlet and outlet water
	Related IPR	Protected via trademark
	Target end-users and benefits	**ENTS/NBS owners, urban water engineers, water and technology companies**: New and improved knowledge and insight of their specific pilots and how NBS^{WT} can treat water and reduce the risk of causing environmental harm to receiving water bodies or the potential of reusing of treated water. **Researchers**: Access to existing toxicological databases
	Dissemination	Output freely available for download from the NIVA web platform

2.2.2 Measures to achieve the expected results

The MULTISOURCE Communication and Dissemination strategy has been drawn up with the objective of maximizing impact by identifying the most appropriate stakeholders, key messages and delivery tools to enable the barriers to impact to be minimized and the favourable conditions required for the take up and use of MULTISOURCE tool suite and pilot technologies to be rolled out at International level. Within the project workplan this will be delivered via WP6 (Stakeholder Engagement) in close coordination and collaboration with WP7 (Communication, Clustering and Dissemination).

The main dissemination targets for project results as outlined in the previous section cover a large audience from water and technology companies, city planners, local authorities, ENTS and NBS^{WT} owners, civil society, policy makers, and the international scientific community. Communication tools and messages therefore will be tailored to these targeted audiences and all MULTISOURCE partners and associated stakeholders will play a key role in engaging with their own networks and local stakeholders to ensure language is not a barrier to accessing project results. Water Europe will lead and coordinate this strategy and the associated Communication and Dissemination Plan (CDP) bringing in not only their expertise in this field but for and foremost their European and International network working hand in hand with ICLEI leading the Stakeholder Engagement activities and capitalizing on their international city network.

Figure 2.1. Phases of the MULTISOURCE communication and dissemination strategy.

The MULTISOURCE CDP will be created at the start of the project as a strategic and targeted dissemination document on how we can promote the activities and results of MULTISOURCE project, ensuring their long-lasting visibility and impact. The plan aspires to identify the dissemination objectives, the target audiences, activities, tools and deadlines and to help partners stay focused on the key messages, target groups and stakeholders at all stages of the project activities. The CDP will include specific Key Performance Indicators (KPIs – based on initial list in 2.2.5) and realistic targets, which will be evaluated periodically. The CDP will determine how the project communicates with the outside world and with key target audiences and will define the mechanisms needed to ensure the long-lasting visibility of the project after its closure. It will address the six basic questions – who, what, why, when, where and how focusing on overcoming the barriers to impact identified for each audience. Thus, the MULTISOURCE CDP will (i) identify the target audience of the project results, (ii) define the dissemination objectives and audience's interest, (iii) define the key messages in line with the barriers and/or points of influence relevant for each audience and (iv) define the most appropriate communication/dissemination medium and means. The CDP will be rolled out in three main phases in the course MULTISOURCE, namely creating awareness from project launch, to engaging directly with stakeholders and end-users to disseminating all project tools and technologies in line with exploitation plans in the final phase.

- A final event to present the results of the project as well as the roadmap to guarantee the implementation of these findings after the project ends.
- An Urban Water Challenge competition will be organized aiming at solving urban water challenges using the MULTISOURCE tools.
- A dedicated edition of Water Projects Europe to ENTS/NBS will be organized to foster collaboration and knowledge exchange amongst similar projects.
- An edition of Water Market Europe will be organized aiming at attracting problem owners and investors that could potentially facilitate and set the basis for the market uptake of MULTISOURCE solutions.

The target audiences will be identified by consulting the partners through a preliminary dedicated round of meetings in a multi-actor approach. MULTISOURCE has already begun to establish an external network of actors in urban water management at regional, national, and international levels and who will help disseminate project outcomes and influence policy advice aimed towards decision-makers at various levels (Section 3.2; see also Annex 2 for 28 letters of support from the initial MULTISOURCE Stakeholder Network). The early engagement of stakeholders will help to build ownership and increase the willingness to contribute to co-design activities, thus enhancing the relevance, usability and usefulness of the results. Stakeholders will simultaneously become advocates for the various MULTISOURCE approaches and outcomes and help spread the key messages of the project.

While the purpose of communication activities is to promote the project and make the research known to multiple audiences, the dissemination activities aim to share research results with potential users for their further exploitation, actual use in related research activities, in municipal decision-making, or in developing new commercial products. MULTISOURCE already has secured international interest from a wide range of stakeholders (see Annex 2).

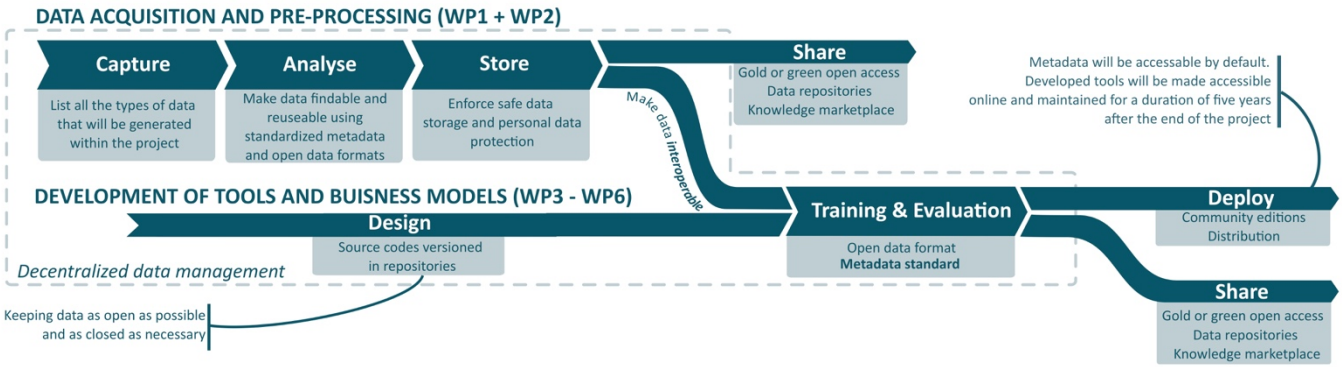
2.2.3 Management of the research data generated or collected during the project

The Data Management Plan (DMP) will follow the guidance provided by the European Commission and will ensure that the data provided is FAIR (Findable, Accessible, Interoperable, and Re-usable). It will be developed by ICRA, INRAE, and UFZ in order to ensure the consistent collection, processing and storage of data generated within MULTISOURCE. To this end, a preliminary survey has already identified the purpose and kind of data to be collected and/or generated within the project. The DMP (Deliverable 8.4, due at Month 6) will ensure the availability of project-generated data both during and beyond the timeframe of the project.

Data management in MULTISOURCE: The data management will be handled using a decentralized approach. Each partner will be responsible for their own data collection, reconciliation and storage but the Data Management Team (DMT) will oversee all aspects of data management over the course of the project. The DMT includes staff from the project coordinator INRAE and WP4 and 5 leaders ICRA and UFZ. The DMT's mission is to: (i) write,

oversee, and implement the Data Management Plan, (ii) define and share the meta-data formats that will be common to all partners, and (iii) centralize the curation of the meta-data / data and their dissemination. As shown in Figure 2.2, data management is included upstream in the data lifecycle so that meta-data production is included in the data post-processing workflow.

Figure 2.2. Main components of the MULTISOURCE data management process.



Types of data generated/collected in MULTISOURCE: The variety of data reflects the inter- and trans-disciplinary nature of the project consortium. Data will be generated in WP1, WP2, WP3, WP4, WP5, and WP6 and can be experimental data from the MULTISOURCE pilots (WP1, WP2, WP3) and from international partners, theoretical (bibliographic) data from a review on research literature, model and simulation data (from the development and application of the tools) and also from expert elicitation workshops. Besides, the project also relies on a body of already-existing data from partners with NBS^{WT} and ENTS experience and other databases from previous EU projects, as well as data from individual stakeholders, who will make specific data accessible in order for them to evaluate the MULTISOURCE tools. The data collected or generated in the project can be qualitative (e.g. chemical analysis results, topological data) or quantitative (stakeholder survey replies) and different data format are envisioned (i.e. text, numeric, symbolic, images, videos, etc.). The DMT will list all the types of data generated.

Standards to be used in MULTISOURCE: The DMT will provide a set of guidelines including a standard or dictionary for metadata (with a particular focus on the traceability of the results) as well as the data formats into which data produced in a proprietary format must be transformed. They will be used in the Analysis and Training/Evaluation steps (Figure 2.2). The DMP will rely on existing best-practices such as those supported by the Open Knowledge Foundation (https://okfn.org), EUROSTAT, the Open Government Standards (http://www.opengovstandards.org/) and especially the EU Directive 2007/2/EC on Infrastructure for Spatial Information in the European Community (INSPIRE) which addresses the spatial data themes needed for environmental applications (http://inspire.jrc.ec.eurpa.eu/). Data collection, which is beyond the definitions of the standard classifications and nomenclatures, will follow the specifications of the DCAT-AP metadata standard[45]. A scientific workflow system will be introduced to ensure the traceability of the post-processing steps when necessary and applicable. The DMT will put effort on supporting the data interoperability to ease the transfer of data from WP1, WP2, and WP3 to WP4 and WP5 and with other existing repositories or databases beyond MULTISOURCE, especially when the datasets might be of general interest by NBS^{WT} researchers or practitioners. This could be achieved through the development of a dedicated Application Programming Interface (API). To this aim, MULTISOURCE will be part of the "Data management and EU evidence-based platforms" Task Force created at EU level among the NBS-sister projects.

How data will be exploited and/or shared/made accessible for verification and reuse: MULTISOURCE will comply with the FAIR data management practices and make the data as open as possible and as closed as necessary (as illustrated in bold in the data management steps on Figure 2.2). All meta-data will be made accessible and data as well unless knowledge protection or personal privacy restrictions apply. Data repositories will also be linked to largely used knowledge marketplaces (europeandataportal.eu, sciencedata.dk, oppla.eu, geoportal.org). For the new software (tools) developed in the project, the source code will be deposited in the GitHub repository. INRAE will act as data controller ensuring that data that will be publicly shared meet personal information protection standards.

How data will be curated and preserved: Data curation will be centralized by the data management team. Information regarding data produced by the partners and where to find it will be kept up to date during the project. The consolidated set of data and meta-data will be curated using the existing infrastructure of the consortium partners. Depending on whether the data can be shared and according to privacy protection rules, data will be stored at https://sciencedata.dk or at https://data.inra.fr/.

[45] https://joinup.ec.europa.eu/collection/semantic-interoperability-community-semic/solution/dcat-application-profile-data-portals-europe/release/201-0

How costs for data curation and preservation will be covered: The main cost will be Article Processing Charges for Open access scientific publications in peer-reviewed journals (which has been considered in the budget). Data storage in the institutional repositories will be carried out with no additional costs. Funds are dedicated to database server implementation and maintenance during the project. Nine person months have been dedicated to data management (shared equally by ICRA, INRAE, and UFZ). As shown in Figure 2.2, the DMT will ensure engagement of all partners in maintaining up-to-date community edition versions of the tools for at least five years after the end of the project and possibilities for longer maintenance will also be explored.

2.2.4 Strategy for knowledge management and protection

The knowledge generated in the project will be managed by the partners generating the knowledge with the support of the **Executive Committee** (ExCom, section 3.2.1) who is in charge of **managing Innovation.** The knowledge management in MULTISOURCE will follow both the DMP (as above), as well as the CDP and will comply with the rules established in the **Consortium Agreement** (**CA**).

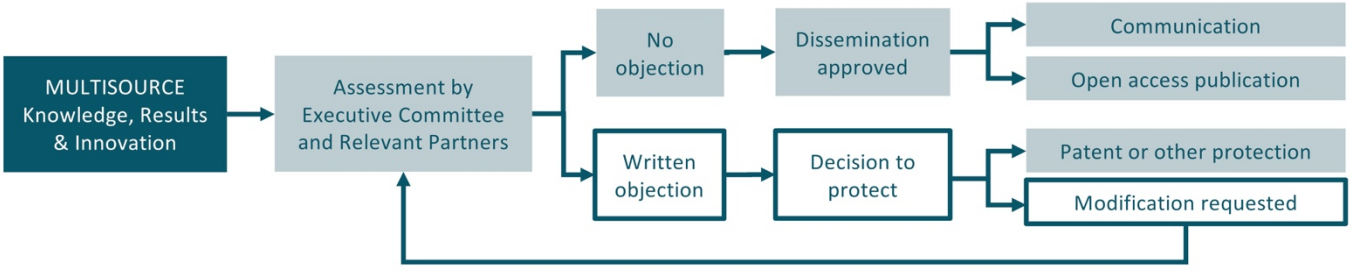
The CA will regulate the process of obtaining IP protection, exploitation and revenue sharing between partners. The CA will be prepared and signed at the start of the project. The project will follow the rules for intellectual property set out by the EC, specifically: (i) partners' pre-existing know-how, while remaining the sole property of their owners, will be made available to other partners when needed for the project implementation; (ii) knowledge developed through MULTISOURCE, will be owned by the partners who have directly contributed to its creation. In case of joint ownership, a separate contract will be drawn up and signed by the co-owners to determine their rights and obligations, and settle the IP management and exploitation rules; Partners have already identified the principle owners/exploiters of project results (Section 2.2.1) enabling transparency and a clear basis for discussion and agreement within the project lifetime; (iii) and access rights to results for in-house research or for teaching activities will be granted on a royalty-free basis. Specific secrecy agreements will be signed among partners involved in tasks with sensitive IP and commercial issues on an as-needed basis. Confidentiality for external guests, including the members of the International Advisory Board will be managed through secrecy agreements. The WPs have been designed to optimize the use of data and avoid conflicts of interest between partners.

MULTISOURCE **will follow the guidelines on open access to scientific publication and research data in H2020.**

- The partners will ensure the maximum dissemination of project outputs, and open access publishing ("gold" open access) or self-archiving ("green" open access) will be the preferred options. All the resulting peer-reviewed scientific articles will be published at least in so-called "green" open access, as most of the academic partners have self-archiving repositories within their organisations. In addition, a budget of 32 000€ has been allocated for gold open access publications.
- Patent applications will be filled if patentability criteria are met and commercial potential is sufficient.

IP rules will be fully described and agreed within the CA. Based on this, a set of guidelines will be communicated to the partners. These guidelines will cover intellectual property management and technology transfer and will summarize the rules for the handling of results before publication, reports and deliverables under review and the technology transfer procedure.

Figure 2.3. MULTISOURCE strategy for knowledge management and protection.



2.2.5 Communication and dissemination tools and channels

KPIs for MULTISOURCE dissemination and communication are provided in Table 2.6 for each of the three phases (see Section 2.2.2, Figure 2.1). Specific tools and channels, including branding, communication, clustering and networking activities, and dissemination and networking, and their target audiences, are provided in detail in this section.

Table 2.6. Key Performance Indicators (KPIs) for communication and dissemination.

KPI for communication and dissemination	Phase 1 (M1-12)	Phase 2 (M13-36)	Phase 3 (M37-48)	Overall	Targeted audience
Website views	1,500	3,000	1,700	6,200	All stakeholders
Number of tweets	100	340	160	600	All stakeholders
Posts on LinkedIn	60	140	100	300	All stakeholders
Posts or press releases	25	40	35	100	All stakeholders
Recipients of E-newsletters	750	1,500	1,750	4,000	All stakeholders
Printed material distributed	1,000	2,000	1,000	4,000	All stakeholders
Video views	-	1,200	1,000	2,200	All stakeholders
Recipients of policy briefs	-	1,000	1,200	2,200	Decision makers
People informed via conferences	2,000	3,300	2,100	7,400	Academics, professionals
Participants in co-creation workshops	220	450	180	850	All stakeholders
Participants in dissemination events	-	340	300	640	All stakeholders
Clustering: # of participants reached	50	200	50	300	NBS projects
Clustering: # of projects reached	5	15	10	30	NBS projects
Number of networks, clusters and Living Labs reached	10	25	15	50	All stakeholders
Number of scientific publications	0	10	15	25	Academics, professionals
Citations of scientific publications	0	160	240	400	Academics, professionals

Branding

MULTISOURCE visual identity. Target audience: *All stakeholders and the general public.* The branding identity of MULTISOURCE will be developed on the basis of the existing logo. Building on the colours and shapes of the current logo adopted, a homogeneous and unified approach will be followed that captures and symbolizes the project's nature and objectives. With this in mind, a style guide, as well as Microsoft Word and PowerPoint templates will be developed, establishing a consistent 'look and feel' across all communication channels.

MULTISOURCE website. Target audience: *All stakeholders and the general public.* The project website is an invaluable tool, as it is the first source of information about the project. The structure of the MULTISOURCE website will be created in such a way that the project's aims and objectives are well-explained and the information about the project activities and results are well-presented and clearly disseminated for each target audience. As a dissemination vehicle, the project website will also give visibility to what the project has created. Pilot and tool demos and/or questionnaires will attract the interest and the attention of the visitors and engage them in the project.

Communication

Social media. Target audience: *Professionals (industry, policy).* Platforms such as LinkedIn, Twitter, and Instagram will be used to reach MULTISOURCE target groups and therefore, they will be used to disseminate the project's outcomes and keep the project's followers highly engaged by establishing a strong online presence and influence and maintaining the information flow between the project and its audience.

Printed material. Target audience: *All stakeholders and the general public.* MULTISOURCE brochures and posters will be produced to present the benefits and impact of the project in an easily understandable and captivating way for the general public. Two brochures, one poster and one roll up will be available to consortium members.

MULTISOURCE video. Target audience*: Municipalities, industry, policy makers, and the general public.* A video will be developed in the second phase of the project as a tool to enhance stakeholders' engagement with the project, reaching out to all the identified target groups and making the project understood by the general public. The video will highlight the need for ENTS and its benefits for society as well as show the pilots in action as a means of demonstrating evidence of ENTS/NBS implementation in a variety of settings and encouraging replication. This video will be available online on the project's website and social media.

E-newsletter. Target audience*: Municipalities, industry, academia.* Annual e-newsletters will allow target groups to be informed about the project, by keeping them up to date about the project pilots and the tools being developed. They will include interviews with a range of stakeholders related to the pilots. This will serve to motivate and give visibility to a wide range of actors (from municipalities to local citizens) encouraging replication and buy in for NBS.

Policy briefs. Target audience*: Local and national governments and policy makers.* MULTISOURCE policy briefs will be developed in such a way that will allow policymakers and managers to interact more effectively with key stakeholders and increase common consensus for the targeted policy or programme. Specific national meetings with regulators will be organized to share results and barriers related to regulation and better shape the policy brief.

Clustering and networking activities

Links with existing clusters and associations. Target audience*: EU and international research and innovation activities and professional communities.* Links with relevant clusters, associations and initiatives like the PEER initiative, the IWA, the Water Environment Federation, NetworkNature and the Cost Action on Implementing nature-based solutions for creating a resourceful circular city will be pursued thanks to the existing connections of MULTISOUCE consortium members. A more detailed list is available in Task 7.3

Liaison with Living Labs. Target audience*: Water-oriented Living Labs, Water-sector related Working Groups.* Europe is a frontrunner in developing novel solutions and technologies to face current water-related challenges. Based on Water Europe's recent publication on Water-oriented Living Labs, MULTISOURCE will identify and develop a plan with different local stakeholder groups where their challenges could be partially or fully solved by MULTISOURCE approach. In order to raise awareness and maximize the impact of the project results MULTISOURCE will seek collaboration with Working Groups perusing similar interest such as WG on NBS and its cluster on Hybrid Green-Grey Infrastructure and the IWA NBS and Resource Recovery WG.

Organization of clustering events and meetings. Target audience*: National, EU, and international research and innovation communities.* Knowledge exchange and collaboration with other national or international projects that address the same challenges or apply similar technologies is essential for MULTISOURCE. For this purpose, smaller meetings and a dedicated event called **Water Projects Europe** will be organized to boost interaction and cooperation across and beyond Europe and will market outreach perspectives and roadmaps of projects outcomes and innovations.

Dissemination and networking

Open access publications in scientific journals. Target audience*: Academics and professionals in the research and innovation community.* Partners will include a publication plan in the CDP and agree on authorship and most appropriate journals in line with the expected scientific and technological results as well as the open publication objective. Examples include Blue-Green Systems, Environmental International, Urban Water Journal, Science of the Total Environment, and Water Research, among others. MULTISOURCE will result in at least 25 scientific articles.

Presentations at events. Target audience*: Academics and professionals in the research and innovation community.* National, European and International Conferences and workshops based on the project will ensure that the project has a high profile, that the national and international community benefits from the MULTISOURCE work and that the results are adopted. They will also offer the advantage that communication can go in both directions: members of the target community will be invited to contribute ideas and brainstorm about ways to make use of the project results.

Examples of events in which partners plans to participate include:

- International Phytotechnology Conference, 300 – 400 attendees, annually
- ICLEI's World Congress, 1,200 attendees (2021; 2024), every three years
- ICLEI's Daring Cities forum (former Resilient Cities), 1,000 attendees, annually
- ICLEI Europe's European Sustainable Cities and Towns Conference, 900 attendees, every three years
- IWA World Water Congress & Exhibition, > 10,000 attendees, annually
- IWA Wetlands for Water Pollution Control, 300 – 400 attendees, biannually (2022, 2024)
- SETAC Europe, 1,500 – 2,000 attendees, annually
- WETPOL conference, c250 – 300 attendees per event, biannually (2021, 2023)
- Water Innovation Europe, 250 attendees, annually
- WEFTEC, > 30,000 attendees, annually
- World Water Week, 3,000 attendees, annually

Organization of MULTISOURCE events. Target audience*: Water professionals, municipalities, city planners, academics.* MULTISOURCE will organize several events to disseminate results and strengthen the diffusion of MULTISOURCE tools and solutions into different international markets. The meetings and workshops for co-creation of business models and tools are listed according to the different communication phases in Figure 2.4. National dissemination events in Italy, Brazil and Vietnam will be held in the local language, with support of the local MULTISOURCE partners, to enhance the accessibility and impact of the project outcomes.

Figure 2.4. Specific meetings, workshops, and events involving MULTISOURCE stakeholders.

3 Implementation

3.1 Work plan, work packages, deliverables and milestones

3.1.1 Overall work plan structure

MULTISOURCE contains eight interlinked work packages (Figure 3.1). WP1 will assess, evaluate, and optimize the seven ENTS pilots. Stakeholders (WP6) will contribute to monitoring of co-benefits provided by the pilots, sharing of knowledge related to the pilots. WP1 will feed activities in WP2, WP3, WP4, and WP5. WP2 will assess chemical and microbiological risks using state-of-the-art methods. Meetings with stakeholders (WP6) will identify local challenges surrounding urban water reuse policies. WP3 will co-develop inclusive and gender-sensitive business models for construction and MOM of NBS^{WT} and ENTS with stakeholders (WP6). WP4 will develop a tool that enables end-users to select best-fit technologies for a given application. WP4 will result in the collection, compilation and publication of the latest information related to process design, construction, implementation, and MOM of NBS^{WT} and ENTS. This information will be published in the form of a comprehensive update to the definitive engineering textbook on treatment wetlands[46]. In an unprecedented effort to promote international dissemination and knowledge sharing, the book will be published open access upon its release. WP5 will create a tool will enable end-users analyse their sewer networks, identify locations where NBS^{WT} could be incorporated to provide water treatment, storage and reuse and simultaneously relieve pressure on existing sewer infrastructure. The Planning Platform will enable end-users to perform a systematic comparison between scenarios with and without NBS^{WT} and will support cities in selecting the most economic (in terms of cost) and most sustainable (in terms of qualitative benefits) solutions. WP6 will create and implement a framework for engaging stakeholders in all WPs. WP7 is dedicated to communication, clustering and dissemination. All aspects of project management and data management are in WP8. The distribution of staff efforts for the eight WPs is given in Table 3.1.

Figure 3.1 Information flow between MULTISOURCE work packages.

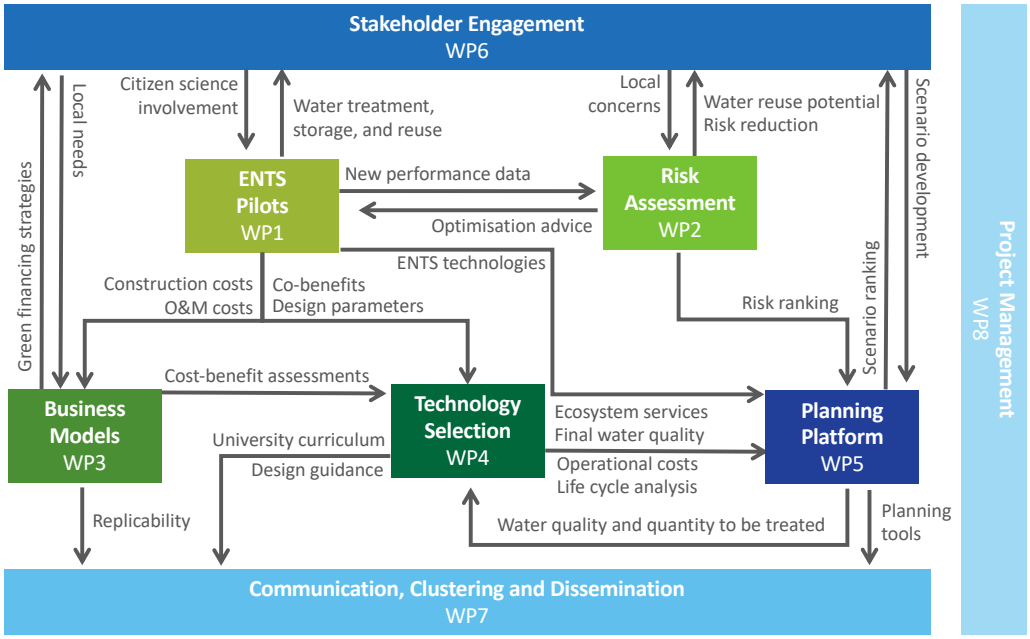


Table 3.1 Timing and distribution of staff efforts in MULTISOURCE Work Packages.

WP Number	Work Package Title	Lead Participant	Short Name	Person-Months	Start Month	End Month
WP1	ENTS Pilots	2	AU	140.1	1	48
WP2	Risk Assessment	16	NIVA	35.0	6	42
WP3	Business Models	4	ALCN	67.5	3	48
WP4	Technology Selection	9	ICRA	113.5	1	48
WP5	Planning Platform	6	UFZ	110.4	1	48
WP6	Stakeholder Engagement	8	ICLEI	78.0	1	48
WP7	Communication, Clustering and Dissemination	20	WE	54.1	1	48
WP8	Project Management	1	INRAE	51.0	1	48
TOTAL				**649.6**		

[46] Kadlec R.H. and Wallace S.D. (2009) Treatment Wetlands, Second Edition. CRC Press: Boca Raton, Florida, USA. 1046 pages.

3.1.2 Project timing

The project timing is shown in Table 3.2, including individual tasks, deliverables, and milestones for each work package.

Table 3.2. Gantt chart outlining main WPs, Tasks, Deliverables and Milestones in MULTISOURCE.

Tasks	Year 1												Year 2												Year 3												Year 4											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
WP1 - ENTS Pilots																																															
Task 1.1: Pilot monitoring, including real-time monitoring options				☆												☆			☆										☆	☆									●									
Task 1.2: Participatory methods for quantification of co-benefits																							●																							
Task 1.3: ENTS evaluation																																								☆						●	
WP2 - Risk Assessment																																															
Task 2.1: Non-target screening of unknown and new pollutants and microplastics in pilots																		☆	●																												
Task 2.2: Cumulative risk assessment of pilots																			☆												☆										●					
Task 2.3: Probabilistic risk assessment of pilots																			☆																						●					
Task 2.4: Risk analysis of pilot effluent for reuse																																☆			●										
WP3 - Business Models																																															
Task 3.1: Assessment of best-practices for innovative financing and O&M strategies					●																																									
Task 3.2: Value proposition, circularity, markets and customer needs																																															
Task 3.3: Modular cost-benefit tool for public and private actors																								☆						●																
Task 3.4: Co-creation of business models																																				●						☆	●					●
WP4 - Technology Selection																																															
Task 4.1: Data and knowledge acquisition												●																								●												
Task 4.2: Life cycle assessment of NBS[WT]																																				●												
Task 4.3: Co-creation of the technology selection level for the tool (Tier 1)																								☆																							
Task 4.4: Co-creation of the design level for the tool (Tier 2)																																															
Task 4.5: Evaluation of the Technology Selection Tool																																									☆	●			●			
Task 4.6: Guidance for process design, construction, and MOM of ENTS and NBS[WT]																																															
WP5 - Planning Platform																																															
Task 5.1: Definition of urban archetypes												☆						●																													
Task 5.2: Hydraulic disconnection module																								●				☆																		
Task 5.3: Scenario development																								☆						●																
Task 5.4: Planning Platform																														☆						●											
Task 5.5: Scenario evaluation																																							☆								●
WP6 - Stakeholder Engagement																																															
Task 6.1: Stakeholder mapping and development of stakeholder engagement framework				☆						☆				●																																	
Task 6.2: Implementation of stakeholder engagement framework: local stakeholders																														●																●
Task 6.3: Implementation of stakeholder engagement framework: international partners																																													●		
Task 6.4: Implementation of stakeholder engagement framework: International Advisory Board																														●														●		
Task 6.5: Analysis of social equality and social inclusion (including gender mainstreaming)						☆																																						●			
WP7 - Communication, Clustering and Dissemination																																															
Task 7.1: Communication and dissemination activities			●			☆			●													☆																								●
Task 7.2: Networking activities																																															
Task 7.3: Clustering activities																								☆				●																		●
Task 7.4: Policy impact strategy and recommendations																								●												●										●
WP8 - Project Management																																															
Task 8.1: Strategic steering																																															
Task 8.2: Scientific coordination and project monitoring				●																				●																							
Task 8.3: Administrative, logistical and financial management		☆●										☆												☆												☆										☆
Task 8.4: Data Management						●																																									

Legend: ● : Deliverable ☆ : Milestone

3.1.3 Detailed work description

WP number	WP1					Lead			AU		Start Month			M1		End Month			M48	
WP title	ENTS Pilots																			
Participant no.	1	**2**	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Short name of participant	INRAE	**AU**	GIRONA	ALCN	FER	UFZ	HCMUT	ICLEI	ICRA	IT	INSA	IRIDRA	GLYON	CMM	MSU	NIVA	OSLO	RIETLAND	UFSC	WE
Person-months	35.5	**29**	12		4	4			16			10			6	4.5	2	15.6		

WP Leader: Pedro Carvalho (AU)

Objectives

The general objective of WP1 is to demonstrate innovative approaches for compact and effective treatment of different urban waters in cities spanning a range of climatic geographical conditions and governance contexts.

- Test and demonstrate of the pilots, by monitoring and collecting data for a broad range of operational and pollutant endpoints
- Develop and test participatory methods with ICT/digital tools to enable the quantification of co-benefits provided by each pilot
- For each pilot, assess i) limits and capacity of the technology, ii) ability to abate environmental risks, and iii) the environmental, social and economic co-benefits of the solution

Description of work and role of participants

WP1 comprises all activities dealing with the demonstration and optimization of the pilots. A total of seven pilots, already (or soon to be) implemented in cooperation with local stakeholders in six European countries and the USA have been selected. Each comprises an innovative technical solution to address a specific challenge in urban water management. The construction of each pilot has been financed via public or public-private sources, not from MULTISOURCE itself, thus optimising the use of EU funding and minimizing the risk of construction delays. Each pilot will be monitored (Task 1.1) from system start-up (where possible) through steady-state operation, intensively for a minimum of two years, and as needed for optimization and long-term monitoring. Pilots will be operated/tested in order to establish the limits and capacity of the treatment systems, to face uncertain and varying load conditions, and assess their effective ability to abate environmental risks. Therefore, the original monitoring activities of each pilot will be complemented by MULTISOURCE with advanced analytical services. To create a baseline scenario of potential water reuse for all pilots, we will measure pathogens, priority substances and contaminants of emerging concern, including microplastics. This will provide an assessment of the occurrence and fate of emerging contaminants, as well as allowing to perform risk assessment (WP2) within and beyond the current regulatory framework. Moreover, to minimize costs and increase the efficiency of the monitoring efforts, sensors and real-time control and operation systems, will be tested (Task 1.1) in Germany, France, Italy, and Spain ENTS pilots and the best solutions will be rolled out to the other pilots in Belgium, Norway, and USA during MULTISOURCE. One of the technical optimizations will be the implementation of online control of oxygen rates in the technologies using active aeration. Monitorization and monetization of co-benefits provided by NBS^{WT} is still a challenge, thus we will explore how current available Information Communication Technology (ICT) and digital tools can be implemented to quantify the co-benefits (Task 1.2). Most promising solutions will be tested in the pilot in Girona and rolled out to all other pilots, so that we can identify and quantify potential co-benefits in each site. Co-benefits quantification will then be monetized through the innovative business models (WP3) and LCA approaches (WP4). Task 1.1 and 1.2 will generate critical data to be fed into the different tools and business modes developed in P2, WP3, WP4, and WP5. Lastly, in a feedback loop approach by using output data from the models, an individual assessment of each pilot will be performed (Task 3.3). This assessment will consider environmental social and economic co-benefits, analysed under different limiting scenarios, which will be very important to increase the integration of such technologies into urban water cycles.

T1.1. Pilot monitoring, including real-time monitoring options (M1 – M40)

Task Leader: AU; **Contributors:** AU, INRAE, IRIDRA, ICRA, NIVA, RIETLAND UFZ

M1-M4 will be used for preparing the pilot activities, namely developing tailored monitoring programmes (including sampling and selection of relevant pollutants) for each pilot. These tailored plans will ensure that diverse and uncertain conditions, both in terms of water quantity and quality (quantified as well in WP5), will be assessed in the most efficient and comprehensive way throughout the project (M4-M40). Common to all pilots, will be the

usage of automatic samplers and/or passive water samplers as adequate to guarantee the representativeness of the samples. Each pilot partner will be responsible for sampling and analysis of conventional parameters according to Standard Methods (five-day biochemical oxygen demand, chemical oxygen demand, nitrogen, phosphorus, total suspended solids, turbidity), environmental parameters (water temperature, dissolved oxygen, oxidation-reduction potential, electrical conductivity), priority substances (heavy metals, polyaromatic hydrocarbons, biocides), contaminants of emerging concern (pharmaceuticals, insecticides, and microplastics), and pathogens (according to EU water reuse regulation[47] as well as viruses such as SARS-CoV-2). Samples for microplastics and organic micropollutant analysis will be shipped to NIVA and AU, respectively. AU will perform all target analysis for the quantification of priority substances and contaminants of emerging concern. AU has state-of-the-art GC and LC hyphenated with mass-spectrometry, as well as validated methods for the analysis of a wide range of organic compounds. Under Task 2.1, NIVA will perform the analysis of the microplastics and AU the non-target screening of unknown and new hazardous organic pollutants. Additionally, the need for characterizing the filter media or substrates will be evaluated according to each pilot. ICRA, INRAE and UFZ will be the first to implement sensors (including validation of low-cost sensors or to assess thermal effect) and online monitoring of water quality/quantity, as already planned on their pilots. These systems will be assessed during the first year of operation (M4-M16) and the best solutions rolled out to the other pilots (M17-M40). Once the different pilots have their respective stakeholders which require access to the data/monitoring system, each partner will be responsible for individually managing their software but ensuring that MULTISOURCE data will be of open access to the consortium and general public (upon request), according to the Data Management Plan (T8.4). Moreover, to perform treatment on demand according to final reuse, INRAE, RIETLAND and IRIDRA will explore how to perform online/real-time control of the aeration in their pilots based on ICT (M28-M40).

T1.2: Participatory methods for quantification of co-benefits (M10 – M40)
Task Leader: ICRA; **Contributors:** GIRONA, FER, INRAE, IRIDRA, ICRA, NIVA, OSLO, RIETLAND, UFZ

Provision of co-benefits is essential for NBS^{WT}, but their systematic quantification is still lacking. There is an urgent need to understand *what* (co-benefits) and *how* (which tools) will provide the best monitoring solutions to not only acquire data but ensuring that these results in reliable indexes to quantify the co-benefits provided by NBS^{WT}. This task will start by reviewing existing ICT/digital tools (e.g. citizen-science apps such as iNaturalist, opentreemap.org, Earth Challenge 2020, and the Catalan Butterfly Monitoring Scheme) and literature on mapping of ecosystem services and social and cultural co-benefits, and their gender dimension. The most promising tools will be evaluated and selected for implementation within the consortium to ensure that all stakeholder perspectives (including the ones relevant to each pilot) are incorporated. Potential disservices and constraints (such as gentrification and touristification, VOC emissions, undesired insects, unpleasant smell, acceptability and tolerance threshold or vandalism[48]) will also be evaluated. To this end, data mining on social networks data, such as Instagram and Flickr, will be explored. We foresee the identification of at least three potential co-benefits in each site, and if possible, with one co-benefit in common across all pilots to study the effect of the environmental and socio-economic context. ICRA will be the pioneer to implement such tools (M10-M22). The outcomes of one-year monitoring will be assessed by all partners in a dedicated workshop (D1.2, M23), after which the tools will be rolled out to ensure the monitorization of co-benefits in all pilots (M24-M40). The Living Lab in Girona, which will be merged into the local community, will serve as an in-depth case study for social co-benefits of ENTS. The framework constructed by the American Institute of Biological Sciences[49] will be followed in order to research, facilitate and maximise social co-benefits. Strategies to reduce the risk of identified disservices will be co-designed with all stakeholders and validated during the project. These co-benefits will be aligned with those being included in the LCA (WP4). The approach proposed for most ENTS pilots is top-down, but researchers are often not likely to identify services and values and their interactions important to the local community without first engaging stakeholders. Regular stakeholder meetings will serve as means to evaluate and improve the social co-benefits of the ENTS in and of the community. Open-ended or semi-structured questionnaires and interviews will be used to identify values and services and their interdependence. Local women organisations will participate in the research, as well as provide disaggregated data. Findings will then be used as inputs into WP3, WP4 and WP6.

T1.3: Pilot evaluation (M36 – M48)
Task Leader: IRIDRA; **Contributors:** GIRONA, FER, INRAE, ICRA, NIVA, OSLO, RIETLAND, UFZ

For each pilot, the limits and capacity of each technology for hydraulic performance and pollutant removal (WP1), together with the results from the individual risk assessment (WP2), will be evaluated and documented in order to facilitate the development of design guidance (WP4). The business models (WP3), together with the

[47] European Commission (2018) Regulation of the European Parliament and of the council on minimum requirements for water reuse.
[48] Anguelovski I. (2016) From Toxic Sites to Parks as (Green) LULUs? New Challenges of Inequity, Privilege, Gentrification, and Exclusion for Urban Environmental Justice. Journal of Planning Literature, 31 (1), pp. 23-36. https://doi.org/10.1177/0885412215610491
[49] Chan K.M.A. *et al*. (2012) Where are *cultural* and *social* in Ecosystem Services? A framework for constructive engagement. BioScience 62(8): 744-756. https://doi.org/10.1525/bio.2012.62.8.7

complementary results from the innovative LCA (WP4) that include co-benefits analysis in parallel to the scenario simulation (WP5) will allow to evaluate the social and economic co-benefits of each pilot. Moreover, environmental, social and economic benefits will be compared across pilots/challenges and case studies. Fact sheets on the newly established and qualified ENTS pilots will provide new information on monitoring results, best practices, long-term management operational requirements and risk assessment (links to WP2, WP3, and WP4). Factsheets will also be used for exploitation activities and sharing and cross-fertilization of the technologies in European and international networks.

Deliverables

D1.1 – ICT / Digitalization tools workshop (T1.2), M23
D1.2 – Monitoring final report, M40
D1.3 – Pilot evaluation, M47

WP number	WP2					**Lead**			NIVA		Start Month		M6			End Month			M42	
WP title	Risk Assessment																			
Participant no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	**16**	17	18	19	20
Short name of participant	INRAE	AU	GIRONA	ALCN	FER	UFZ	HCMUT	ICLEI	ICRA	IT	INSA	IRIDRA	GLYON	CMM	MSU	**NIVA**	OSLO	RIETLAND	UFSC	WE
Person-months	2	10	0.5	2			0.5		2				0.5	0.5	0.5	**11.5**	0.5		4.5	

WP leader: Sondre Meland (NIVA)

Objectives

The overall objective is to perform risk assessments of the water quality based on chemical and microbiological monitoring data from the various pilots. Emphasis will be on the pilots' removal rates, risk reduction, and the potential of re-using treated water. Additionally, identification of new and emerging chemicals including microplastics will be important. This overall aim can be divided in four objectives with their corresponding tasks:

- Identify unknown and new hazardous organic chemicals, and microplastics in ENTS pilot effluents;
- Assess the ecotoxicological risk of chemicals and non-chemical stressors (e.g. particles) identified in water samples and monitoring data by Cumulative Risk Assessment (CRA);
- Conduct a probabilistic risk assessment using Bayesian Network Modelling;
- Conduct a risk analysis for ENTS effluent reuse.

Description of work and role of participants

WP1 and WP2 will provide chemical data of multiple contaminants from the pilots which allow a change from focussing on a few legacy chemicals (e.g. priority substances in the WFD) to focussing on complex chemical mixtures and to identify drivers for toxic effects in the different water sources. Both inlet and outlet water quality will be subjected to cumulative risk assessment. Both percentage removal rate and risk reduction will be determined to evaluate the various ENTS' treatment performance. Additionally, the water quality in the effluent will be risk assessed to document any harm this effluent may have on receiving water bodies. The outlet water quality will also be risk assessed with respect to the potential reuse of treated water in various applications (e.g. urban uses such as irrigation or recreational uses such as fishing or bathing) by comparing concentration data with existing and relevant benchmarks from national and international. An important and initial part of the WP will also be to identify new and emerging organic chemicals and microplastics that may be present in various water types.

The risk assessment of chemical and non-chemical (e.g. particles and microplastics) stressors in inlet and outlet water quality will be performed by Cumulative Risk Assessment (CRA) using NIVA's Risk Assessment Database (NIVA RAdb) tool (www.niva.no/radb). Thus, applying the most recent advances in risk assessment of multiple stressors in aquatic environments to ENTS pilots treating urban water types. Chemical monitoring data from the pilots (WP1 and WP2 (Task 2.1)) will be used in the NIVA RAdb to estimate environmental risks of individual chemicals as well as complex mixtures of chemicals. The tool compiles data from experimental studies and data-assisted models that cover effects from molecular and/or cellular responses to effects on the individual and population level. This holistic data-based approach can point out which chemical or mixture of chemicals are potentially most detrimental to specific species or taxa in aquatic environments (both marine and freshwater). Additionally, existing or recommended water quality benchmarks for irrigation and other reuse purposes will be identified and included in the risk assessment. In addition, we will explore Bayesian Network (BN) modelling as

a tool to carry out a probabilistic risk assessment, i.e. calculating the risk quotients (RQs) as probability distributions. In this way, the temporal variability and uncertainties in treatment performance of the pilots can be characterized. The potential reuse of treated water will be risk-assessed using a similar approach and by e.g. comparing concentrations of priority pollutants defined in the WFD with existing WFD regulations and benchmarks as well as future regulatory scenarios. The suitability of treated water to be reused for different urban applications (irrigation, urban farming, toilet flushing) will also be assessed.

T2.1. Non-target screening of unknown and new pollutants and microplastics in pilots (M6 – M20)
Task Leader: AU; **Contributors:** INRAE, GIRONA, IRIDRA, ICRA, MSU, NIVA, OSLO, RIETLAND, UFZ

Selected samples and/or potentially pooled samples of different events/seasons from Task 1.1 will be subject to a broad analytical screening by AU. Analysis will be performed both by liquid-chromatography and gas chromatography coupled with high-resolution mass spectrometry (two Orbitrap and one TripleTOF are available) combining both data-dependent and independent acquisition modes. A suspect screening and a non-target screening workflow will be employed by combining proprietary software (Thermo & Sciex) and the open source software MZmine and linked libraries (e.g. NORMAN network, MassBank and METLIN). This will also allow the characterization of intermediate transformation products (TPs). Moreover, the most relevant candidates based on frequency of occurrence and intensity will be subjected to CRA to predict environmental, population and individual organism health effects using the NIVA RAdb, see Task 2.2). When relevant, and if standards are commercially available, new compounds might be included in the target screening routines by AU (Task 1.1). Task 2.1. will also be responsible for measuring microplastics in the samples. Water samples will be filtered at site and the filters will be shipped to NIVA for chemical analysis. The microplastic concentrations will be determined by measuring polymers using pyrolysis GC-MS (Multi-Shot Pyrolyzer (EGA/PY-3030D) equipped with an Auto-Shot Sampler (AS-1020E) (Frontier lab Ltd., Fukushima, Japan) attached to GC-/MS (5977B MSD with 8860 GC, Agilent Technologies Inc., CA, USA).

T2.2: Cumulative risk assessment of pilots (M20 – M42)
Task Leader: NIVA; **Contributors:** GIRONA, FER, INRAE, IRIDRA, ICRA, NIVA, OSLO, RIETLAND, UFZ

Chemical results obtained from Task 1.1 and Task 2.1 will be subject to environmental risk assessment by NIVA RAdb. The work will be divided in two stages: i) conducting cumulative risk assessment (CRA) on the first half of collected monitoring data (approximately one year of monitoring), and ii) conducting CRA on the complete monitoring data set. This will ensure that important output can be utilised in other WPs and pilots can e.g. be modified and optimised to enhance treatment performance and risk reduction. This will be the first time the most recent advances in CRA of aquatic environments are applied to pilots treating urban water types. Risk quotients will be determined for individual chemicals as well as complex mixtures of chemicals. Species-specific risks (most vulnerable species/taxa groups) and risk drivers (chemicals) will be identified in order to derive cumulative risk quotients (CRQ). Effects on different molecular targets will be used to predict the cumulative hazard quotients (CHQ). In this way, temporal risk potential of untreated and treated water will be determined in the various pilots. The difference in risk potential between untreated and treated water will allow an assessment of the overall treatment performance of the pilots. This will be an enhanced and novel approach compared to standard assessment which is normally based on percentage removal of chemicals and particles.

T2.3: Probabilistic risk assessment of pilots (M20 – M42)
Task Leader: NIVA; **Contributors:** GIRONA, FER, INRAE, IRIDRA, ICRA, NIVA, OSLO, RIETLAND, UFZ

The exposure data (i.e. chemical concentrations from Task 1.1 and Task 2.1 and effect data from Task 2.2 will be used in Bayesian Network (BN) modelling to carry out a probabilistic risk assessment, i.e. calculating the RQs as probability distributions. The ratio between the probabilistic distribution of exposure data and the probabilistic distribution of effect data will be used to calculate RQs. In this way, the temporal variability and uncertainties in treatment performance of the pilots can be characterized.

T2.4: Risk analysis of pilot effluent for reuse (M31 – M36)
Task Leader: UFSC; **Contributors:** GIRONA, FER, INRAE, IRIDRA, ICRA, NIVA, OSLO, RIETLAND, UFZ

The potential reuse of treated water will be risk-assessed using a similar approach as in Task 2.2 and Task 2.3. Chemical concentrations of priority pollutants defined in various relevant regulations (e.g. WFD), the regulation on minimum requirements for water reuse, national regulations, as well as future regulatory scenarios discussed with different Environmental Agencies (WP6) will be compared to their corresponding benchmarks. Microbiological risk assessment of pathogens will also be performed.

Deliverables

D2.1 – Unknown and new organic pollutants, M20
D2.2 – Risk assessment of pilot effluent for reuse, M36
D2.3 – Cumulative and probabilistic ecotoxicological risk assessment of pilots, M42

WP number	WP3					Lead			ALCN		Start Month			M3		End Month			M48	
WP title	Business Models																			
Participant no.	1	2	3	**4**	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Short name of participant	INRAE	AU	GIRONA	**ALCN**	FER	UFZ	HCMUT	ICLEI	ICRA	IT	INSA	IRIDRA	GLYON	CMM	MSU	NIVA	OSLO	RIETLAND	UFSC	WE
Person-months	2	19	1.5	**24**	4	4	1.5		2			2	1.5	1.5	1.5		1.5	1	0.5	

WP Leader: Dimitra Theochari (ALCN)

Objectives

To co-develop new inclusive and gender-sensitive business models for construction, operation and long-term management and maintenance of urban NBS^{WT} customized to types of NBS^{WT}, urban domains and regulatory frameworks, with innovative partnerships and financing strategies, by

- Creating a knowledge base of best practices for innovative financing and O&M strategies;
- Define target markets and identify new business opportunities for both ENTS and NBS^{WT}, including the potential of circular management of urban resources, identify customer segments and needs, and spark stakeholder processes to make regulatory conditions more conducive to further uptake;
- Provide cost-benefit evidence specified for customer segments and provide feedback for the development of technologies and business models;
- Co-develop business cases for post-project continuation and replication of project pilots including. financing and long-term O&M in partnership between public and private stakeholders.

Description of work and role of participants

WP3 will start by identifying best-practices for innovative approaches to financing and O&M of NBS^{WT} and other solutions to urban water challenges that could be applied to NBS^{WT} (T3.1). T3.2 will define the value proposition, market and customer segments, and customer and community needs for each pilot in the project. The definition of the value proposition will include a circularity assessment and an assessment of co-benefits to widen the opportunities for value creation, also in terms of inclusive solutions to broad societal challenges. This way, we aim to locate financing within and beyond the water sector, reflecting the multiple co-benefits of NBS. T3.3 translates the qualitative value proposition into benefits in monetary terms and develops a cost-benefit analysis tool that includes directly incurred costs and benefits and externalities depending on the user (public or private business model). This way, we create cases for the fundamentally different sets of objectives/incentives of public/non-profit actors vs. private for-profit actors. T3.4 will gain stakeholder knowledge and co-develop ENTS-specific business models together with local public and private stakeholders facilitated by municipal/metropolitan partners, including long-term financing and O&M plans. This task includes liaising with WP4 and WP5.

T3.1. Assessment of best-practices for innovative financing and O&M strategies (M3 – M8)
Task Leader: ALCN; **Contributors:** AU, CMM, FER, GLYON, GIRONA, HCMUT, MSU, OSLO, UFSC

ALCN will map reference best-practices, i.e. innovative business models, for solutions to each of the urban water challenges addressed by the project. These will include successful business models for NBS, but also for alternative (grey) solutions which NBS could replace, in particular, decentralized water treatment systems, community-based management (including long-term financing and O&M). Best-practice collections conducted by previous NBS for city projects, e.g. NATURVATION, will be the starting point. However, they include only few NBS^{WT} cases. FER will focus on successful cases managed by local communities and their acceptance of NBS, as well as successful co-governance of decentralized systems, to increase evidence for real-life success of proposed NBS. The research from the Girona Living Lab will also be used in this regard

T3.2: Value proposition, circularity, markets and customer needs (M4 – M12)
Task Leader: ALCN; **Contributors:** AU, CMM, FER, GLYON, GIRONA, HCMUT, MSU, OSLO, UFSC

Based on qualitative information and technical design specifications provided by the project pilots (WP1), and evidence of co-benefits of other NBS (e.g. ecosystem functions, wellbeing, property value), ALCN will define the value proposition (qualitative) in exchange with respective pilot and technology developers This will include a circularity assessment of resource flows through these systems and further processing and reuse stages (qualitative Material Flow Analysis, qualitMFA) to identify exploitable secondary resources, such as water, nutrients, energy, materials and multifunctional benefits of each ENTS. Based on the qualitative value proposition, ALCN will define

the target markets, opportunities for cross-sector financing (within and beyond the water sector) and customer segments for each solution. The four municipal partners in the consortium will support in identifying enabling partners among customer segments in preparation for WP6 and T3.4. ALCN and AU will then map out customer needs as a basis for participatory business model development in T3.4. FER will identify and analyse potential positive and negative impacts on male and female users and stakeholders. When available, WP1 will provide quantitative evidence, which will be used to quantify major exploitable resource streams based on the qualitative MFA. Results of the circularity assessment will be transferred to WP4 to include in the Technology Selection tool.

T3.3: Cost-benefit analysis and tool for public and private actors (M4 – M48)
Task Leader: AU; **Contributors:** ALCN, ICRA, UFZ

In this task, we will provide a cost-benefit analysis (CBA) methodology that can be applied to NBS^{WT}. This methodology (cost-benefit functions) and results data will be transferred by ICRA to WP4 and integrated into the MULTISOURCE Technology Selection Tool. The CBA methodology will also be made available as a standalone simple calculation tool. The CBA will be based on generic cost and benefit functions, with a modular structure in order to adapt the model to different user groups (addressing the interest of public institutions and/or private companies) and contexts in both the developing and the developed world. The methodology will allow users to select cost and benefit centres (parameters/modular functions) into the computation according to the costs and returns actually impacting feasibility for specific end-users, thus allowing to reflect differences between for-profit companies (narrow cost-competitiveness, excluding externalities/societal costs and benefits), and public/non-profit entities who also bear, or at least consider, externalities such as urban temperature increases, flood damages, aesthetic/recreational value (public vs. private business model principle). To identify relevant CBA variables and structure the modular functions, we will conduct interviews with target end-users. The cost and benefit functions will be based on state-of-the-art benefit and cost transfer models applying a significant number of scientific papers addressing the economic subject of a nature-based solution, wetland restorations and water pollution and health risk. Depending on the context, the baseline of the CBA will either be a conventional water treatment solution or a non-treatment solution (consistent with comparative alternatives in the MULTISOURCE Planning Platform).

ALCN and AU will translate identified potential revenue streams and co-benefits (value proposition in T3.2) to monetary terms ("benefits" in CBA) based on existing methodologies for natural capital accounting and ecosystem valuation in line with the methodology used in WP1. With incoming results from the LCA in WP4 (and based on monitoring data generated in WP1), ICRA will compare and integrate these results into the CBA, which will simultaneously allow for quality control and testing of the methodologies. The pilots and complementary studies will provide the data on costs (planning, construction, O&M) to carry out the CBA for the project ENTS. Costs and benefits are considered along the entire life cycle. ICRA and UFZ will contribute to defining the specific cost-benefit methodology to ensure consistency with the Technology Selection Tool (WP4) and the Planning Platform (WP5), respectively. ICRA will also transfer the results of the LCA from WP4 to WP3, to quantify the cost-benefit analysis. The data and cost-benefit functions will be transferred to WP4.

T3.4: Co-creation of business models (M20 – M48)
Task Leader: ALCN; **Contributors:** AU, CMM, FER, GIRONA, GLYON, HCMUT, ICRA, INRAE, OSLO, MSU, UFSC, UFZ

ALCN will co-create business models and roles of various stakeholders based on the results of T3.1 – T3.3 and through seven stakeholder workshops hosted by pilot partners in Belgium (RIETLAND), France (GLYON/INRAE), Germany (UFZ), Italy (CMM/IRIDRA), Spain (GIRONA/ICRA), Norway (OSLO/NIVA), and the United States (MSU). At the workshops, Public-Private Partnership (PPP) concepts including contributions/roles developed for financing and for O&M, with existing management approaches and partnerships as a starting point, and by matching value proposition with individual pains, gains, mandates and resources. We will build on engagement and relationships already developed strategically in WP6 activities with actors concerned in the whole NBS^{WT} lifecycle from planning, to access to co-financing, to long-term management. Workshop participants will include actors who are interested to become/stay active in putting the business model to practice, as well as actors who have similar plans to develop replication cases. The workshops will also identify gaps where significant enabling stakeholders are not yet involved but are required to develop a sound, bankable business case. Public actors can include municipal agencies, community organizations. The private sector includes companies such as construction and property development firms, architecture and landscape firms, private banks, investment companies, as well as private persons interested in installing NBS^{WT}. Pilot partners will ensure post-workshop continuation of partnerships and follow-up for post-project continuation of pilots and/or replication NBS^{WT} in their regions. Local stakeholders in Girona will also be engaged via regular meetings throughout the four-year project.

Based on the results of T3.1 and the workshops in this task, AU will (i) provide a guideline on financing strategies for NBS by exploring private-public partnerships between municipalities, utility companies, private investment

funds, e.g. pension funds, green bonds, EU and international financing facilities and communities (community-based financing tools such as asset pools to capture individuals willingness to pay), and (ii) develop guidelines for financing strategies, planning, installation, operation and maintenance methods for NBS^{WT}, highlighting also the opportunities to capitalize on secondary resource recovery and community-based financing, management, operation and maintenance. The content of the guidelines will feed into the MULTISOURCE database (background of the Technology Selection Tool) as well as into the database of case studies metadata developed by EDICITNET (http://www.edicitnet.com) (ICRA is responsible for EdiCitNet tools). Feedback rounds with the international consortium partners (HCMUT, MSU, UFSC) and the International Advisory Board will contribute to the replicability of the business models in varying conditions. The outputs of this task will be transferred to WP5. FER will provide guidelines to promote gender-responsive bidding documents, in line with procurement legislation, as well as gender-responsive PPP contracts that will bring about long-term gender commitments. The aim is to ensure that NBS do not worsen existing or create new social inequalities (including gender inequalities) when they are financed through public-private partnerships, which are typically driven by profit-making rather than public interest concerns.

Deliverables

D3.1 – Reference handbook of financing and O&M best-practice cases, M5
D3.2 – Cost-benefit functions and results, M30
D3.3 – Descriptions of new business models, M36
D3.4 – Practical guidelines to business model development for NBS^{WT}, M42
D3.5 – Set of recommendations for inclusive and gender-responsive bidding documents and PPP contracts, M48

WP number	WP4					**Lead**			ICRA		Start Month			M1		End Month			M48	
WP title	Technology Selection																			
Participant no.	1	2	3	4	5	6	7	8	**9**	10	11	12	13	14	15	16	17	18	19	20
Short name of participant	INRAE	AU	GIRONA	ALCN	FER	UFZ	HCMUT	ICLEI	**ICRA**	IT	INSA	IRIDRA	GLYON	CMM	MSU	NIVA	OSLO	RIETLAND	UFSC	WE
Person-months	53	2	1	2	4	1	1		**36**		3	1.5	1	1	1	2	1	1	2.5	

WP Leader: Joaquim Comas (ICRA)

Objectives

The general objective of WP4 is to develop and test a web-based decision-support tool for stakeholders to facilitate the selection and design of NBS^{WT}, including ENTS, while priority locations for local treatment, storage and reuse are identified with the MULTISOURCE Planning Platform (WP5). The specific objectives of WP4 are:

- Collect relevant data generated for ENTS technologies in WP1, WP2, and WP3 and elsewhere;
- Account for the multifunctionality and impact of NBS^{WT} in the technology selection process;
- Develop the MULTISOURCE Technology Selection Tool;
- Evaluate the tool in a number of case studies defined by different water streams, final water use and socio-environmental context and needs.

Description of work and role of participants

The knowledge base supporting the tool will be based on data generated in WP1, WP2 and WP3, expert knowledge from all over the world and an exhaustive review of scientific evidences of innovative natural treatment systems, also on their effects on and acceptance by the local communities, disaggregated by gender, and will be codified by means of both mathematical models and artificial intelligence techniques (i.e. knowledge-based systems). The tool will be structured in two levels: Tier 1 for the selection of the most suitable NBS^{WT} for a given socio-environmental context and needs, and Tier 2 to provide preliminary design information for the pre-selected NBS^{WT}.

The MULTISOURCE Technology Selection Tool will be built upon an existing prototype that has been developed within the SNAPP-NCEAS Sanitation for and by nature (SANNAT) international project (https://snapp.icra.cat/), which included only conventional nature-based solutions for wastewater treatment. The knowledge base of this tool will be extended by including (i) **enhanced natural treatment systems** for water treatment, storage and reuse as well as NBS^{WT} suited for urban applications but also for potential **water reuse** and **circular economy** schemes (from WP3); (ii) environmental **life-cycle impact** assessment; (iii) assessment of **socio-economic co-benefits** provided by these ENTS, such as biodiversity increase, temperature regulation, urban farming, economic and

social development and gender equality, (iv) **guidance for design** and for financing long-term management, operation and maintenance, including preliminary estimations of costs and benefits for project-developed ENTS; and (v) **risk management plan** to minimise chemical and biological hazards depending on the final water use. No other NBS selection tool provides all these functionalities for NBS^{WT} and ENTS. The Technology Selection Tool can work as a stand-alone tool or be used in conjunction with the MULTISOURCE Planning Platform (WP5). The Technology Selection Tool selects the most adequate technologies (and provides an assessment based on technical, socio-economic, environmental criteria, including circularity schemes, risk plans and guidelines for design and O&M), which will then be integrated in urban archetypes and different scenarios in the Planning Platform and assessed at neighbourhood or city scale

T4.1. Data and knowledge acquisition (M1– M36)
Task Leader: AU; **Contributors:** ALCN, FER, HCMUT, ICRA, INSA, INRAE, IRIDRA, NIVA, MSU, UFSC, UFZ

This task aims to acquire all data and knowledge required for the knowledge base of the WP4 Technology Selection tool. The knowledge base will include data generated from the MULTISOURCE pilots (WPs 1, 2 and 3) and from international partners in different climate regions (Brazil, USA, Vietnam), from existing NBS databases (Nature4Cities, NATURVATION, UNaLaB, UrbanGreenUP, PlanteDefi: French database with over 3,500 NBS^{WT} systems), from expert elicitation workshops, and from a review on research literature on the nexus between NBS, integrated water resource management, circular economy and gender equality and women empowerment. AU will compile and provide the **data from the pilot sites**. Special emphasis will be put on the results of the quantitative assessment of additional **benefits** provided by pilots in WP1 (e.g. biodiversity and well-being). NIVA will identify key input data required to develop **risk management plans** for safe water reuse. IRIDRA, RIETLAND, MSU and ALCN will provide relevant **investment, operational and maintenance costs** data as well as opportunities for secondary **resource valorisation** (water, nutrients, energy, materials). ICRA and INRAE will perform the literature and projects review to identify published results on NBS^{WT} and perform a data mining process to extract relevant information such as type of water treated, removal efficiencies, sustainability indicators, co-benefits provided and any other design/operational setting. For the workshops, since the aim is to gather consensus among experts from all over the world on complex issues, a modified Delphi method will be used. FER will perform a literature and project review to establish the effects of NBS on **gender equality** and vice versa with the aim of ensuring that the Technology Selection contributes to gender equality. The nexus between the two categories has not been explored. The findings will be used not only to sensitize project partners, but also to raise awareness among water practitioners and decision-makers.

T4.2: Life cycle assessment of NBS^{WT} (M1 – M36)
Task Leader: INRAE; **Contributors:** ALCN, HCMUT, ICRA, IRIDRA, MSU, NIVA, RIETLAND, UFSC, UFZ

This task has a two-fold objective: (i) applying the classical comparative **LCA for NBS^{WT}** and (ii) developing a novel LCA approach to **account for the multifunctionality of NBS^{WT}**. INRAE will develop a module on whole-system cradle-to-grave Life Cycle Assessment (LCA) of NBS^{WT}, which will allow comparison of systems in terms of construction materials, system operation, performance, and waste/by-product management, and will be based on ISO14040/14044 standards. NBS^{WT} perform two types of functions: (i) main functions e.g. the treatment and management of wastewater/stormwater/greywater and (ii) secondary or Ecosystem Services (ES) functions (i.e. flooding protection, urban heat island mitigation, habitats for insects and pollinators, increased food and water security, enhanced societal interactions, social inclusion, among others). Existing typologies for ES functions such as the internationally recognized CICES v5.1 classification identified three main categories of ES with (a) provisioning services, (b) regulation and maintenance services and (c) cultural services[50]. This inherent multifunctionality of NBS^{WT} will be accounted for in a novel LCA approach developed in MULTISOURCE and applied to selected urban archetypes in WP4 tool and urban scenarios in WP5 with a clearly defined context (i.e. known urban catchment) to complement the cost-benefit assessment (WP3). Co-benefits monitored in pilots will be used as inputs to the innovative method developed here.

INRAE will provide LCA results for each NBS^{WT} in selected urban archetypes to be encapsulated into a streamlined LCA calculator (developed by ICRA) to enable users' end goals with some variable parameters (to define according to users' needs). Hence, new case studies could be assessed and compared under different "customizable" scenarios (involving NBS-WT in an urban archetype). INRAE will draw expertise from its experience with a first simplified LCA calculator (ACV4E) and lessons learnt[51].

[50] Haines-Young R. and Potschin-Young M. (2018) Revision of the Common International Classification for Ecosystem Services (CICES V5.1): A Policy Brief. One Ecosystem 3: e27108. https://doi.org/10.3897/oneeco.3.e27108

[51] Guérin-Schneider L. *et al*. (2018) How to better include environmental assessment in public decision-making: Lessons from the use of an LCA-calculator for wastewater systems. J. Clean. Prod. 187, 1057–1068. https://doi.org/10.1016/j.jclepro.2018.03.168

T4.3: Co-creation of the technology selection level for the tool (Tier 1) (M6 – M42)
Task Leader: ICRA; **Contributors:** ALCN, FER, CMM, GIRONA, GLYON, INRAE, INSA, IRIDRA, NIVA, RIETLAND, OSLO, UFSC, UFZ

This task is focused on co-developing the WP4 tool to enable the **selection** of the most adequate technology, given an environmental and socio-economic context and user needs. ICRA will encapsulate the required knowledge for the selection of the most suitable technologies, identified in Task 4.1 and Task 4.2, by means of a database and artificial intelligence tools, i.e. a knowledge-based system composed of decision rules. The knowledge base (collection of database and rules) will include information about technologies' properties, water reuse schemes, links between urban archetypes (WP5) and best-fit technologies, and a set of local constraints (such as legislation, land availability, poor governance structures that do not foster integrated, participatory and cross-sectoral approaches), and will be verified by NIVA, INRAE, ALCN, IRIDRA, RIETLAND and external experts. Removal efficiencies and surface required for different pollutants will be key performance indicators for the selection reasoning process. At the programming level, the most adequate web-based **open source** programming languages will be used to develop user-friendly interfaces and all data and knowledge will be freely accessible. Focused annual workshops with experts, various stakeholders and end-users, coinciding with project meetings, will be used to showcase intermediate prototypes as well as to **co-design** functionalities and interfaces of the tool. ICLEI and FER will ensure the engagement of stakeholders such as engineering companies, municipalities, water authorities, and water utilities during the evaluation process. The knowledge base implementation will allow for automatic **upgrading** every time additional data is uploaded online by registered users. The information describing the technologies included in the tool will be modifiable when new data or knowledge will be available but also the tool will allow the inclusion of completely new technologies.

T4.4: Co-creation of the design level for the tool (Tier 2) (M12 – M42)
Task Leader: ICRA; **Contributors:** ALCN, AU, HCMUT, ICLEI, INRAE, INSA, IRIDRA, MSU, NIVA, RIETLAND, UFSC, UFZ

This task aims at co-developing the decision support level of the WP4 tool to enable a **preliminary design and cost estimations** of NBS technologies. ICRA and INRAE will perform a statistical analysis on the empirical and bibliographic data of full-scale case studies gathered in Task 4.1 to identify equations linking design and performance for NBS^{WT}, while cost-benefit equations for the different technologies will come from WP3. These equations will be confronted to expert's consultation groups, guided by INRAE and ALCN for the design and economic aspects, respectively. ICRA will program a combination of mathematical equations and decision trees to provide a preliminary design for the technologies selected in Tier 1, given a specific water flux (defined by quantity and quality) and final use. The aim of Tier 2 is to provide preliminary information regarding the required surface and material volume per inhabitant equivalent (wastewater) or volume of water (rainwater), removal efficiencies achieved and potential investment and operation and maintenance costs. The tool will be usable in different economic contexts since a calibration of the cost parameters will be possible based on some specific metrics (e.g. human labor or materials).

When quantitative data from a new case study or ENTS pilot will be available, the equations providing space required and cost estimations will be automatically re-calibrated. This machine learning feature of the web-based tool will allow to overcome the risk of data and knowledge becoming obsolete with time, on the contrary it will assure a continuous update and improvement of the tool.

T4.5: Evaluation of the Technology Selection Tool (Tier 2) (M30 – M48)
Task Leader: INRAE; **Contributors:** ALCN, AU, FER, CMM, GIRONA, GLYON, HCMUT, ICLEI, ICRA, INSA, IRIDRA, OSLO, NIVA, MSU, RIETLAND, OSLO, UFSC, UFZ

INRAE will lead the **verification of the tool**. Experts from the cities, advisory board and project partners will be engaged on designing a number of (real scenarios from WP5 or invented) case studies/challenges related to urban water management and water reuse for WP4 tool testing, covering a wide range of geographic, economic and social conditions, in MULTISOURCE individual municipalities (GIRONA, OSLO), metropolitan municipalities (GLYON, CMM), and via international partners (HCMUT, MSU, UFSC). Different types of wastewaters (load and composition), climate, more or less densely populated cities, socio-economic circumstances of local communities, economic constraints and legislation barriers will be explored in two focused workshops for preliminary evaluation of the tool. The verification process will allow to improve the final prototype after identifying gaps and debugging the tool, as well as favouring stakeholder appropriation. The validated prototype will allow an assessment of the selected pilot technologies but also a comparison with alternative technologies based on multiple technical, environmental and economic criteria. In addition, the provision of co-benefits such as ecosystem services will be assessed for pilot technologies in specific urban archetypes. The tool will be used for dissemination and training since the outcomes of the final workshop will be provided as web-based tutorials

T4.6: Guidance for process design, construction, and MOM of ENTS and NBS^{WT} (M6 – M42)
Task Leader: INRAE; **Contributors:** AU, ICRA, IRIDRA, MSU, RIETLAND, UFSC

From the new information gathered in Task 4.1, Task 4.4 will contribute to new guidance on the design, construction, and management, operations and maintenance (MOM) of ENTS. This task will result in creation of new guidance for NBS^{WT} and ENTS design, construction and MOM. This guidance will be published in the form of an open access engineering textbook (*Treatment Wetlands, Third Edition*, approximately 700 pages), as a new edition of the most comprehensive resource on the topic[52]. The co-authors of the book are international experts in NBS^{WT} and many have experience in pedagogical teaching. In addition to MUTLISOURCE partners, this task will involve external collaboration with Marcos von Sperling, Federal University of Minas Gerais (Brazil), Kela Weber, Royal Military College (Canada), and Scott Wallace, Naturally Wallace Consulting (United States) (see Annex 2 for letters of support from each co-author). Dedicated to students, researchers, designers, decision makers and city planners, the book, published by CRC Press, will be open-access upon publication and will be linked on the International Water Association Publishing website (Annex 2 for letter of support from IWA Publishing) to facilitate immediate and widespread dissemination and uptake of the newest information on implementing nature-based solutions for water treatment.

Deliverables

D4.1 – Research paper on the interplay between NBS^{WT} and gender equality, M12
D4.2 – Establishment of an international knowledge base on NBS^{WT}, M36
D4.3 – Scientific article on the LCA method development and application on real cases studies, M36
D4.4 – MULTISOURCE Technology Selection Tool: prototype complete, M42
D4.5 – Publication of open-access textbook on NBS^{WT}, M42
D4.6 – MULTISOURCE Technology Selection Tool: publication of web-based tutorials, M45

WP number	WP5					**Lead**			UFZ		Start Month			M6			End Month			M48
WP title	Planning Platform																			
Participant no.	1	2	3	4	5	**6**	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Short name of participant	INRAE	AU	GIRONA	ALCN	FER	**UFZ**	HCMUT	ICLEI	ICRA	IT	INSA	IRIDRA	GLYON	CMM	MSU	NIVA	OSLO	RIETLAND	UFSC	WE
Person-months	14.5	8	1	2		**45.4**	1		6		25	1.5	1	1	1		1		1	

WP Leader: Jan Friesen (UFZ)
Objectives

WP5 aims to develop a tool that allows decision makers to define where it is relevant to disconnect rainwater and wastewater from their centralized sewer network based on an integrated and territory approach. This MULTISOURCE Planning Platform will enable the comparison between classic and novel urban water management scenarios. To do this, WP5 will:

- Provide tools to map urban archetypes that highlight urban regions where NBS^{WT} can be applied;
- Provide a disconnection module to determine where decentralized solutions are possible and which varying fluxes NBS^{WT} will have to face;
- Assess novel urban water management scenarios using scenario planning during which innovative business models (WP3) and locally suitable technologies (WP4) will be considered in defining plausible scenarios;
- Develop a planning platform that enables stakeholders to compare a wide range of technologies, connection types and disconnection strategies (centralized, decentralized, or even household-based solutions);
- Evaluate and rank selected scenarios based on life-cycle cost assessment and qualitative rankings of environmental benefits or ecosystem benefit.

Description of work and role of participants

The MULTISOURCE Planning Platform will develop and compare different wastewater management scenarios. Classically this is done by comparing centralized and decentralized scenarios and different treatment technologies.

[52] Kadlec R.H. and Wallace S.D. (2009) Treatment Wetlands, Second Edition. CRC Press: Boca Raton, Florida, USA. 1046 pages.

The scenarios are then fed by spatial data (e.g. length of sewer network or number of household treatment units) as well as economic data in order to derive treatment costs per scenario and rank all. Auxiliary benefits such as ecosystem, environment, or societal will be incorporated using qualitative rankings. The work package includes preparatory items such as the classification of municipality regions into urban archetypes and the development of a disconnection tool that will provide suburbs that have potential for disconnection for the main sewer line to be serviced by NBS^{WT}.

Following the urban archetypes and disconnection regions the focus will be on developing wastewater management scenarios that include both business-as-usual scenarios (e.g. centralized treatment) and different NBS^{WT} scenarios. Next are the development of the Planning Platform and the use of the Planning Platform, where the defined scenarios will be ranked and evaluated. Strong stakeholder interaction will take place during the scenario development as well as during the scenario evaluation. Within the different tasks WP5 is interconnected with WP1, WP3, WP4, and WP6 in view of NBS^{WT} data, novel financing and cost approaches, qualitative ecosystem and environmental benefit rankings, and stakeholder interaction and outreach.

T5.1. Definition of urban archetypes (M6– M18)
Task Leader: UFZ; **Contributors:** AU, ALCN, CMM, GIRONA, GLYON, HCMUT, ICLEI, ICRA, INRAE, INSA, MSU, OSLO, UFSC

This task will provide a classification of urban subregions – urban archetypes – that are based on the properties and requirements of NBS^{WT}. The use of urban archetypes will facilitate scenario evaluation for data scare regions and is aimed at providing a first assessment of the applicability of NBS^{WT}. Urban archetypes help to decide which NBS^{WT} can be applied according to spatial requirements such as available open spaces or building and population density. By combining local and global data, urban archetypes will also be applicable in data scarce conditions.

This task builds cross-linkages to WP1 and WP4 in terms of technical properties and technology selection. In addition, municipality partners are strongly involved in local data provision. Within this task, we will further define the data formats for the input data and the data transfer will be coordinated between WP5 and the data providers. Data providers are the technologies from WP1 and the different city partners that collect and provide the data. Depending on the individual data policies, all open data will be made publicly accessible (see Section 2.2.3).

T5.2: Hydraulic disconnection module (M6 – M30)
Task Leader: INSA; **Contributors:** CMM, GIRONA, GLYON, HCMUT, ICRA, INRAE, MSU, OSLO, RIETLAND, UFZ

This task will create a module that can define urban areas that can be disconnected from the central sewer line, by using various NBS^{WT} technologies, to avoid untreated urban water to be released into the environment. Within the disconnected regions the different scenarios including central solutions will be compared. The disconnection module will be based on an integrated hydrological model. This integrated approach will account for the combination at catchment scale of centralized sewer systems and NBS^{WT} technologies. The developed model will be tested and validated against data derived from field demonstrators (WP1). Scenarios set in Task 5.3 will also be considered. NBS^{WT} technologies selected in WP4 will be implemented in the model. Long term simulations will provide indicators on upstream disconnected volume and load variation (input for Task 1.3) and downstream overflow events reduction. The proposed disconnection module will be implemented in the planning platform (Task 5.4). Further, the disconnection module will include climate change and urbanisation assumptions that will be later included in the scenario development (Task 5.3).

T5.3: Scenario development (M12 – M36)
Task Leader: UFZ; **Contributors:** AU, ALCN, CMM, GIRONA, GLYON, HCMUT, ICLEI, ICRA, INRAE, INSA, MSU, NIVA, OSLO, UFSC

Planning scenarios are used to describe specific urban water management approaches, such as: (i) centralized water collection (sewer) and treatment, (ii) decentralized collection (suburbs) and treatment, as well as (iii) mixed or single building approaches. Using the toolbox (Task 5.4) the scenarios will then be evaluated and ranked in Task 5.5 according to specific treatment cost (i.e. €/m^3 of treated water) and co-benefits. In close cooperation with WP3 (business models) further scenarios sets will be developed to utilize different cost ranking based on innovative financing (i.e. instead of specific treatment costs, property pricing or insurance costs may be taken). Cross-linkages with WP1 and WP4 will determine the specific technologies to be included within the scenarios. Specific future scenarios will take climate change and urbanisation effects into account (through Task 5.2).

Scenario sets, i.e. based on specific treatment costs or on innovative business models, will always include a plausible business-as-usual scenario against which decentralized NBS^{WT} scenarios will be compared to. The defined scenario sets will be designed using MULTISOURCE NBS^{WT} findings. At the same time, further specific scenarios will be developed in close cooperation with stakeholders (e.g. municipalities) in cooperation with WP6.

Such scenarios may cover suburbs that are planned for development and for which municipality partners can then design a scenario which will provide a systematic comparison of specific urban water management approaches. All scenarios require monetary benefits in order to ensure cost ranking amongst scenarios. Additional scenario benefits that cannot be included in a cost comparison (i.e. ecosystem services) will be included in the form of ranked scales and descriptive scenario factsheets. Auxiliary qualitative rankings will be developed for environmental impacts and ecosystem benefits using LCA in Task 4.2. Such auxiliary rankings are planned in a similar concept to EU energy labels, to function as "eco-efficiency" indicators.

T5.4: Planning Platform (M24 – M36)
Task Leader: UFZ; **Contributors:** AU, ALCN, CMM, GIRONA, GLYON, HCMUT, ICLEI, ICRA, INRAE, INSA, MSU, NIVA, OSLO, UFSC

The planning platform will be based on the ALLOWS methodology[53] that will be modified and automated to process urban water management scenarios. The planning platform will be programmed as an open source code that estimates the spatial setting and cost associated to each scenario. The planning platform consists of a spatial package defining the sewer/treatment unit requirements and an economic package combining investment, re-investment and O&M costs. The MULTISOURCE Planning Platform will incorporate improvement of Tasks 5.1, 5.2, 5.3 and WP4. The platform will be built in a modular way to incorporate results and input from WP4 as well as data from WP1 and WP2. A source code will be available in an open programming language (e.g. R or python) via GitHub.

T5.5: Scenario evaluation (M24 – M48)
Task Leader: UFZ; **Contributors:** AU, ALCN, CMM, GIRONA, GLYON, HCMUT, ICLEI, ICRA, INRAE, INSA, MSU, NIVA, OSLO, UFSC

Scenario sets developed using the Planning Platform will be ranked according to treatment cost as well as according to further benefits such as environmental impacts and ecosystem benefits. Scenario evaluations will be conducted together with individual municipalities (GIRONA, OSLO), metropolitan municipalities (GLYON, CMM) and international partners (HCMUT, MSU, UFSC). Targeted workshops will solicit feedback from municipality partners and international partners for testing and evaluating the tool and discuss how to incorporate and facilitate city-wide implementation of NBS^{WT} within their local regions. The scenario evaluations serve as well as a first recommendation for city planners, future project engagement and as a basis of discussion for further stakeholder involvement. Linkages to WP2 and WP4 will provide both cost ranking and qualitative ranking (results from LCA, Task 4.2) that will help provide information for the scenario ranking that extends beyond a pure monetary comparison. Whereas the cost ranking of the different scenarios is rather straight forwards, stakeholder interaction is required for qualitative ranking (e.g. ecosystem, environment, societal benefits) and their respective weights with respect to cost rankings.

Deliverables

D5.1 – Urban archetype maps, M18
D5.2 – Characteristics of urban regions disconnected from sewer, M24
D5.3 – Urban water management scenarios developed, M30
D5.4 – Prototype available for planning platform code, M36
D5.5 – Urban water management scenarios ranked, M48

[53] van Afferden, M. *et al*. (2015). A new approach to implementing decentralized wastewater treatment concepts. Water Science & Technology, 72(11), 1923-1930. https://doi.org/10.2166/wst.2015.393

WP number	WP6							Lead	ICLEI		Start Month			M1		End Month			M48	
WP title	Stakeholder Engagement																			
Participant no.	1	2	3	4	5	6	7	**8**	9	10	11	12	13	14	15	16	17	18	19	20
Short name of participant	INRAE	AU	GIRONA	ALCN	FER	UFZ	HCMUT	**ICLEI**	ICRA	IT	INSA	IRIDRA	GLYON	CMM	MSU	NIVA	OSLO	RIETLAN	UFSC	WE
Person-months	3	2	8	3	6		6	**21**	4			1	7	8	1	1	4	1	2	

WP Leader: Barbara Anton (ICLEI)

Objectives

WP6 aims to meet the urban water planning needs of both pilot stakeholders and intended end-users of the MULTISOURCE tools and business models developed in the project. In all dimensions of the stakeholder engagement, activities will respect the principles of inclusiveness and equitability, in order to ensure that a diversity of relevant needs and interests (including people of all genders, but also vulnerable and marginalised groups) are adequately represented and addressed in the process and its outcomes. To reach this aim, WP6 will coordinate, oversee and, wherever necessary, facilitate the engagement with a range of stakeholders, and specifically:

- Facilitate identification of stakeholders through a mapping exercise at the outset of the project;
- Provide, coordinate and monitor implementation of the framework for engaging stakeholders in 1) the monitoring, quantifying and evaluation of the benefits and co-benefits of the pilots and 2) the co-design of the business models, the Technology Selection Tool, and the Planning Platform (in collaboration with FER, the leaders of WP1, WP3, WP4 and 5 and relevant municipal partners);
- Document lessons learned from the local stakeholder engagement process for co-design of the pilots in the frame of the Living Lab in Girona (in close collaboration with GIRONA, ICRA and FER);
- Set up and coordinate engagement of MULTISOURCE international partners in Brazil, the United States and Vietnam in co-creating business models and tools (in close collaboration with INRAE, UFSC, MSU and HCMUT);
- Set up and coordinate participation of the International Advisory Board in evaluating the pilots and co-designing the models and tools (in collaboration with INRAE).

Description of work and role of participants

WP6 will identify stakeholders, establish and facilitate their engagement in the monitoring activities under WP1 and the co-design of the business models and tools in WP3, WP4 and WP5, ensuring the compilation and integration of a wide range of perspectives from different groups of society, and at local, national and international levels. In the case of the pilot in Girona, WP6 will also directly support the local stakeholder engagement in the actual pilot development at local level. The specific format of the engagement in other pilots will vary according to their different purposes, the stage of development, and the related needs and interests of relevant stakeholders.

In the frame of WP1 and co-facilitated by ICLEI, partners responsible for pilots (GIRONA/ICRA, OSLO/NIVA, INRAE, IRIDRA, MSU, RIETLAND, UFZ) will lead engagement of stakeholders in their local pilots to identify relevant co-benefits (and potential negative impacts or disservices) and contribute to defining indicators and practices to monitor these. In Girona, local engagement activities will also concern the pilot as a whole and build on the Living Lab established previously for the co-creation of a community orchard/edible garden. Here, local stakeholders will test and validate the business models and tools developed under WP3, WP4 and WP5 in a real-life context of planning and implementing NBS^{WT} and share their experiences and lessons learnt with the relevant WP leaders. They will also actively contribute to developing the business models under WP3. Metropolitan municipalities CMM and GLYON will set up and convene expert groups in their areas that review the business models and tools at different stages of development. These expert groups will consist of interested experts from municipalities and other relevant institutions in the two metropolitan areas, such as private sector water utilities or landowners. Access to stakeholder groups in Lyon will be facilitated by the University of Lyon's existing IMU LabEx project of which INRAE and INSA are members.

T6.1. Stakeholder mapping and development of stakeholder engagement framework (M1– M14)
Task Leader: ICLEI; **Contributors:** AU, ALCN, CMM, FER, GIRONA, GLYON, INRAE, OSLO

ICLEI will closely collaborate with the lead partners in WP1, WP3, WP4 and WP5; the municipal partners (GIRONA, OSLO, GLYON and CMM); and gender expert FER to develop a co-design framework (D6,1). This will be composed of effective and inclusive methodologies and formats for engaging stakeholders for the various

purposes foreseen. It will guide the sharing of knowledge and experience, documentation of lessons learned, integration of expert views into the monitoring of co-benefits, evaluation of the MULTISOURCE pilots, and development of the MULTISOURCE business models (WP3) and tools (WP4 and WP5). In parallel, GIRONA/ICRA, INRAE, IRIDRA, ICRA, MSU, NIVA/OSLO, RIETLAND, UFZ and ALCN will each undertake a stakeholder mapping exercise in the pilot locations using guidance and templates provided by ICLEI, while FER will assist in identifying women's organisations to be included. Each partner leading a local stakeholder engagement process (whether for a pilot or tool/business model) will use their resulting stakeholder map and the co-design framework to establish a locally-specific approach in Task 6.2.

T6.2: Implementation of stakeholder engagement framework: local stakeholders (M10 – M48)
Task Leader: ICLEI; **Contributors:** AU, ALCN, CMM, FER, GIRONA, GLYON, ICRA, INRAE, OSLO, MSU, UFZ

Building on the co-design framework and in close coordination with the municipal partners, relevant WP leaders and FER, ICLEI will support implementation of stakeholder engagement activities as defined in Task 6.1. Expected activities include testing the MULTISOURCE tools with end-users in a real-life context, as well as setting up expert groups with interested professionals from different backgrounds to benefit from a range of perspectives and expertise. With respect to the pilots, the degree of engagement with local stakeholders will vary, from a high intensity for the Living Lab (in Girona) to a moderate intensity for other pilots, e.g. local expert groups meeting periodically in virtual and physical forums. Where a Living Lab is in place (or to be established), ICLEI and FER will provide ongoing guidance on effective co-design, including stakeholder mapping to ensure the equitable inclusion of relevant groups, especially vulnerable and under-represented groups. Stakeholders are to be defined in Task 6.1, but are expected to include public (e.g. municipal departments for water, environment, sustainability, and economy), academic (tertiary level, but also primary/secondary schools) and private sector institutions (e.g. water utilities), as well as civil society groups (e.g. cultural associations, food cooperatives, and women's organisations, wherever relevant). For the development of the tools and business models, the focus will be on end users, likely to be technical staff working in municipal departments or private companies (e.g. urban planners, landscape architects, or hydraulic engineers).

T6.3: Implementation of stakeholder engagement framework: international partners (M1 – M48)
Task Leader: ICLEI; **Contributors:** HCMUT, FER, INRAE, MSU, UFSC

ICLEI will coordinate the input of international partners from Brazil, the United States and Vietnam by building opportunities for their interaction with project partners and organising their participation in European project events. In the USA, international partner MSU will also contribute experiences and lessons learnt from a local ENTS pilot (although with a lesser depth of stakeholder involvement and analysis than foreseen for the European pilots). Where suitable relationships exist, ICLEI will support these partners in liaising with relevant programmes and institutions in their home countries to explore partnerships and funding options for replicating MULTISOURCE solutions in their own countries. In Brazil and Vietnam, ICLEI will also co-organise one workshop each, including site visit, in Brazil and Vietnam for both dissemination purposes and exchange on relevant technological, environmental, social and/or economic aspects of NBS^{WT} between selected project partners from Europe and local experts in the two countries. Gender expert FER will identify possible gender issues relevant to these international contexts, which are likely to differ from the European pilot locations.

T6.4: Implementation of stakeholder engagement framework: International Advisory Board (M7 – M48)
Task Leader: ICLEI **Contributors:** AU, FER, INRAE

Six internationally renowned experts in natural (specifically water) resources and wastewater management have confirmed their participation in the International Advisory Board (IAB), They will follow the project as 'critical friends', provide their input and feedback during the co-design processes for the various tools and business models developed under WP3,WP4 and WP5 and observe the inner coherence, effectiveness and impact of the project across all WPs. Roles and responsibilities of the IAB members will be defined via a Memorandum of Understanding and they will be given the opportunity for first-hand impressions of the pilots in MULTISOURCE through site visits organised alongside other project events. The IAB will be regularly updated when key milestones in the development of the business models and planning tools have been achieved and will feed their further development with their profound technical expertise in natural resources (especially water) management and climate change resilience. They will also make links to further relevant experts and institutions in their professional environment to support the outreach activities under WP7.

T6.5: Analysis of social equality and social inclusion (including gender mainstreaming) (M1 – M48)
Task Leader: FER; **Contributors:** ALCN, AU, CMM, GIRONA, GLYON, FER, HCMUT, ICLEI, ICRA, INRAE, IRIDRA, MSU, NIVA, OSLO, RIETLAND, UFSC, UFZ

FER will conduct a workshop on gender mainstreaming and related aspects with all project partners at the project kick-off meeting. This will enhance project partners' awareness of and sensitivity to critical issues that are to be considered in the envisaged stakeholder engagement processes around water treatment and NBS. Supported by ICLEI, FER will further lead an analysis of existing knowledge on the interplay between NBS^{WT}, social equality and social inclusion and draft a paper on the key results. Based on this groundwork, and the experience gained through pilot monitoring and the development of tools and business models, ICLEI (supported by FER) will develop two knowledge briefs targeted at policy-makers and practitioners responsible for water management (and water treatment more specifically), containing recommendations on how to improve social inclusion (and specifically gender equality).

Deliverables

D6.1 – Co-design framework, M14
D6.2 – Progress and lessons learnt from the stakeholder engagement in MULTISOURCE pilot locations (interim and final report), M30 and M48
D6.3 – International Advisory Board engagement reports (mid-term and final report), M30 and M44
D6.4 – Two knowledge briefs on selected topics related to social equality, inclusion and gender mainstreaming in NBS for water management, M42
D6.5 – Recommendations for the use of MULTISOURCE business models and tools in Brazil, the United States and Vietnam, M46

WP number	WP7					**Lead**			WE		Start Month			M1		End Month			M48	
WP title	Communication, Clustering and Dissemination																			
Participant no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	**20**
Short name of participant	INRAE	AU	GIRONA	ALCN	FER	UFZ	HCMUT	ICLEI	ICRA	IT	INSA	IRIDRA	GLYON	CMM	MSU	NIVA	OSLO	RIETLAN	UFSC	**WE**
Person-months	4	4	1	2	4	2	2	3	4		1	2	1	1	1	2	1	1	1.5	**19.6**

WP Leader: Andrea Rubini (WE)

Objectives

WP7, in coordination with WP6, will guarantee visibility and engagement of stakeholders applying a multichannel communication approach, and will support the exploitation strategy. The objectives of WP7 are to:

- Produce a strategic dissemination plan together with a MULTISOURCE brand to serve as a strong foundation for subsequent communication and dissemination activities;
- Raise awareness and maximise impact of MULTISOURCE objectives, achievements and tools through digital (web presence, e-newsletter, social media) and printed (brochures, leaflets, etc.) means;
- Engage and maintain a strong stakeholder network through a series of events, workshops and coordinated presence at relevant industry conference;
- Build synergies amongst research and innovation projects on NBS to support knowledge exchange and best practices.

Description of work and role of participants

The communication, clustering and dissemination activities aim to reach a wide range of stakeholders from research, industry, government, local communities, universities and students. The activities developed within this work package have been tailored to key target audiences in order to maximize the visibility, awareness, and impact of MULTISOURCE outcomes. Different communication and dissemination channels are planned, including traditional methods (website, printed or electronic promotional material, press releases, and scientific publications as well as more innovative methods (online communication tools or competitions). Working in close collaboration with WP6, WP7 will build relationships between the project and associations focusing on similar themes and activities worldwide, establishing lasting synergies with these stakeholders and other ongoing related projects.WP7 will promote international outreach. The MULTISOURCE International Partners from Brazil and Vietnam will also each organize a technical workshop in their home country, including a site visit to a relevant NBS^{WT} implementation project, inviting several project partners as well as national experts in order to share with the MULTISOURCE project best practices that have been developed in their own professional context.

T7.1. Communication and dissemination activities (M1– M48)
Task Leader: WE; **Contributors:** All partners

This task will produce the following communication and dissemination tools:

- **A detailed communication and dissemination plan**, which will be a living, evolving document as the project progresses. This plan will identify the dissemination objectives, activities, target audience, tools and deadlines and will determine how the project communicates with the outside world and with key target audiences and will define the mechanisms needed to ensure the long-lasting visibility of the project after its closure.
- **Corporate identity and corporate materials** (logo, templates and style guide) will be developed with the objective of informing the consortium about the layout and design for the brochure, presentations, web pages, and newsletters.
- **Project website**: WE will set up a website as the main source of information. WE will maintain the website and all partners will contribute with material and content. The public website will inform the wider community of the objectives of the project and its progress.
- **Social media:** Presence in social networks is essential to ensure the visibility and dissemination of the project. In that sense, LinkedIn, and Twitter accounts will be used to disseminate the project's outcomes and maintain the information flow between the project and its audience. By using social media tools, projects can establish an online influence that will keep their followers highly engaged in their activities.
- **Other dissemination actions:** a set of dissemination actions will cater to a range of promotional resources to communicate to stakeholders in a professional and engaging way.
- **Brochures, posters and roll up banners**: The first brochure will be developed in M6 to help attract audiences and build on the first social media actions. The second will build on the tangible results and experiences from case studies in Year 3 of the project. An A1 poster and roll up will also give key facts and outputs and be available for consortium members use.
- **Video:** a short, promotional video will be developed summarizing the challenges of NBS in the water and aligned sectors, the project's objectives and expected results.
- **E-Newsletter:** One e-newsletter per year is planned in the course of the project. These will summarise the work and the progress made in the project. The newsletter will be released to a targeted recipients' list that will be built in close collaboration with WP6.

T7.2: Networking activities (M1– M48)
Task Leader: WE; **Contributors:** All partners

This task will involve participation, setting up and organisation of project meetings and technical forums/workshops and conferences as well as the organization of local, regional and European workshops and events. It is envisaged that each project partner will participate in an average of three events, for a total of 60 instances of MULTISOURCE networking activities. Potential events are described in Section 2.2.6 and include IWA Specialist Group Conference on Wetland Systems for Water Pollution Control (300 – 400 people per event, biannually, next events in 2022 and 2024); WETPOL conference (300 people per event, biannually, next events in 2021 and 2023); Amsterdam International Water Week (approximately 1,250 participants, biannually, next events in 2021 and 2023). A final event will also be organised in conjunction with the final consortium meeting.

Aiming at maximizing impact and engagement amongst different stakeholders, MULTISOURCE has scheduled, described into detail in Section 2.2.5 an ambitious agenda of events and workshops to pursue a double objective. These events will serve as a hub to disseminate MULTISOURCE activities, tools and results while also providing the necessary inputs to create the enabling framework for the co-creation of MULTISOURCE business models and tools.

T7.3: Clustering activities (M1 – M48)
Task Leader: WE; **Contributors:** All partners

Clustering activities and liaising with other NBS-related projects and sister projects funded under the SC5-27-2020 call will be of especial relevance for MULTISOURCE. These actions aim at exploring and harmonising the following areas:

- New governance, business, financing models and economic assessment tools
- Operationalising value of ecosystems
- Identifying emerging areas of concern and challenges for research and innovation about ecosystem services, biodiversity and natural capital, in the view of the impact of the European Green Deal.
- Dissemination and exploitation of knowledge and learning on biodiversity and ecosystem services
- Mapping Ecosystems and their services

- Demonstrating innovative NBS in cities and urban Water-Oriented Living Labs to facilitate market outreach and uptake of innovative solutions.

For this purpose, WE has launched a new set of WE events named Water Projects Europe (WPE). WPE aims at clustering water-related projects by thematic areas to allow them to interact, mutually build on the respective experience and outcomes, facilitate the transition from lower to higher TRLs and to foster market outreach. WE will also organise smaller and targeted meetings with other relevant projects, including parallel projects approved under SC5-27-2020, Working Groups on NBS and Resource Recovery from IWA and the Water Europe NBS Working Group; networks such as Nature4Cities, BiodivERsA, CLEVER Cities, MAES Urban Pilot, Eklipse, URBINAT, Grow Green, Women for Water Partnership, NetworkNature, the PEER cluster, UrbanByNature, Green City Accord, Water Europe Working Group on Urban Water Pollution, Water Europe Working Group on NBS, Water Europe Working Group on Ecosystem Services, IWA Cities of the Future/Principles for Water-Wise Cities.

In addition, WE will facilitate clustering activities through the Water-Oriented Living Labs (WoLLs) programme that includes the establishment of a WoLLs Network as a catalyst for the adoption of NBSs related innovations. This action will (i) support the creation of an enabling environment and ambitions to encourage a large variety of stakeholders from various economic sectors to come together, commit and engage in the NBS, and (ii) increase the visibility and dissemination of knowledge and finding on NBS within the WoLLs that are necessary to promote the adoption of innovative solutions and secure investments.

T7.4: Policy impact strategy and recommendations (M13 – M48)
Task Leader: ALCN; **Contributors:** All partners

ALCN and WE will develop a policy impact strategy defining channels at regional/municipal, national, EU and international levels to impact policy-level visions and policy instruments (regulatory adaptations, standards, fiscal incentives etc.). WE's Advocacy Programme for innovative and progressive water policy will be leveraged to reach EU and national-level stakeholders. Inputs to global reference outlets e.g. by IWA, UN-Water, UNEP, FAO will also be targeted to disseminate at an international level.

ALCN and WE will translate relevant project results (from WP1, WP2, WP3, WP4, WP5, and WP6) to recommendations for policy adaptations at EU level and national levels of selected partner countries, including inputs to the next review of the EU Water reuse Guidelines. Existing policy gap analyses as well as expertise and experience of project partners and stakeholders will provide the starting point. ALCN and WE will draft yearly policy briefs and disseminate them via wider outreach channels and direct communication with policy actors.

Deliverables

D7.1 – Communication and dissemination action plan, M3
D7.2 – Portfolio of communication and dissemination material, M29
D7.3 – Three policy briefs, M24, M36, M48
D7.4 – Clustering activities, M28, M48
D7.5 – Final report on communication and dissemination activities, M48

WP number	WP8					**Lead**			INRAE		Start Month			M1		End Month			M48	
WP title	Project Management																			
Participant no.	**1**	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Short name of participant	**INRAE**	AU	GIRONA	ALCN	FER	UFZ	HCMUT	ICLEI	ICRA	IT	INSA	IRIDRA	GLYON	CMM	MSU	NIVA	OSLO	RIETLAN	UFSC	WE
Person-months	**17**					3			3	28										

WP leader: Jaime Nivala (INRAE)
Objectives

The main aim of WP8 is to ensure effective and efficient project coordination and management. The objectives of this WP are three-fold:

- At the strategic level, to steer the project to ensure the project reaches its objectives and to do so addresses all unexpected situations, be these scientific, technological, environmental or societal;

- At the operational level, to put in place the procedures and tools needed to ensure that the project progresses in compliance with the Grant Agreement, the Consortium Agreement and the project work plan and produces timely and quality results;
- At the administrative level, to organise project meetings, administer project payments, prepare project reports and ensure efficient collaboration and communication amongst partners.

Description of work and role of participants

The coordination and overall management of the project will benefit from the management expertise of INRAE, together with the experience of the project management team (INRAE Transfert – IT) and the WP leaders (person-months for ExCom role in management have been foreseen in the respective WP person months and budget). The overall coordination will be the sole responsibility of INRAE, who will be the legal entity responsible for all contractual arrangements and reporting to the EC, while IT will assist the coordinator with tasks related to operational, technical and financial management. See Section 3.2.1 for details of the project governance.

T8.1. Strategic steering (M1– M48)
Task Leader: INRAE; **Contributors:** IT

With the support of IT and the project governance, INRAE will:

- Chair the General Assembly (GA) and Executive Committee (ExCom) meetings and ensure follow-up of decisions
- Survey and interact with scientific and technological developments in the field and of other international and national initiatives including interactions with other related on-going projects or initiatives (Clustering activities see WP7).
- Analyse events that may impact the project and, if necessary, propose changes to the project orientations to the GA for decision-making
- Ensure that contingency measures are implemented in response to risks identified during the project
- Ensure efficient management of the Grant Agreement with EC-REA team and in line with the Consortium Agreement
- Agree on the distribution of the EC financial contribution according to the Grant Agreement and the Consortium Agreement.

T8.2: Scientific coordination and project monitoring (M1 – M48)
Task Leader: INRAE; **Contributors:** IT

INRAE will lead and manage this task with the assistance of IT for all operational activities. In terms of scientific coordination, this includes:

- Coordination of scientific activities across WPs and partners, in line with the work plan.
- Present the scientific progress of the project at project reviews and other relevant events
- Monitoring the scientific quality of the results according to the Grant Agreement and the state-of-the-art
- Risk management through appropriate mitigation measures and alternative plans.
- Oversee innovation management activities to ensure appropriate dissemination and exploitation of results.

The support team at IT will put in place appropriate tools to facilitate the monitoring of the work plan, resource use and delivery of quality outputs notably:

- Management Guidelines, which will outline the project management and quality control procedures.
- Establishment of a Collaborative Platform (online project intranet), designed to enable secured and real-time storage and exchange of all the project information.
- The Risk Management Plan, which will outline the process for identifying and mitigating risks in the project and include a risk register to be reviewed at ExCom meetings.

Project management guidelines and procedures will be evaluated by the project management team mid-project in order to adjust and improve processes and tools as relevant. This evaluation will be carried out via a simple questionnaire and with one to one phone interviews as required.

T8.3: Administrative, logistical and financial management (M1 – M48)
Task Leader: IT; **Contributors:** INRAE

IT, in close collaboration with INRAE, will take care of all the operational activities related to administrative, logistical and financial requirements:

- Day-to-day administrative and logistic issues, including the organisation of project meetings and their follow-up (KOM, Annual Meetings except the final meeting (WP7), ExCom e-meetings, GA meetings.
- Appraisal and monitoring of the project costs incurred globally, per work package and per participant in order to foresee, monitor and control the costs incurred.

- Preparation and follow-up of EC payments.
- Assistance to individual project partners on specific administrative issues.
- Minutes of the project governing bodies' meetings (ExCom and GA) and annual meetings.

IT will also ensure reporting requirements are properly conducted:

- Consolidating periodic and final activity reports and quality control of financial reports (as specified in the Grant Agreement and including periodic cost claims by all project partners).
- Organisation of project reviews to be organised with the EC-REA.

T8.4: Data Management (M1 – M48)
Task Leader: ICRA; **Contributors:** INRAE, UFZ

Within this task, a comprehensive report will be provided on the monitoring data to be produced, homogenized, stored and maintained. The data collected by MULTISOURCE will include data from literature review, experts' interviews and other existing real case studies. The consortium pays special attention to the nature of data: knowledge area, multidimensionality, numerical format, supporting information, as well as ownership. The Data Management Plan (DMP) specifies all data formats, amount of data to be produced, and whether data will be shared on open access or has restrictions. The project adheres to the FAIR (Findable, Accessible, Interoperable, Reusable) principles for data management, as promoted by the European Commission.

The most suitable data formats will be determined, with a focus on data homogeneity and interoperability. The data management plan will ensure that all observation data can be seamlessly imported into the MULTISOURCE tools notably by the implementation of Application Programming Interfaces (APIs). The DMP will document the allocation of resources for data management and all data security and ethical aspects. In total, nine person-months are allocated to this task, which is shared equally between UFZ, INRAE and ICRA. The DMP is a dynamic document and will be updated during the project on an as-needed basis. To guarantee long-term use of the MULTISOURCE data and results, the curation will be hosted on the INRAE dataverse repository (https://data.inrae.fr/) and the metadata will be connected to NBS^{WT} related databases (e.g. NetworkNature) to increase project result visibility and continuity during and beyond the duration of the project.

Deliverables

D8.1 – MULTISOURCE management guidelines, M2
D8.2 – Establishment of the Collaborative Platform, including user guide, M4
D8.3 – Data Management Plan, M6
D8.4 – Evaluation of management tools and procedures, M24

Table 3.3. List of deliverables.

Number	Title	Lead Partner	Type	Level	Due date
D1.1	ICT / Digitalization tools workshop	ICRA	OTHER	PU	M23
D1.2	Monitoring final report	AU	R	PU	M40
D1.3	Pilot evaluation, including ENTS pilot factsheets	IRIDRA	R	PU	M47
D2.1	Unknown and new organic pollutants	AU	R	PU	M20
D2.3	Risk analysis of pilot effluent for reuse	UFSC	R	PU	M36
D2.2	Cumulative and Probabilistic Risk Assessment of pilots	NIVA	R	PU	M42
D3.1	Reference handbook: financing and O&M best practices	ALCN	R	PU	M5
D3.2	Cost-benefit functions and results data	AU	OTHER	PU	M30
D3.3	Descriptions of new business models including technical design guidelines	ALCN	R	PU	M36
D3.4	Practical guidelines to business model development	ALCN	R	PU	M42
D3.5	Set of recommendations for gender-responsive bidding documents and gender-responsive PPP contracts.	FER	R	PU	M48
D4.1	Research paper on the interplay between NBS and gender equality	FER	R	PU	M12
D4.2	Establishment of an international knowledge base on NBS^{WT} and ENTS	ICRA	R	PU	M36
D4.3	Scientific article on the LCA method development and application on real cases studies.	INRAE	R	PU	M36

D4.4	MULTISOURCE Technology Selection Tool: prototype complete	ICRA	DEM	PU	M42
D4.5	Publication of open-access textbook on NBS^{WT}	INRAE	R	PU	M42
D4.6	MULTISOURCE Technology Selection Tool: publication of web-based tutorials	ICRA	R	PU	M45
D5.1	Urban archetype maps	UFZ	OTHER	CO	M18
D5.2	Characteristics of urban regions disconnected from sewer	INSA	OTHER	PU	M24
D5.3	Urban water management scenarios developed	UFZ	R	PU	M30
D5.4	Prototype available for planning platform code	UFZ	OTHER	PU	M36
D5.5	Urban water management scenarios ranked	UFZ	R	PU	M48
D6.1	Co-design framework	ICLEI	R	PU	M14
D6.2	Progress and lessons learnt from the stakeholder engagement in MULTISOURCE pilot locations	ICLEI	R	PU	M30, 48
D6.3	International Advisory Board engagement reports (mid-term and final)	ICLEI	R	PU	M30, 44
D6.4	Two knowledge briefs on selected topics related to social equality, inclusion and gender mainstreaming in NBS for water management	FER	R	PU	M42
D6.5	Recommendations for the use of MULTISOURCE business models and tools in Brazil, USA and Vietnam	ICLEI	R	PU	M46
D7.1	Communication and dissemination action plan	WE	OTH	CO	M3
D7.2	Portfolio of Communication and Dissemination material	WE	DEC	PU	M9
D7.3	Three policy briefs	ALCN	R	PU	M24, 36,48
D7.4	Clustering activities	WE	R	PU	M28, 48
D7.5	Final report on communication and dissemination activities	WE	OTH	CO	M48
D8.1	MULTISOURCE Management guidelines	IT	OTHER	PU	M2
D8.2	Collaborative Platform guide	IT	OTHER	PU	M4
D8.3	Data Management Plan	ICRA	R	PU	M6
D8.4	Evaluation of Management tools and procedures	IT	R	CO	M24

R - software, technical diagram; PU - public, fully open; CO - confidential; CI - classified.

3.1.4 Work package interdependencies

As indicated in Figure 1.3 and Figure 1.4, MULTISOURCE WPs are strongly interdependent. Table 3.4 outlines the most important connections and information flow between various work packages.

Table 3.4. Interdependencies and information flow between the various WPs.

Information Flow	Content
WP1 → WP2	Import of pilot monitoring data to NIVA RAdb
WP1 ← WP2	Cumulative risk assessment for pilot optimization
WP1 → WP3	Inclusion of additional benefits of pilot technologies into monetization of value proposition Inclusion of findings from gender disaggregated data into gender tools for business models
WP1 → WP4	Pilot data import into Technology Selection Tool
WP1 → WP4	Participatory methods for quantification of co-benefits
WP1 → WP5	Pilot technologies as options in MULTISOURCE Planning Platform
WP1 ← WP6	Citizen science involvement at MULTISOURCE pilots
WP1 → WP7	New knowledge about pilot design and performance for a wide range of pollutants
WP1 → WP7	ICT / digitalization workshop
WP2 → WP3	Cumulative risk assessment of pilots based on reuse application
WP2 → WP4	Risk assessment included in Technology Selection Tool
WP2 → WP5	ENTS risk assessment included in scenario ranking
WP2 ← WP6	Local stakeholder workshops to identify relevant barriers to urban water reuse
WP2 → WP7	Recommendation for use of NBS^{WT} in urban water cycles

WP3 → WP4	Circularity assessment and identification of secondary resources provided by pilots
WP3 → WP4	Cost-benefit equations to be used in Technology Selection Tool
WP3 → WP5	Definition of cost-benefit methodology
WP3 ← WP5	Scenario development based on innovative financing strategies
WP3 ⇄ WP6	Co-creation of business models, public-private partnership concepts, gender equality
WP3 ⇄ WP6	Co-organization of stakeholder workshops in BE, DE, ES, FR, IT, NO, US
WP3 → WP7	Development of guidelines for financing strategies
WP3 → WP7	Ensure replicability of business models in a wide range of conditions
WP3 → WP7	Map barriers and drivers of uptake at national, EU, and international levels
WP4 → WP5	Ranking of cost and ecosystem services of different scenarios using novel LCA
WP4 ⇄ WP6	Evaluation of tool with municipalities, metropolitan municipalities & international partners
WP4 → WP7	Training workshops for Technology Selection Tool
WP4 → WP7	Open-access publication of process design, operation and maintenance of NBS^{WT}
WP4 → WP7	Best practices for newly developed pilot technologies
WP5 ⇄ WP6	Scenario development tailored to stakeholder input
WP5 → WP7	Training workshops for the MULTISOURCE Planning Platform
WP5 → WP7	Local case studies for individual municipalities and metropolitan municipalities
WP6 → WP7	Stakeholder involvement in dissemination activities
WP6 ← WP7	Clustering activities with other Water-Oriented Living Labs
WP8 → all WPs	Scientific and administrative management; data management
WP8 → all WPs	Equitable inclusion of gender and socio-economic aspects

3.2 Management structure, milestones and procedures

3.2.1 Consortium governance and milestones

The MULTISOURCE governance has been designed to fit with the complexity and scale of the project (Figure 3.1). The governance structure has different levels to distinguish operational management, innovation management, conflict resolution, and scientific/technical & strategic advice. The capacity of each group is indicated in Figure 3.1 (either decision-implementing, decision-making, or advisory).

The project management will be carried out by the coordinator with strong support from the Project Management Team (PMT), and close interactions with the Executive Committee (ExCom). The Executive Committee will also directly interact with (i) the General Assembly to ensure that strategic decisions are taken in due time, (ii) the project's dedicated International Advisory Board (IAB).

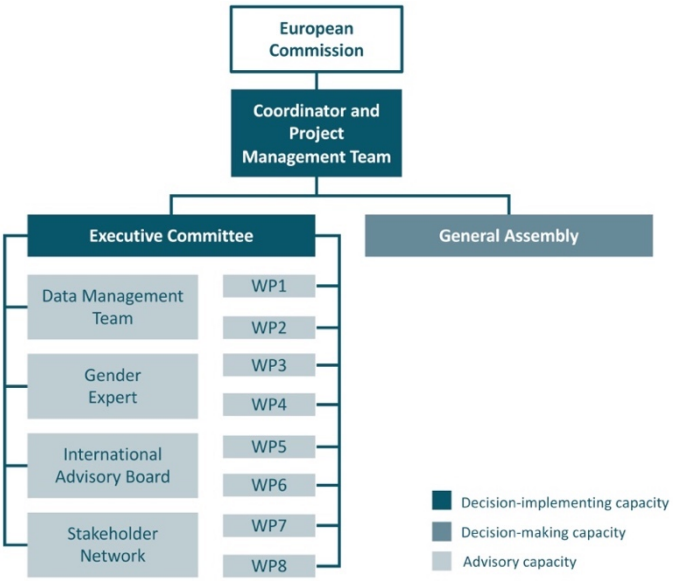


Figure 3.1. Governance structure of MULTISOURCE.

The Project Coordinator

The coordinator of the project is Dr. Jaime Nivala who is a research associate at INRAE. Dr. Nivala has 20 years of experience in the use of nature-based solutions for wastewater treatment. She specializes in the design, implementation, and management of technologies for the treatment of domestic and industrial wastewater, with a special focus on nature-based solutions for water treatment. Dr. Nivala has worked in the USA, Germany, Denmark, France, and has been involved in many international projects over the past 12 years, with an emphasis on projects in the Middle East: SMART-I (2008 – 2010), SMART-II (2011 – 2014), and SMART-MOVE (2015-2019). She has 30 peer-reviewed publications in top scientific journals, with 1,212 citations and an *h*-index of 16 (scopus, 02.09.2020). From 2012 – 2019, Dr Nivala was responsible for the scientific management of two research platforms at the Helmholtz Centre for Environmental Research (UFZ) in Leipzig, Germany, where she coordinated her department team within the "Integrated Project" on water scarcity. Dr. Nivala's work experience has given her a practical perspective and the ability to solve water problems for public and private sectors, as well as within the area of applied research in developed and developing countries.

The Project Coordinator's primary role is to act as the interface between the consortium and the EC and to promote and supervise the overall technical and scientific activities of the project. The coordinator will have day-to-day and administrative support from the Project Management Team.

Among other tasks defined by the EC Contract and the Consortium Agreement, the Project Coordinator oversees:

- Chairing the Executive Committee (ExCom) and the General Assembly, taking all actions to enable proper implementation of the decisions made by these bodies;
- Ensuring smooth operation of the project: work plan maintenance, monitoring project progress, analysing results, identification of problems and consequences for future work progress;
- Overseeing the writing of periodic reports on progress of the project and partner activities;
- Submitting all required progress reports, deliverables and financial statements to the EC/REA;
- Communicating all information in connection with the Project to the Commission/REA;
- Transferring the advance payments and further payments to the participants as per the provisional budget and the actual expenditure as approved by the General Assembly.

The Project Management Team (PMT)
Role: The primary role of the Project Management Team (IT) is to provide support to the coordinator (INRAE), the organisation solely responsible for the project coordination. IT will oversee the day-to-day administrative, logistics and financial tasks as well as putting in place the procedures and tools for project management and monitoring.

Composition: The PMT is made up of an experienced project manager and support staff at IT to ensure the efficient implementation of the project.

Meetings: The PMT will hold weekly virtual meetings with the Coordinator to ensure that project management support and Coordination are well aligned.

Decision-making: The PMT may make recommendations for decision-making but has a decision-implementing role.

IT will provide support for the following tasks:

- Project administration (including planning, preparation and follow-up, including minutes, of these meetings);
- Consolidation of the periodic EC project reports and any internal project reports;
- Support the monitoring of completion of milestones and production of deliverables;
- Financial administration (monitoring of expenses against budget allocations, consolidation of financial summary sheets, and certificate on the financial statements, if applicable);
- Consolidation and verification of the cost claims in line with the contractual requirements, their conformance with the work done and the Certificate of Financial Statement to be produced by relevant partners;
- Organisation of and post-processing of project meetings;
- Assistance to individual project partners on specific administrative issues;
- Assistance for internal communication and implementation and maintenance of the collaborative platform;
- Evaluating the efficiency of all project management tools and procedures.

The General Assembly (GA)
Role: The General Assembly (GA) is the decision-making body of the project. The GA will be responsible for the strategic and political orientations of the project: the overall direction of all WP activities– and re-orientation whenever necessary (budget revision, integration of new partners and dealing with defaulting partners).

Composition: Chaired by the project coordinator, the GA is composed of one representative from each partner organisation (20 members), each having one vote for decision-making.

Meetings: Meetings of the GA will be held once a year, unless the progress of the project may require intermediate meetings. In this case, the General Assembly meetings will be convened by the Coordinator or by at least 50% of its members. The secretariat of the General Assembly is ensured by the Project Management Team.

Decision-making: The GA requires a quorum of 2/3 of its members for decision-making and makes decisions upon a simple majority.

To ensure the relevance of the project's implementation plan regarding the progress of the project as well as external changes, the GA will:

- Analyse the risk register, performance indicators and all other relevant information provided by the Executive Committee;
- Analyse the evolution of the context in which the project is carried out, notably, strategic, legal, societal, political, economic aspects, etc.
- Take appropriate decisions in case of conflict between partners.

The Executive Committee (ExCom)
Role: The Executive Committee (ExCom) is the decision-implementing body of the project. Chaired by the Coordinator, the ExCom is composed of work package leaders, each of them having extensive management

experience in leading research groups, large-scale national projects and EU projects of previous and current Framework Programmes and strong experience in European networking and/or research projects.

The ExCom will oversee the operational management of all MULTISOURCE activities. It will also prepare the decisions to be taken by the GA and ensure that these decisions are properly implemented, integrating recommendations, and surveying ethical and gender issues. It will review abstracts before results are disclosed by project partners. The secretariat of the Executive Committee is ensured by the Project Management Team.

The ExCom will also oversee work package resource management. The ExCom will be supported by the work of the Project Management Team including quality control and preparing meetings with the EC, the preparation and transmission of deliverables. The ExCom will advise on the management of knowledge and of Intellectual Property (IP) and of other innovation-related activities arising in the project. This advice will comply with the rules established in the Consortium Agreement. The ExCom will (i) propose a set of guidelines to the partners summarizing the rules for the handling of results before publication, reports and deliverables under review and the technology transfer procedure; (ii) identify knowledge that requires protection, based on the progress reports and project deliverables; and (iii) propose measures of knowledge protection (e.g., patents) and dissemination (e.g., publications).

Composition: Chaired by the coordinator, the ExCom is composed of the following work package leaders.

- Dr. Jaime Nivala (F), INRAE, WP8 leader
- Dr. Pedro Carvalho (M), AU, WP1 leader
- Dr. Sondre Meland (M), NIVA, WP2 leader
- Dimitra Theochari (F), ALCN, WP3 leader
- Dr. Joaquim Comas (M), ICRA, WP4 leader
- Dr. Jan Friesen (M), UFZ, WP5 leader
- Barbara Anton (F), ICLEI, WP6 leader
- Andrea Rubini (M), WE, WP7 leader

Meetings: Meetings of the ExCom are held through monthly videoconference (unless the interests of the project may require intermediate meetings) plus a physical meeting during the annual project meeting.

Decision-making: The ExCom makes decisions by consensus, or if not possible, based on a simple majority. No contractual decisions are made by the ExCom but only operational decisions. The ExCom will prepare decision-making at GA level. This ExCom will work interactively, communicating regularly through the internal collaborative workspace and audio/video conference tools.

The International Advisory Board (IAB)

Role: The International Advisory Board (IAB) members will follow the project as 'critical friends' who will provide their feedback during the co-design processes for the various models and tools and observe the coherence, effectiveness and impact of the project across all WPs. Roles and responsibilities of the IAB members will be defined via a Memorandum of Understanding and they will be given the opportunity for first-hand impressions of the ENTS pilots in MULTISOURCE through site visits organised alongside other project events. Cooperation with stakeholders is an essential aspect of MULTISOURCE. The involvement of the IAB will: 1) ensure a co-design process is carried out at all stages of the project, 2) provide external points of view on the work plan of the project, 3) act as a key dissemination channel for project outcomes. The IAB involvement will also ensure that the knowledge produced by other already existing initiatives, new ideas and emerging initiatives are duly considered.

Composition: The IAB is composed of renowned international experts from organizations including the International Union for the Conservation of Nature (IUCN), the International Water Association (IWA), and The Nature Conservancy (TNC), as well as national experts from industry, research, and public agencies. All IAB members have confirmed their participation with letters of support (see Table 3.5; see also letters of support in Annex 1)

Table 3.5. Confirmed MULTISOURCE International Advisory Board Members.

Name	Institution	Country	Expertise
Paula Kehoe, Director of Water Resources	San Francisco Public Utilities Commission	USA	Sustainable urban water management, alternative water sources, public education
Sudhir Pillay PhD, Research Manager	Water Research Commission	SA	Sanitation and sustainable urban water management, decentralized wastewater treatment
Trine Munk, Head of Resilience	Ramboll	DK	Water and climate resilience, urban planning
James Dalton, Director, Global Water Programme	International Union for the Conservation of Nature (IUCN)	SW	Nature-based solutions in urban environments, communications and knowledge management
Katharine Cross, Strategic Programmes Manager	International Water Association	Thailand	Water resource management from local to global scale, water governance and policy
Rob McDonald PhD, Lead Scientist, Global Cities	The Nature Conservancy	USA	Urban conservation, role of green infrastructure in urban well-being

The individuals of the IAB have committed to provide feedback, quality control and advice for aligning MULTISOURCE outcomes with the needs of end-users and stakeholders, and to suggest strategic actors who can support the fair and equitable inclusion across gender and groups of under-represented and/or disadvantaged persons. They will provide advice for accelerating creating synergies and opportunities for the uptake of nature-based solutions for urban water treatment, storage and reuse using the MULTISOURCE tools and business models.

Meetings: The IAB will be engaged via email, webinars and physical meetings. All IAB members will be invited to selected project meetings. A dedicated budget under INRAE (Project Coordinator) is foreseen for travel and subsistence costs for IAB members to attend selected physical meetings.

Decision-making: Advisory.

Gender Expert

The Gender Expert, represented by FER is the key staff member within MULTISOURCE dealing with its gender mainstreaming strategy and building capacities for incorporating gender equality into the project's work, in terms of content and, in cooperation with ICLEI processes. As a Gender expert, FER role will be to promote increased attention to and integration of gender into project activities and outcomes. Responsibilities of the Equitable Development Advisor include:

- advise the ExCom on gender issues throughout the consortium and project activities to make MULTISOURCE inclusive and equitable as possible;
- develop capacity of the consortium by identifying the needs of partners for information and training in gender equality and mainstreaming, and obtaining relevant documents and training material which will empower them to apply a gender lens to their future work beyond this project;
- participate actively, provide technical support and contribute to activities of relevant WPs on gender equality by incorporating this perspective to all stages: planning, implementation, reporting, communication and evaluation;
- analyse existing knowledge on the interplay between NBS, societal challenges, participatory processes, community inclusion, integrated water resource management and equitable development.

As the gender expert, FER will be associated in each ExCom e-meeting. FER will work in close cooperation with the coordination team, WP6 leaders and Executive Committee and will be responsible for the coordination, monitoring and evaluation of the project's equitable development mainstreaming strategy in order to ensure inclusiveness of MULTISOURCE.

Decision-making: Advisory capacity and awareness-raising capacity.

The Data Management Team (DMT)

The Data Management Team will advise on the management of data generated by the project. More particularly, it will be composed of experts in data management from partners organisations (ICRA, INRAE, and UFZ) and will advise on i) how to manage MULTISOURCE data according to the FAIR principles (Findable, Accessible, Interoperable and Reusable), ii) how to deal with personal data according to General Data Protection Regulation (GDPR), and iii) data sharing in the particular context of cooperation with international partners.

Meetings: The DMT will be engaged via email, webinars and physical meetings.

Decision-making: Advisory capacity and awareness-raising capacity.

The Stakeholder Network

Role: All the Stakeholder Network members will provide two-way communication between the consortium partners and a wide variety of stakeholders. It will also serve as a channel for disseminating the project at local, national, European and international levels, creating widespread awareness of the MULTISOURCE business models, tools and other outcomes. By supporting the dissemination of the results generated by the project, it will support the implementation and integration the developed tools, processes and methods.

Composition: The composition of the Stakeholder Network will evolve along with the project. The Stakeholder Network, which is a separate entity from the International Advisory Board, is already confirmed by letters of support from 26 individuals from organizations including: cultural societies, local water administrations, national ministries, cities and municipalities, non-profit organizations, private companies, public agencies and bodies, regional authorities, a publishing association, and universities (see letters of support, Annex 2). The Stakeholder Network has a strong international base, with members from Brazil (2), Canada (1), France (3), Greece (1), Italy (4), Netherlands (1), Norway (4), South Africa (1), Spain (6), United Kingdom (1) and United States (1), which will be increasingly expanded over the course of the project.

Meetings: The members of the Stakeholder Network will be invited to project meetings and will interact with the ExCom during the project.

Decision-making: Advisory capacity.

Table 3.6. List of milestones.

Milestone Number	Name	Leader	WP	Means of Verification	Due Date
M1.1	Monitoring start	AU	1	Pollutant and sampling plan per pilot defined and pilots operational	M4
M1.2	Real-time monitoring tools	AU	1	Best sensors and tools to be rolled to other partners are selected	M16
M1.3	Yearly monitoring	AU	1	One year of monitoring data from the pilots is treated and available for the modelling effort	M19, M31
M1.4	Pilot optimization plan	AU	1	Modelling data from WP5 is analysed and the required methodology to evaluate limits of pilots is defined	M30
M1.5	Modelling data for pilot evaluation	AU	1	Data from all other WPs necessary to perform the evaluation of each pilot is collected	M42
M2.1	Non-target screening of hazardous chemicals and microplastic analysis accomplished	AU	2	Data ready to be exported to other tasks and WPs	M19
M2.2	Import of microbiological data for risk analysis for reuse	NIVA	2	Data imported and ready to be processed	M30
M2.3	Import of monitoring data from the pilots to NIVA RAdb	NIVA	2	Data imported and ready to be processed in the NIVA RAdb (50%: M20, 100%: M32)	M20, M32
M3.1	Stakeholder co-created business models, with financing and MOM strategies for continuation and replication of pilots	ALCN	3	Presentation made to the IAB	M33
M4.1	Two workshops with stakeholders have been held to co-develop the tool	FER	4	Meeting minutes	M24
M4.2	Online publication of the MULTISOURCE selection tool prototype	ICRA	4	Operational on Internet	M42
M5.1	Archetype definitions defined	UFZ	5	Archetype classification scheme based on data from WP1 and 4, report	M12
M5.2	Baseline scenarios defined	UFZ	5	Report on baseline urban water management scenarios	M24
M5.3	Disconnection module	INSA	5	Software package for disconnection tool	M28
M5.4	Software structure & links to tools defined	UFZ	5	Report on the planning platform code structure and the links to WP1 and 4 data and results	M30
M5.5	Ranking defined	UFZ	5	Ranking methods defined to compare urban water management scenarios using qualitative and quantitative rankings, Report	M40
M6.1	Review of co-creation needs and opportunities across WPs completed	ICLEI	6	Report	M4
M6.2	Workshop on gender mainstreaming held	FER	6	Minutes	M6

M6.3	Stakeholder mapping complete and core stakeholder groups for engagement defined	ICLEI	6	List of stakeholders engaged in each city	M10
M7.1	MULTISOURCE website	WE	7	Website released	M6
M7.2	MULTISOURCE video	WE	7	Video on the website	M22
M7.3	WPE event	WE	7	Event report	M24
M8.1	Kick Off Meeting	INRAE	8	Minutes	M2
M8.2	Annual meetings	IT	8	Minutes	M12, M24, M36
M8.3	Final meeting	IT	8	Minutes	M48

3.2.2 Relevance of the organisational structure and decision-making mechanisms

The organisational structure of MULTISOURCE is adapted to the scale of the project as the different decision-making bodies cover the different levels of management needed (Table 3.7). The decision-making mechanisms are distributed amongst the different partners involved to ensure that each partner is committed to the success of the project and that fair and transparent decisions are taken in the case that any disputes arise.

Table 3.7. Level of management, governing bodies, and their individual roles in MULTISOURCE.

Level of management	Body	Role
Project governance	General Assembly	Political and strategic orientation, decision-making on any contractual changes
	Executive Committee	Operational management of all project activities and decision-implementing
Project coordination and management	Coordinator	Communication with EC, responsible for coordinating the project work plan and grant agreement
	Project Management team	Monitoring of the progress, risk management, day to day administrative, logistical and financial management
WP management	WP Leaders	Coordination of WP activities, progress reporting in WPs
Advisory & Awareness raising capacity	Gender Expert	Promote increased attention to and integration of gender in MULTISOURCE
	Data Management Team	Management of data generated by the project
Advisory	International Advisory Board	External experts in an advisory capacity
	Stakeholder Network	External stakeholders for dissemination, promotion, use of the project results

3.2.3 Innovation management

Innovation management will be carried out operationally in MULTISOURCE by the ExCom (Section 2.2) and will follow a process that creates a consistent and sustainable path for innovation through the tools and activities.

Strategic watch: The innovation management plan rests on continuous surveying of the environment in which the project takes place. This strategic watch includes:

- Identification of the most promising markets;
- Identification of stakeholders with an interest in using the project's tools and business models (or with an otherwise relevant contribution to make, e.g. possession of relevant knowledge, or likely impacted by the project outputs), analysis of their needs, and inclusion of a consistent and tailored co-creation approach with stakeholders through a dedicated WP (WP6);
- Regular review of the project progresses through interactions with the International Advisory Board;
- Identification of new regulations and socio-political contexts.

Periodic screening of potential new or improved products, services or processes along the project period will enable the identification of internal (within the municipality) or external (e.g. private sector) technical or market opportunities. The inclusion of cities (GIRONA, OSLO) and metropoles (CMM, GLYON) as project partners, as well as different networks, clusters, working groups and Living Labs, will provide access to real-world environments where policies are made and implemented, as well as to end-users targeted for uptake of the project results. This will ensure project partners are equipped with a good understanding of existing conditions, as well as potential entry points and obstacles to uptake of innovative technologies, tools and models.

Engagement with stakeholders: WP6 and WP7 will organise and foster a structured dialogue between the project consortium members and stakeholders, including end-users, which will enable input into the process of developing tools and business models, through iterative review of needs, prototype development and testing. Along with the stakeholder engagement actions in WP6 and networking, clustering and continuous social media actions from WP7, the project will address a broader audience of individuals with relevant knowledge and expertise.

Internal assessment and planning: Another principle followed by MULTISOURCE is to continuously analyse the project's results in view of identifying the most promising ones in terms of innovations. An initial analysis is provided in section 2.2. It will be reviewed along the project to capture and share amongst partners plans, be they individual or collective, for exploiting project results in the best manner to achieve the expected impacts.

3.2.4 Critical risks and contingency plan

Table 3.8. List of critical risks and risk-mitigation measures.

N°	Risk description	Probability	Impact	Proposed risk-mitigation measures
R1.1	Analytical delays either due to accumulation of high number of samples or instruments breakdowns	Medium	Low	The partners experience running pilots, the distribution of analytical work by the different partners, and the access to different analytical labs if needed minimises the problem
R1.2	Samples might get delayed which may compromise their integrity or even get lost during international shipment	High	Medium	Partners have worked internationally before and have optimized their courier options for sample transport. Loss of samples will be minimized by storage of several replicates by the sending partners.
R1.3	Pilot operational problems	Medium	Low	Pilots break down and maintenance is needed. Since systems will be constructed and operated under dedicated funding schemes, the mitigation of breakdowns and regular maintenance is ensured.
R1.4	Co-benefits monitoring is not possible. The co-benefits identified as most relevant per pilot may require efforts beyond what is budgeted.	Medium	Medium	Several co-benefits per pilot will be identified. Simultaneously the best methods to monitor them will be selected. These will allow to match what would be nice to have from what is possible to do and make the assessment realistic.
R1.5	Data is missing to complete the pilot evaluation	Low	High	All partners are committed to the project. The pilots have been financed by other funds and if not currently built are in the process of being. Several have their own basic monitoring scheme. So, monitoring efforts are further potentiated by MULTISOURCE. The WP milestones and deliverables are designed to maintain a tight control on data availability.
R2.1	Lack or delays of monitoring data from the pilots which will cause delays in risk assessment	Low	Medium	Instead of doing the risk assessment on 100% of collected data, we will perform risk assessment in two steps (once for 50%, again for 100% of data).
R2.2	Analytical delays in non-target screening and/or microplastic analyses either due to accumulation of high number of samples or instruments breakdowns	Medium	Low	AU and NIVA are responsible for non-target screening and microplastic analysis, respectively. However, both partners have the knowledge, competence and instruments to perform these analyses and will thus be able to step in if needed.
R2.3	Delays in the Risk Assessment due to any	Low	Medium	Measures will be re-allocation of human or infrastructure resources to maintain a

	malfunctions of the NIVA RAdb			predictable developmental and production environment.
R3.1	Cost-benefit methodology does not match stakeholder needs, which hampers application by external stakeholders.	Medium	Medium	Instead of doing the risk assessment on the two-year monitoring data (100% data) we will perform risk assessment on 50% of the data (ca. one year of monitoring). Hence, any delays should be caught up properly.
R3.2	Unavailability of key stakeholders to participate in business model co-creation activities	Medium	High	Instead of customizing the CBA model to user groups during the development phase, we can customize it during the testing phase. The modular cost-benefit functions will be tested by partner cities/metropolitan partners, which will provide insights on which parameters this stakeholder group applies and the public-targeted CBA model configuration can be adapted according to this. Additional testing by other stakeholders will provide further insights and inform customization.
R3.3	Business models are not applicable to other continents, developing countries and informal settlements	Low	High	Organise separate meetings with key stakeholders with facilitation by city/metropolitan partners to collect their input and co-develop specific business solutions complementary to the outputs of the workshop, facilitate engagement between core stakeholder group to co-develop the business model and financing strategy in an iterative process.
R4.1	Unavailability/delay of empirical data from pilots	Medium	Low	Focus knowledge base development on data from literature and previous projects
R4.2	Reduced applicability of the MULTISOURCE Technology Selection Tool due to lack of end-user involvement	Low	High	First, to ensure early involvement of end-users in the tool development; second, intensify the execution of participatory procedures (co-design strategies) and social media marketing.
R4.3	Lack of interoperability between WP4 and WP5 tools	Medium	High	Develop the tools in accordance with the most common standards among EU projects; co-design workshops shared among WP4 and WP5 tool end-users
R5.1	Lack of data from pilots/ municipalities	Medium	High	Develop archetypes based on global data and literature values
R5.2	Lack of data from municipalities	Medium	High	Use open access data (e.g. from platform such as geoportail, data.grandlyon.com)
R5.3	Low stakeholder interest	Low	Medium	Focus on standard scenarios
R5.4	Lack of cost data	Medium	Medium	Use available cost data from different countries/previous studies. Reduce municipal case studies to those with data.
R5.5	Lack of stakeholder input for ranking results and weighting of cost and qualitative rankings	High	Medium	Use qualitative rankings in the form of scenario factsheets as auxiliary information. The scenario ranking will then only depend on costs.
R6.1	Low or decreasing interest of local stakeholders in engaging in various roles foreseen in project	Medium	High	Main role in the establishment of the various groups will be with the respective local partners who are trusted institutions and can also partly build on existing relations. More elaborate co-design processes in a Living Lab format or similar will follow established principles to foster continued interest such as the development of a jointly agreed long-

				term vision, transparency and clarity about the level of influence stakeholders can have and a fair reflection of stakeholders' needs.
R6.2	Insufficient feedback/input from international experts, incl. IAB members	Low	Medium	All international experts have been carefully selected for their expertise and professional standing. Personal contacts will be fostered by inviting the international experts to physical meetings of the consortium partners. At these occasions, site visits will be made possible wherever feasible, so that the experts can gain an appropriate understanding of the pilots. The international experts will also be regularly briefed and invited to participate in online meetings.
R7.1	Low visits in website and social media	Medium	Low	Keep the website and social media under frequent updates (weekly basis)
R7.2	Low participation in project events	Medium	Low	Disseminate the event not only through MULTISOURCE official channels but also all partners communication means.
R8.1	Delay in the work plan and in the delivery of project outcomes	Medium	Low	The coordinator will benefit from the expertise of INRAE Transfert and the experience of the WP leaders. The management structures and procedures have been designed to optimise project monitoring and overcome delay.

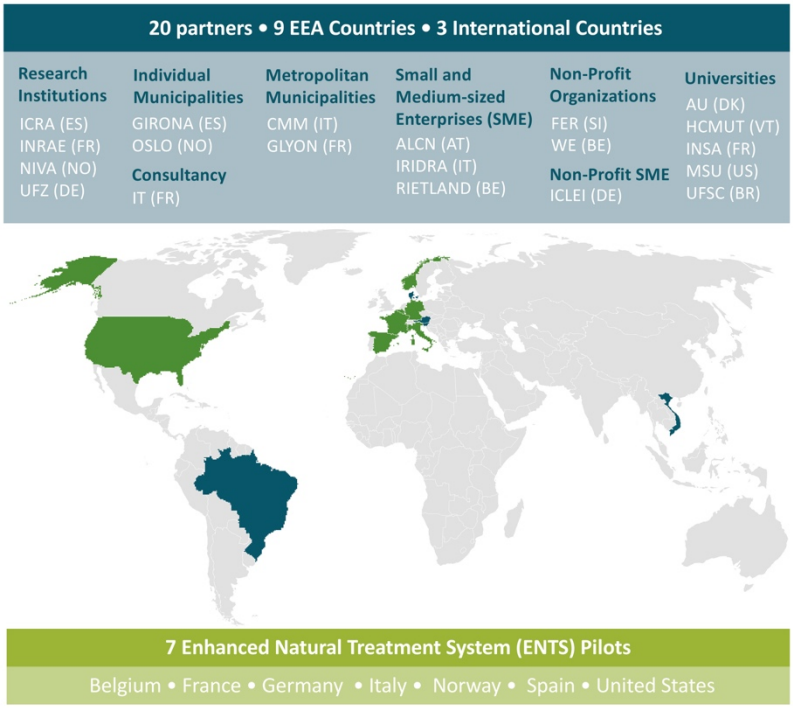
3.3 Consortium as a whole

MULTISOURCE is formed by a multi- and interdisciplinary consortium composed of twenty partners from research institutions, universities, consultancies and non-profit organizations in Europe, Brazil, Vietnam and USA. The consortium partners bring together world-leading experts and key research groups in urban water management, wastewater treatment, nature-based technologies, circular economy, life-cycle analysis, ecosystem services, urban governance, stakeholder engagement and gender equality. The consortium is also well experienced in the coordination of and participation in related projects of several Framework Programs of the European Commission.

The MULTISOURCE consortium includes:

- 4 research institutions (France, Germany, Norway, Spain)
- 2 individual municipalities (local authorities) (Norway, Spain)
- 2 metropolitan municipalities (France, Italy)
- 1 company specialized in EU project management (France)
- 3 SMEs (Austria, Belgium, Italy)
- 2 non-profit organizations (Belgium, Slovenia)
- 1 non-profit SME / global city network (Germany)
- 5 universities (Brazil, Denmark, France, Vietnam, USA)

Figure 3.2. Map of the MULTISOURCE consortium.



The proven management capacity, strong leadership and competency of project partners has already been demonstrated in their involvement in the related past and ongoing projects (Table 2, Section 1.3.3). The consortium has conceptualized an innovative approach to demonstrate, evaluate, and optimise enhanced natural treatment systems in real urban settings and to co-create demand-driven, modular tools and innovative business models to accelerate city-wide planning and financing of NBS for urban water treatment, storage and reuse.

To ensure the applicability of the tools and business models across different scales, economies, and climate conditions, two individual municipalities, one in Spain (GIRONA) and another in Norway (OSLO), as well as two metropolitan municipalities, one in France (GLYON: 59 municipalities) and one in Italy (CMM: 133 municipalities) as consortium partners provide key input to the development of the tools and business models. International perspectives will be provided by project partners in Florianopolis, Brazil (UFSC), Ho Chi Minh City, Vietnam (HCMUT) and Bozeman, Montana, USA (MSU). International cooperation will be strengthened through activities with partners UFSC, HCMUT and MSU and the International Advisory Board (IAB). The six members of the IAB complement the consortium partners, bringing expertise from Europe, Africa, Asia, and North America in the areas of natural resource management (especially water) and climate change resilience. The consortium has been created with gender balance in mind. This is reflected in the nearly balanced gender distribution amongst work package leaders (3 females, 5 males), principal investigators per organization (9 females, 11 males), and members of the International Advisory Board (4 females, 4 males).

3.3.1 Excellence of the consortium

The partners of the project consortium have diverse and synergistic fields of expertise in the key areas of technology, society, economy, policy, and management (Figure 1.2, Table 3.9). Together, the MULTISOURCE partners have the capacity to tackle the challenge of facilitating the systematic, citywide planning of nature-based solutions for urban water treatment, storage and reuse and developing financing and management strategies for their implementation.

Table 3.9. The complementary expertise of the partners in the MULTISOURCE consortium.

	Society				Environment									Policy						Economy				Management			
Partner	Environmental sociology	Environmental decision support	Inclusivity and gender equality	Stakeholder engagement	NBS for water treatment	Wastewater process design	Resource recovery	Hydrology	Environmental analytical chemistry	Fate of organic contaminants	Ecotoxicology	Environmental risk assessment	Digital communication	Urban governance	Urban planning	International relations	Green and edible cities	Policy advice	Capacity development	Environmental economy	Circular business models	Circular economy	Life cycle analysis	Project management	Clustering	Collaboration and networking	Dissemination and exploitation
1-INRAE		●	●		●	●	●		●							●	●	●					●	●	●	●	●
2-AU	●				●	●	●		●	●	●	●		●			●	●		●	●	●	●				
3-GIRONA					●								●	●	●		●	●									
4-ALCN			●		●	●	●			●	●				●		●	●			●	●		●	●		●
5-FER			●	●												●		●	●			●				●	
6-UFZ		●	●		●	●	●	●		●	●	●					●		●								
7-HCMUT					●	●	●	●							●	●			●							●	●
8-ICLEI		●	●	●								●	●	●	●	●	●	●	●			●	●	●	●	●	●
9-ICRA	●	●	●	●	●	●	●			●					●		●			●		●	●		●	●	●
10-IT																			●					●		●	
11-INSA		●			●	●	●	●							●												
12-IRIDRA			●		●	●	●		●	●		●			●		●	●			●				●	●	●
13-LYON						●	●						●	●	●	●	●	●						●			●
14-CMM														●	●		●	●							●	●	●
15-MSU					●	●	●	●				●															
16-NIVA	●				●	●	●	●	●	●	●	●		●		●	●	●		●		●		●		●	●
17-OSLO			●		●		●	●				●		●	●		●	●				●	●	●			●
18-RIETLAND					●	●															●						
19-UFSC					●	●						●	●	●				●	●						●	●	●
20-WE													●					●							●	●	●

The **individual municipalities GIRONA and OSLO** and the **metropolitan municipalities GLYON and CMM** are key partners of the MULTISOURCE consortium. GIRONA will provide its experience in participatory approaches for stakeholder engagement such as the design and implementation of an edible neighbourhood (via the MULTISOURCE pilot in Girona). GIRONA will also provide performance, cost and GIS data from the companies in charge of water treatment, distribution, wastewater collection, transport and treatment, and disseminate project results through the network of cities to which GIRONA belongs. OSLO is the capital of Norway and the European Green Capital of 2019. It is one of the fastest growing capital regions in Europe and has an ambitious climate strategy and a goal of 95% reduction in climate emissions by 2030 compared to the 2009 baseline. Part of OSLO's climate strategy is work on identifying new, smarter ways of climate mitigation and adaptation that includes the implementation of novel NBS. The Metropolitan City of Milan (CMM) is a local public authority that governs the metropolitan urban area (133 municipalities including the City of Milan), representing a functional population of more than five million inhabitants and has been working in climate change and NBS for many years. In MULTISOURCE, CMM implements and coordinates activities of all municipalities and all stakeholders in the area, ensuring the dissemination and transfer of project results. The metropolitan municipality of Lyon (GLYON) has numerous data and elements of knowledge for characterization of the territory, structures and of the populations which constitute it. With various roles (including design office, project manager, owner, operator) in a large panel of themes (roads, sanitation, and urban planning) GLYON also provides wider feedback on business-side experiences.

The main partners bringing expertise in **NBS^{WT}, wastewater process design, and resource recovery** are **AU, ALCN, HCMUT, GIRONA, ICRA, INSA, INRAE, IRIDRA, MSU, NIVA, OSLO, RIETLAND, UFSC, and UFZ**. These partners have extensive experience in the design, implementation, and optimization of innovative nature-based solutions for water treatment, storage and reuse. The consulting firms IRIDRA and RIETLAND offer decades of experience in the design, implementation, and O&M of NBS^{WT} for treating a wide range of polluted water worldwide and are also actively involved in applied research.

Leading experts from **AU, ALCN, ICRA, INRAE, IRIDRA, NIVA and UFZ** provide in-depth knowledge about **environmental analytical chemistry, fate of organic contaminants, and ecotoxicology**. The **environmental risk assessment expertise of AU, ICLEI, IRIDRA, MSU, NIVA, OSLO, UFSC, and UFZ** enables MULTISOURCE to conduct a comprehensive characterization (including micropollutants, microplastics, and pathogens) and risk assessment of the seven enhanced natural treatment system pilots. In particular, the newly developed NIVA Risk Assessment Database Tool facilitates rapid and consistent hazard and risk Assessment of single chemicals and mixtures of chemicals. The secondary benefits provided by NBS^{WT} are becoming increasingly important as urban areas look for new ways to incorporate green technology into existing grey infrastructure approaches. To better quantify these benefits, expertise in environmental sociology (AU, ICRA, and NIVA), environmental decision support (provided by HCMUT, ICLEI, INSA, INRAE, and UFZ), and ecosystem services and co-benefits (ALCN, FER, UFZ, ICLEI, ICRA, INRAE, IRIDRA, and OSLO) are required.

The **co-creation of economic assessment methodologies and business models will be led by ALCN and AU**. These will be developed in close cooperation with municipality partners (CMM, GIRONA, GLYON, OSLO) and their local stakeholders, as well as with MULTISOURCE partners with expertise in environmental economy (ICRA, NIVA), circular business models and circular economy (FER, ICLEI, ICRA, IRIDRA, and RIETLAND), and Life Cycle Analysis (ICLEI, ICRA, INRAE, and OSLO). With its international experience in gender and equitable development, FER will further the participatory approach to ensure inclusion of relevant community actors that will facilitate the sustained success of the project, as well as social ecosystem services, and to safeguard equitable benefits for both men and women. The complementary expertise of the consortium will ensure that MULTISOURCE approaches and technologies will succeed beyond the duration of project funding. As a global network of cities, ICLEI will widen the perspective beyond the MULTISOURCE municipality partners to help ensure that the developed tools and business models are also compatible with other relevant municipal sectors such as urban development, land-use planning, and public procurement. Further expertise in urban governance and urban planning (AU, ALCN, GIRONA, HCMUT, ICLEI, ICRA, INA, IRIDRA, GLYON, CMM, NIVA, OSLO, and UFSC) as well as green and edible cities (AU, ALCN, GIRONA, GLYON, ICLEI, ICRA, IRIDRA, CMM, NIVA, OSLO, and UFZ) will facilitate transfer of scientific findings into practical use by local entities. ALCN and WE along with MULTISOURCE partners AU, FER, GIRONA, GLYON ICLEI, INRAE, IRIDRA, CMM, NIVA, OSLO, UFSC will expand the impact of the project by providing recommendations and policy advice.

WE is the recognized voice and promoter of water related RTD and innovation in Europe, and strives to enhance the performance of water service providers, water users, and technology providers, in a sustainable and inclusive way. WE will leverage its extensive network across Europe to maximize the dissemination and impact of MULTISOURCE tools and business models. Dissemination of project results will be further promoted by the project's International Advisory Board, thus also leveraging the networks of international organizations such as the

International Water Association, The Nature Conservancy (TNC), the Water Research Commission (WRC), and the International Union for the Conservation of Nature (IUCN).

IT is a technology transfer and project engineering company that promotes innovations in food, agriculture and the environment. IT will support the set-up, negotiation and management of collaborative research projects at the European level by bringing its expertise in project management.

3.3.2 Industrial/commercial involvement to ensure exploitation of the results

The SMEs ALCN, IRIDRA, and RIETLAND were hand-selected for the MULTISOURCE consortium in order to integrate experience and expectations of the private sector into the research conducted in the project. In this way, the overall exploitation potential of MULTISOURCE results is strengthened. The SMEs in MULTISOURCE have a long record of innovation in the research and implementation of nature-based solutions for water treatment, and are integrated into the project from both the leadership level (ALCN: WP leader and Task leader; IRIDRA: Task leader, pilot lead contact; RIETLAND: pilot lead contact).

The selection of individual municipalities (GIRONA, OSLO) and metropolitan municipalities (CMM, GLYON) for the MULTISOURCE was also strategic. These partners will ensure the tools and business models developed in the project are applicable across the scales needed for widespread uptake and implementation of NBS^{WT} in urban areas (from individual municipalities up to groups of more than 100 municipalities). These partners are also involved directly with local academic/industry partners and pilots (GIRONA: ICRA and the pilot in Spain; OSLO: NIVA and the pilot in Norway; CMM: IRIDRA and the pilot in Italy; GLYON: INRAE and the pilot in France), which ensures a direct transfer of scientific results into application and dissemination through regional, national, and international networks.

3.3.3 Other countries and international organisations not automatically eligible for EU funding

In line with the EU strategy for international cooperation in research and innovation, the MULTISOURCE consortium includes international partners in Brazil, USA, and Vietnam who do not receive direct funding from the project. These three partners will explore the possibility of acquiring parallel national co-funding. These partners will bring further international perspectives and expertise to the development of the tools and business models and provide connections to local stakeholders in their region and explore opportunities for application in a local context. Travel for HMCUT, MSU, and UFSC to participate in annual project meetings (and associated workshops before or after these meetings) is covered by MULTISOURCE (five meetings in total).

Ho Chi Minh City University of Technology (HCMUT) – a member of Vietnam National University, Ho Chi Minh City, is the flagship university in technology teaching and research activities in Vietnam National University, Ho Chi Minh City. HCMUT is a centre of technology, industry and management training. Located in HCMUT, the research unit CARE was recognized as the International Joint Laboratory of IRD-France and belongs to the main research centre RESCIF which focuses on the three societal issues: (i) water and critical zones, (ii) water, hazards and vulnerabilities and (iii) water and health in the south of Vietnam. HCMUT will be the primary dissemination point in Asia for MULTISOURCE tools and business models. Vietnam is a NBS^{WT} technology frontrunner in Asia and will facilitate the dissemination and exploitation of MULTISOURCE outcomes in Asia.

Montana State University (MSU) is responsible for operation and monitoring of the MULTISOURCE pilot in Bozeman, Montana (USA), which will contribute to data collection efforts in WP1. The data from the pilot will be risk assessed in WP2. The methodology for cost-benefit analysis and NBS^{WT} business models (WP3) will be transferred to MSU for engagement with local stakeholders, including local municipalities (City of Bozeman, Montana) and state agencies (Montana Department of Environmental Quality- MDEQ). MSU has treatment performance data and cost data for various NBS^{WT} operating in cold climate conditions, which will be included in the Technology Selection Tool and the Life Cycle Analysis methodology (WP4), as well as the Planning Platform (WP5).

The Decentralized Sanitation Research Group at University at Universidade Federal de Santa Catarina (UFSC) has been working more than 15 years with NBS^{WT}, mainly constructed wetlands applied to wastewater to small communities, producing design tools and recommendations for subtropical climates, and more recently to study the governance of sewerage for small municipalities. UFSC's expertise will provide information for the Technology Selection Tool (WP4). UFSC’s connection with local municipalities (WP6) will enable dissemination of MULTISOURCE tools to a variety of stakeholders in South Brazil (WP7).

3.4 Resources to be committed

The requested EC grant is €4,999,632. The total budget of the project is €5,169,167. The budget distribution per WP is shown in Table 3.10. The summary of staff efforts in person-months are provided in Table 3.11.

Table 3.10. Budget distribution per work package.

WP	Work Package Title	Total Costs	EC Grant	% EC Grant
WP1	ENTS Pilots	€1,171,374	€1,135,037	23%
WP2	Risk Assessment	€304,161	€289,842	6%
WP3	Business Models	€527,126	€504,735	10%
WP4	Technology Selection	€584,047	€565,692	11%
WP5	Planning Platform	€833,999	€818,017	16%
WP6	Stakeholder Engagement	€677,209	€641,832	13%
WP7	Communication, Clustering and Dissemination	€606,529	€579,756	12%
WP8	Project Management	€464,721	€464,721	9%
TOTAL		**€5,169,167**	**€4,999,633**	**100%**

- Significant resources are dedicated to stakeholder engagement, representing 24% of the total project cost. This includes the contributions of municipality partners CMM, GIRONA, GLYON, OSLO; stakeholder engagement experts FER, ICLEI; and international partners HCMUT, MSU, UFSC to WP1-WP7.
- Labour costs represent 66% of total costs. Other costs amount to 6% of the total budget and include: organisation of workshops, pilot instrumentation, open access publication costs, conference registration fees, and audit costs. Travel costs account for 4% of the total budget. As mentioned in Section 1.3.4, ENTS pilots have already been constructed with funds from parallel projects, thus optimising the use of EU resources.
- The budget balance between countries is France: 28% of the total EC Grant (four partners), Germany: 17% (two partners); Denmark: 15% (one partner, two research groups), Norway: 10% (two partners). All others represent the remaining 30% of the total EC Grant.
- A budget of €69,000 is set aside in the INRAE budget to cover the travel and accommodation of the International Advisory Board members, international partners HCMUT, MSU, UFSC and other stakeholders.

Table 3.11. Summary of staff effort in person-months.

Partner Number	Partner Short Name	WP1	WP2	WP3	WP4	WP5	WP6	WP7	WP8	Total
1	INRAE	35.5	2	2	51	14.5	3	4	17	**131.0**
2	AU	29	10	19	2	8	2	4	0	**74.0**
3	GIRONA	12	0.5	1.5	1	1	8	1	0	**25.0**
4	ALCN	0	2	24	2	2	3	2	0	**35.0**
5	FER	4	0	4	4	0	6	4	0	**22.0**
6	UFZ	4	0	4	1	45.4	0	2	3	**59.4**
7	HCMUT	0	0.5	1.5	1	1	6	2	0	**12.0**
8	ICLEI	0	0	0	0	0	21	3	0	**24.0**
9	ICRA	16	2	2	36	6	4	4	3	**73.0**
10	IT	0	0	0	0	0	0	0	28	**28.0**
11	INSA	0	0	0	3	25	0	1	0	**29.0**
12	IRIDRA	10	0	2	1.5	1.5	1	2	0	**18.0**
13	GLYON	0	0.5	1.5	1	1	7	1	0	**12.0**
14	CMM	0	0.5	1.5	1	1	8	1	0	**13.0**
15	MSU	6	0.5	1.5	1	1	1	1	0	**12.0**
16	NIVA	4.5	11.5	0	2	0	1	2	0	**21.0**
17	OSLO	2	0.5	1.5	1	1	4	1	0	**11.0**
18	RIETLAND	14.6	0	1	1	1	1	1	0	**18.6**
19	UFSC	0	4.5	0.5	2.5	1	2	1.5	0	**12.0**
20	WE	0	0	0	0	0	0	19.6	0	**19.6**
	Total	**137.6**	**35.0**	**67.5**	**114.0**	**109.4**	**78.0**	**57.1**	**51.0**	**649.6**

3.4.1 Other direct costs for participants whose budget for consumables, travel and equipment is over 15% of their staff costs.

1 INRAE	Cost (€)	Justification
Travel	28,500	Travel to three project meetings per year, six project workshops, and conferences
Equipment	1,600	PC laptop (1,600€ for LCA contract researcher) in WP4
Other Goods & Services	125,950	Consumables: WP1: maintenance material for pilot monitoring (NH4/NO3 sensors 7,500€) ICT low cost sensors (oxygen, redox, temperature, pH 5,000€) and ICT data logger (5,000€). WP8: Data management server service over the project 2,500€. Other costs: WP1: Pathogen and metal analysis by an external lab (24,000€) and 750€ for hosting a WP1 input workshop to define co-benefits. WP5 SimaPro LCA software and EcoInvent database access (900€/yr) Invitations WP6: travel for 6 IAB Members to two project meetings x 2,000€ + International partners (Vietnam, Brazil, United States) x five meetings x 3,000€ = 69,000€ + 1,500€ in WP7 to hold a pilot info day
Total	156,050	
2 AU	**Cost (€)**	**Justification**
Travel	24,000	WP1: management meetings (2 meetings per year x 1000€/meeting x 4 y = 8000€) + WP3: management meetings (2 meetings per year x 1000€/meeting x 4 y= 8000€) + workshop travelling (4 x 750 = 3,000€) + WP7 (4 conferences x 1,250€ = 5,000€)
Other Goods & Services	67,784	Consumables: WP1: Laboratory consumables for sample treatment and target analysis of micropollutants, solvents, analytical standards, LC and GC columns, vials, plastic and glassware, MS parts such as ESI capillaries and cleaning kits (38,434€) WP2: Non-target analysis - solvents, columns and capillaries for LC-HRMS (6,500€) WP3: access to server and databases to work on the economic model (2,850€). Other costs: WP7: Open-access publication fees (3 papers / project) (3 x 4,000€ = 12,000€), conference registration fees (4 conferences x 750€) + WP8: Audit certificate (5,000€)
Total	91,784	
3 GIRONA	**Cost (€)**	**Justification**
Travel	8,000	Travel to two project meetings per year
Other Goods & Services	16,500	WP1: Civil works and other arrangements needed to implement the hybrid green wall and integrate it with a community garden in a Girona neighbourhood (10,000€) + 1,500€ for hosting input workshops (defining co-benefits in WP1); WP3: organisation of input workshop on business models, WP4 and WP5: organisation of input workshop on tools. WP6: organisation of workshops
Total	24,500	
5 FER	**Cost (€)**	**Justification**
Travel	6,400	Travel to two project meetings per year, to two project workshops and/or conferences
Other Goods & Services	10,000	WP7: Open Access Publications 3500€, organization of dissemination event in Slovenia 3,000€, 3,500€ for women's organisation involvement in WP1 and WP3
Total	16,400	
7 HCMUT	**Cost (€)**	**Justification**
Travel	3,000	2 person (WP6) and 1 person (WP7) to join in the meetings
Other Goods & Services	2,750	Consumables: For printed reports. Other costs: organisation of workshop and field visit in Vietnam: two-way local transportation: 500€, Catering: 10€ x 20 person = 200€ Participant folders: 50€, Total: 750€.
Total	5,750	
9 ICRA	**Cost (€)**	**Justification**
Travel	12,250	Travel to two project meetings per year, four trips for workshops in WP1, and two conferences in total.
Other Goods & Services	32,750	Consumables (small equipment, chemicals) for the ENTS pilot implementation and monitoring (23,000€) + analysis for SARS-CoV-2 (5,000€). Other costs: WP7: open access publications (4,000€) + conference fees (750€)
Total	45,000	
10 IT	**Cost (€)**	**Justification**
Travel	8,000	1 kick-off meeting + 4 annual meetings for one person and 1 annual meeting (2 days/3 nights) = 1,100€ x 3 meetings + 800€ x 2 meetings; three Project Reviews (1 person) 725€ x 3 meetings

Other Goods & Services	22,000	Project meeting consumables: five general meetings: badges, plastic folders meetings = 600€*5 meetings= 3,000€. Other costs: Collaborative platform: 4 years = 80€ x (48 months + 2 months final report) = 4000€. Catering +renting costs for five General meetings x 2 days x 55 people (catering +renting rooms except for kick-off meeting and final meeting) = 15,000€.
Total	30,000	
12 IRIDRA	**Cost (€)**	**Justification**
Travel	14,000	Travel to two project meetings per year (8,000€), trips for input workshops and pilots
Other Goods & Services	31,250	Consumables: Labs for chemical analysis (16,000€) and 2 COD sensors to monitor in a continuous way the organic content in the effluent or the influent of the ENTS (6,500€ x 2). Other costs: WP1: 750€ for hosting an input workshop (defining co-benefits in WP1) WP7: 1,500€ for the organisation/hosting of pilot info day.
Total	45,250	
14 CMM	**Cost (€)**	**Justification**
Travel	8,000	Travel & subsistence to two project meetings per year
Other Goods & Services	10,000	Other costs: WP3: organisation of input workshop on business models, WP4-5: organisation of input workshop on tools WP7: Organization of one national event in Milan (more than 50 people): organization, catering, reimbursement for 3-5 speakers
Total	18,000	
15 MSU	**Cost (€)**	**Justification**
Other Goods & Services	14,250	Consumables for monitoring water quality analysis: BOD, TSS, Nitrogen, Phosphorus, *E. coli*. Shipping samples to AU. Other costs: WP7: hosting a local event in the US
Total	14,250	
16 NIVA	**Cost (€)**	**Justification**
Travel	10,500	Travel & subsistence to two project meetings per year and to two conferences
Other Goods & Services	61,500	Other costs: Water quality monitoring of ENTS pilot including water sampling devices, sensors for on-line measurements, chemical analysis of relevant pollutants such as metals, particles, chloride (WP1 and WP2) (55,000€). Dissemination: costs related to organising and arranging workshop and demonstration event of ENTS pilot (WP7) – 5,000€ +1,500€ for conference fees.
Total	72,000	
17 OSLO	**Cost (€)**	**Justification**
Travel	9,000	Travel & subsistence to two project meetings/year including to stakeholder meetings
Other Goods & Services	12,000	Consumables: Direct costs related to testing on site - such as maintenance hole and equipment for watering powered by solar. Other costs: WP1: 1,500€ for hosting input workshops (defining co-benefits in WP1); WP3: organisation of input workshop on business models, WP4 + WP5: organisation of input workshop on tools.
Total	21,000	
18 RIETLAND	**Cost (€)**	**Justification**
Travel	9,680	24 field visits for taking samples, travelling distance 100 km x 0.35€/km =1,680€ plus 8 project meetings, flight within Europe + hotel 3 nights = 8,000€
Other Goods & Services	21,270	Consumables: Lab analyses on standard parameters plus pathogens, shipment of samples to AU. Other costs: WP1: 750€ for hosting an input workshop (defining co-benefits in WP1). WP7: 1,320€ for holding a pilot info day.
Total	30,950	
19 UFSC	**Cost (€)**	**Justification**
Travel	1,000	WP7: workshop in Florianópolis, Brazil plus national conferences participations.
Other Goods & Services	2,000	Other costs: WP 6: Field trip expenditures in Santa Catarina State/Brazil; WP 7: 2-day workshop to be held in Florianópolis, Brazil plus national conferences participations.
Total	3,000	
20 WE	**Cost (€)**	**Justification**
Travel	8,000	800€ per meeting for 2.5 participants per meeting (average) for 4 meetings
Other Goods & Services	31,000	8,000€ website + 7,500€ video + 500€ printing brochures + 15,000€ organization of WME and WPE events for clustering activities
Total	39,000	

Table of Contents

4 Members of the consortium

4.1 Participants

4.1.1 INRAE: Institut national de recherche pour l'agriculture, l'alimentation et l'environnement

Partner number and name	1. Institut national de recherche pour l'agriculture, l'alimentation et l'environnement (INRAE)	
Short name	INRAE	

Description of the legal entity

INRAE is the French National Research Institute for Agriculture, Food and the Environment stemming from the merger in 2020 of two leading research organisations: INRA (National Institute for Agricultural Research) and IRSTEA (National Research Institute of Science and Technology for Environment and Agriculture). INRAE has as its mission to carry out excellent science in order to provide innovative solutions addressing global challenges, notably climate change, biodiversity and food security while at the same time enabling the much needed agroecological, nutritional and energy transitions. This research also serves policy making from regional to international levels, thereby contributing to the Sustainable Development Goals. With more than 250 research and experimental units (within 18 regional research centres and in 14 scientific departments), INRAE works in close cooperation with a wide range of external partners (farmers, industry groups, SMEs, NGOs, regional governments, higher education…) supporting a continuum between fundamental research and applied research and fostering a cross-disciplinary approach. It has a well-established network of national and European-led research infrastructures providing the data and services required to advance public and private research. INRAE received the European Commission's Human Resources (HR) Excellence in Research Award. It has put forward Open Science as one of its priorities by setting up an Open Science Directorate and various tools to facilitate the uptake of open methods by its researchers. INRAE also plays a major role in defining and aligning European research through its leading role within joint research programmes (such as FACCE JPI, Water JPI…) and partnerships (e.g. PEER) as well as by coordinating and participating in numerous European and international projects.

REVERSAAL research unit (Lyon) initiates, implements and coordinates research projects in the field of wastewater treatment processes, towards the development of tomorrow's Water Resource Recovery Facilities (WRRF). The research Unit is worldwide recognized in NBSWT technologies and conducted different national and European research projects.

INRAE ITAP-Montpellier is a founding member of ELSA (Environmental Life cycle and Sustainability Assessment), a research group for life cycle assessment and industrial ecology which include several research labs and post-graduate institutions of the Languedoc-Roussillon area (France). The platform's purpose is to stimulate research and transfer to industries in eco-technologies applied to biomass for energy, agricultural and food products, wastewater management, agricultural technology, water, and urban territories.

Competence and main role(s) in the project

INRAE-REVERSAAL will coordinate this project and will strongly participate in WP1 for pilot monitoring, WP4 and WP5 including NBS design rules and performances and testing the planning tool in Lyon metropole. As well, will be involved in other technical WP to make links between different WP.

INRAE - ITAP Montpellier will bring expertise in Life Cycle Assessment (LCA) of wastewater systems modelling within WP4 NBSWT Selection and Design and LCA application to Urban Archetype in WP5.

Profile of key staff members who will be undertaking the work

Dr. Jaime Nivala (F): holds a PhD in Bioscience in 2012. She has 20 years of experience in the practical application of nature-based solutions for water and wastewater treatment. Dr. Nivala is recognised as an international leader in nature-based technology research and implementation with over 30 peer-reviewed publications. Dr Nivala is the coordinator of this project. (h-index 17 and over 1200 citations).

Dr Pascal Molle (M): is a research director. He has over 20 years of experience in the development of NBS for wastewater treatment of small and medium size communities, sludge treatment and storm waters. He oversees the research team focused on decentralised wastewater treatment and reuse. He created and is leading a French national group on the evaluation of new treatment processes for small communities (www.epnac.fr) involving all French public institutions implied in sanitation issues. (h-index 24 and over 1880 citations).

Dr Nicolas Forquet (M): is a researcher working at INRAE since more than ten years. His researches focus on the long-term operation of NBS and their prediction using modelling and data mining. (h-index 11 and > 400 citations)

Dr Eva Risch (F): Eva has worked since 2010 in the field of environmental assessment of wastewater treatment technologies using LCA. She studied the inclusion of temporal system dynamics with wet-weather events during her PhD thesis. (h-index 6 and over 125 citations)

Dr Eléonore Loiseau (F): Eléonore leads research in LCA and impact assessment at INRAE since 2014. Her work includes the development of territorial LCA approaches, and regionalized impact models such as water deprivation, or land fragmentation (h-index 10 and over 500 citations).

Relevant publications

Nivala, J., Murphy, C., Freeman A. (2020) Recent advances in the application, design and operation & maintenance of aerated treatment wetlands. Water 2020, 12, 1188.

Nivala, J., Van Afferden, M., Hasselbach, R., Langergraber, G., Molle, P., Rustige, H., Nowak, J. (2018) The new German standard on constructed wetland systems for treatment of domestic and municipal wastewater. Water Science & Technology. 78(11), pp. 2414-2426.

Lombard-Latune R., Pelus L., Fina N., L'Etang F., Le Guennec B., Molle P. (2018) Resilience and reliability of compact vertical-flow treatment wetlands designed for tropical climates. Stoten, 642, 208-215.

Risch, E., Gasperi, J., Gromaire, M.C., Chebbo, G., Azimi, S., Rocher, V., Roux, P., Rosenbaum, R.K., Sinfort, C., 2018. Impacts from urban water systems on receiving waters – How to account for severe wet-weather events in LCA? Water Res. 128, 412–423. https://doi.org/10.1016/J.WATRES.2017.10.039

Loiseau, E., Aissani, L., Le Féon, S., Laurent, F., Cerceau, J., Sala, S., Roux, P., 2018. Territorial Life Cycle Assessment (LCA): What exactly is it about? A proposal towards using a common terminology and a research agenda. J. Clean. Prod. 176, 474–485. https://doi.org/10.1016/J.JCLEPRO.2017.12.169

Relevant projects or activities

- **TONIC** (Tools fOr greeN resIlient Cities) in collaboration with INSA and funded by two French water agencies. The project aims at analysing the potential of NBS^{WT} for local treatment in cities and exploring disconnection strategies.
- **OFB ACV (**OFB, French national agency for biodiversity), 2020-2021, LCA models of nature-based solutions (some of them selected in MULTISOURCE) will be developed and applied to a real case study to assess whole-system environmental impacts including rain events.
- **SWINGS project,** Safeguarding Water Resources in India with Green and Sustainable Technologies; FP7-ENV-2012; GA: 308502; 2012/2015. IRSTEA: Partner.
- **MAD4WATER**, DevelopMent AnD application of integrated technological and management solutions FOR wasteWATER treatment and efficient reuse in agriculture tailored to the needs of Mediterranean African Countries, H2020 WATER-5c-2015, RIA, ID 688320-2. IRSTEA: Partner.
- **Water4Crops**, Integrating biotreated wastewater reuse and valorisation with enhanced water use efficiency (WEF) to support the Green Economy in EU and India, FP7 GA 311933, 2012-2016. IRSTEA: Partner.

Significant infrastructure and/or any major items of technical equipment

- PlanteDefi Database collecting all design and performances information on more than 5,000 NBS^{WT} treating wastewater in France - https://plantedefi.irstea.fr/
- REFLET research platform for NBS application - https://reversaal.inrae.fr/reflet_en/ . REFLET research and development platform, located in Lyon (France), offers engineering consulting firms, constructors and contracting authorities, specific tools for developing and validating treatment wetlands systems for the treatment of wastewater, sludge and stormwater (real effluents).
- INRAE host a git repository for code development and versioning and have a dedicated tool for data curation and dissemination based on dataverse.
- Chemical lab analysis for global parameters, organic compounds and metals.
- Strong full-scale equipment for online monitoring of real scale treatment plants.

4.1.2 AU: Aarhus University

Partner number and name	2. Aarhus University	AARHUS UNIVERSITY
Short name	AU	

Description of the legal entity

Aarhus University (AU) was founded in 1928. It has ca. 39,000 students; 1,800 PhD students (25% of which are international), close to 700 postdoctoral scholars along with 11,000 employees (2018). AU has five faculties which cover the entire research spectrum – basic research, applied research, strategic research and research-based advice to the authorities. The two research groups associated with the present project are part of WATEC, AU-Water Centre for Water Technology (https://watec.au.dk/). One group has expertise on environmental chemistry, fate of pollutants and water treatment technology. The other research group consist of environmental economist and environmental sociologist who have experience working on projects like the H2020 Regreen project which is concerned with the implementation of nature-based solutions cities across Europe.

Competence and main role(s) in the project

The **environmental chemistry and water technology group** will lead WP1 dealing with the monitoring of the pilot systems and provide target (task 1.1) and non-target (task 2.1) analysis of organic micropollutants. We will coordinate data transfer to and from WP1 to the WPs (2-5) dealing with development of tools. Contributions are also planned for WP6 and WP7.

The **environmental economic and sociologist group** will work mostly on WP3 helping to develop the foundation for a viable business case for nature-based solution to challenges concerned with water pollution and treatment. Collaboration with WP5 is also planned, as well as participation in WP6 and WP7 activities.

Profile of key staff members who will be undertaking the work

Researcher Pedro Carvalho (M): PhD in chemistry; has more than 10 years of experience working with the fate of organic micropollutants in the environment and the development of natural and technical systems for water treatment. Authored more than 45 scientific articles (h-index 21 and 1224 citations), member of IWA and SETAC.

Senior Researcher Carlos Arias (M): Civil Engineer, PhD in Natural Sciences; specialized in the development and optimization of ecotechnologies for wastewater treatment and the treatment of diffuse pollution. He has authored more than 80 scientific articles (h-index 30 and more 5007 citations), keynote speaker in several meetings

Senior Researcher Toke Panduro (M): PhD in Environmental economic; has more than a decade of experience working on environmental economics issues especially related to economic valuation and cost-benefit analysis of common good solutions.

Senior Researcher Berit Hasler (F): PhD in Environmental economic; Has worked on a broad scope of economics issues related to environmental problems covering food production, water quality, recreation, valuation and cost-benefit analysis.

Senior Researcher Anne Jensen (F): PhD in Environmental sociology. Specialised in understanding social processes and motivations, local governance and institutional barriers in relation to environmental issues and nature-based solutions.

Relevant publications

Oral, H.V. Carvalho, P.N., Gajewska, M., Ursino, N., Masi, F., van Hullebusch, E.D., Kazak, J.K., Exposito, A., Cipolletta, G., Andersen, T.R., Finger, D.C., Simperler, L., Regelsberger, M., Rous, V., Radinja, M., Buttiglieri, G., Krzeminski, P., Rizzo, A., Dehghanian, K., Nikolova, M., Zimmermann, M. (2020). A Review of Nature Based Solutions for Urban Water Management in European Circular Cities: a critical assessment based on case studies and literature. Blue-Green Systems, 2(1) doi: 10.2166/bgs.2020.932

Zhang, L., Lv, T., Zhang, Y., Button, M., Arias, C.A., Weber, K.P., Brix, H., Carvalho, P.N. (2018). Impacts of configuration design and plants on the microbial community of constructed wetlands treating ibuprofen. Water Research, 131:228-238

Liang, C., Zhang, L., Nord, N.B., Carvalho, P.N., Bester K. (2019). Dose-dependent effects of acetate on biodegradation of pharmaceuticals in moving bed biofilm reactors. Water Research 159:302-312

Zhou, Q., Panduro, T. E., Thorsen, B. J., & Arnbjerg-Nielsen, K. (2013). Adaption to extreme rainfall with open urban drainage system: An integrated hydrological cost-benefit analysis. Environmental management, 51(3), 586-601.

Dalgaard, T., Hansen, B., Hasler, B., Hertel, O., Hutchings, N. J., Jacobsen, B. H., & Kristensen, I. S. (2014). Policies for agricultural nitrogen management—trends, challenges and prospects for improved efficiency in Denmark. Environmental Research Letters, 9(11), 115002.

Relevant projects or activities

- CLEANWATER: Eco-technological solutions to remove micro-pollutants and micro-plastics from wastewater (BONUS Blue Baltic), 2017-2020, http://www.swedenwaterresearch.se/en/projekt/bonus-cleanwater/, development of technological solutions to remove micropollutants from wastewater, provides the analytical base for MULTISOURCE.
- TOXICROP: Cyanotoxins in Irrigation Waters: Surveillance, Risk Assessment, and Innovative Remediation Proposals (H2020-MSCA-RISE-2018), 2019-2022, https://www.toxicrop.com/, optimization of constructed wetland systems to remove cyanotoxins from surface waters
- PAVITR: Potential and Validation of Sustainable Natural & Advance Technologies for Water & Wastewater Treatment, Monitoring and Safe Water Reuse in India (H2020-SC5-2018-2019-2020), 2019-2023, Project Website, Exploitation of nature based wastewater treatment technology for water reclamation
- Regreen: Fostering nature-based solutions for smart, green and healthy urban transitions in Europe and China (H2020 SC5-13-2018-2019), 2019-2023, https://www.regreen-project.eu/, Regreen promotes urban liveability, through fostering nature-based solutions in Europe and china using evidence-based tools and improved urban governance accelerating the transition towards equitable, green and healthy cities.
- The combined effects of climate adaptation (Climate-KIC and other sources), 2018-2021, https://ifro.ku.dk/english/research/projects/taettere-paa-klimatilpasningens-samlede-effekter/, The projects set out to evaluate the total cost of storm flood events and extreme precipitation events on local residents.

Significant infrastructure and/or any major items of technical equipment

The research group has direct access to AU Environmental chemistry & toxicology facilities including the analytical equipment: 4 HPLC-MS/MS systems (two of those with high resolution mass spectrometry), two GC-MS systems (one with high resolution mass spectrometry) and several process HPLC systems. Different software for data treatment, as well as access to different databases are also available.

4.1.3 GIRONA: Ajuntament de Girona

Partner number and name	3. Ajuntament de Girona	Ajuntament de Girona
Short name	GIRONA	

Description of the legal entity

The City of Girona (100.266 inhabitants) is the capital of the Province of Girona, which is placed in the most Northern East of Spain, with limits to France and the Mediterranean. The council of Girona is the main public government at the local level, responsible for providing the services ruled by Spanish law 7/1985, such as urban planning, local environment, water supply, road infrastructure, etc. The Council of Girona is active member several municipal networks specialized in environmental and water management, including CILMA (Girona Province), Xarxa de Ciutats i Pobles cap a la Sostenibilitat (Catalonia). Moreover, is also member of Eurotowns (Network of Small and Medium Size European cities). In 2017, the city council approved the Action Plan for Climate and Sustainable Energy focused on 27 actions for climate change mitigation, and 17 actions for climate change adaptation. The areas of the Municipality involved in the project are Sustainability, Social rights and cooperation and Economic promotion of the city.

Competence and main role(s) in the project

The Municipality of Girona will be mainly involved in the monitoring and citizen engagement related to the Girona pilot; they will also participate in dissemination of the project and on providing data for the testing of MULTISOURCE tools.

Profile of key staff members who will be undertaking the work

Martí Terés Bonet (M): Councilor of Sustainability, Psicologist, Master in Publicity and Marketing, Master in Informations Society. Professor of psicology, Specialist in corporate and digital communication.

Marc Rosdevall Biosca (M): Head of Landscape & Biodiversity department, Environmental scientist, master's in landscape management. Active in regional networks of local authorities related to landscape management and green cities. Involved in different projects related to urban landscape, urban/natural ecosystems connectivity, and climate change adaptation.

Päivi Garriga (F): Directress of the Social Centre of Sant Narcís neighbourhood (where the pilot will be tested in Girona). Bsc degree in Social education. Masters degre in Youth and society. Active in social movements and self-organized community projects as well as in ecological local consumer groups.

Richard Pointelin (M): Technician in sustainable renovation at the Economic promotion department. PhD in Experimental Science and Sustainability, Urban planner & geographer. Experience of participatory processes in the urban sphere at the international level, in different problematics: environment and biodiversity, housing, urban exclusion, mobility. Active in citizen networks in Girona and Catalonia.

Relevant publications

Pla Local de Mitigació del Canvi Climàtic a Girona (Local Plan for Climate Change Mitigation). LAKS - LIFE Project LIFE07 ENV/IT/000451. Ajuntament de Girona, 2011. (http://www2.girona.cat/documents/11622/227681/LAKS-PAESple.pdf)

Pla Local d'Adaptació al Canvi Climàtic de Girona (Local Plan for Climate Change Adaptation). PWC - Ajuntament de Girona, 2013. Various authors.

Pla estratègic de desenvolupament urbà sostenible i integrat - EDUSI (Strategic plan for sustainable and integrated urban development). BOS CONSULTING, 2014. Various authors.

Pla d'acció pel clima i l'energia sostenible de Girona (Action plan for climate and sustainable energy of Girona). La Vola - Ajuntament de Girona, 2017. Various authors. (http://www2.girona.cat/documents/11622/227681/Pla_PACES_GIRONA.pdf)

Projecte marc per a una infraestructura verda multifuncional a 'la Vora' de Girona (Framework project for a multifunctional green infrastructure on 'the Edge' of Girona). Estudi Martí Franch - Ajuntament de Girona, 2018. Authors: Franch, M., Batllori, G. (https://www.girona.cat/transparencia/docs/estudis/ProjecteLaVoradeGirona-intro.pdf

Relevant projects or activities

The Municipality of Girona has been or is currently partner in European Fund Programmes (LIFE+, Interrreg, 7th FP) that are summarized in the following link: http://www2.girona.cat/ca/alcaldia_relacions_externes_prog_eur, among them:

- Valorize natural and cultural heritage through sustainable development (2017/2020) - Partner
- CREDITHS4HEALTH – Social innovative and health promotion (2016) - Partner
- NATUR'ACC POCTEFA – Valorize natural and cultural heritage to protect and manage natural resources (2014/2015) - Partner

Other relevant activities:

- Sistema d'Indicadors de Sostenibilitat de Girona. SISGi (Sustainability Indicators System of Girona) (http://www2.girona.cat/ca/sostenibilitat_indicadors
- Taula Municipal de Sostenibilitat (Municipal Board of Sustainability) (http://www2.girona.cat/ca/sostenibilitat_taula)

Significant infrastructure and/or any major items of technical equipment

- 'La Vora' Pilot test Torre Gironella / Riu Ter. 70 Ha of peri-urban blue/green infrastructure. Project released between 2014-2018 to develop the Framework project of 'La Vora' (The Edge), tools and protocols for implementing the final project of 600 Ha.
- Hortes de Sta. Eugènia. 41 Ha of food gardens including waterlands.
- A 100% public utility (TRARGISA) responsible of waste and wastewater management, with GIS data from the whole sewer system network.
- A public company, Aigües de Girona, Salt i Sarrià de Ter, SA (http://www.aiguesdegirona.cat) with private participation, responsible of water treatment and distribution, including an analytical lab.

4.1.4 ALCN: Alchemia-Nova GmbH

Partner number and name	4. Alchemia-Nova	
Short name	ALCN	

Description of the legal entity

Alchemia-nova GmbH is based in Vienna, Austria, dedicated to consulting, research and innovation, technology development, education, training and dissemination in the fields of **circular economy, resource recovery, nature-based solutions, phytotechnology, biobased industry and sustainable buildings**. They ultimately seek to contribute to a more sustainable future through the transformation of linear production-consumption patterns into closed-loop processes. ALCN draws on over 20 years of grassroot and policy-level expertise and experience in the application of circular economy principles and the innovation and implementation of nature-based solutions within many national (research funds and direct consultation for Austrian ministries) and EU projects (H2020, LIFE, FP7, FP6). They employ around 30 persons based in Austria and Greece. Their collaboration network spans over all European countries to China, Southeast Asia, South Africa, Kenya, MENA countries and South America. www.alchemia-nova.net

Competence and main role(s) in the project

ALCN will lead work package 3 (NBS^{WT} Business Models) and provide inputs to WP 2 (Risk Assessment), WP4 (Technology Selection Tool), WP 5 (MULTISOURCE Planning Platfomr), WP 6 (Stakeholder Engagement) and WP7 (Communication, Clustering and Dissemination).

Profile of key staff members who will be undertaking the work

Theresa Heitzlhofer, MSc. (F): (Biology) specialises on human ecology, business models for functional urban greening (NBS) and stakeholder engagement. Theresa heads alchemia-nova's sales and marketing team as well as stakeholder engagement/ participatory approaches. The LooPi® idea was born out of her combination of interests in resource reclamation and our existing green wall technology.

Johannes Kisser, MSc. (M): (Chemical Engineering) is the Chief Technical Officer at ALCN. Over the last 15+ years he developed research & innovation projects, held lectures at universities, given numerous presentations at forums, conferences and workshops on circular economy and NBS. He is dedicated to co-creating ideas and nurturing them to life, innovating nature-based and circular solutions throughout the world.

Dimitra Theochari, Dipl. Ing. (F): (Architecture and Structural Engineering, Landscape Architecture) For the past 10 years, Dimitra has worked in landscape architecture companies around the world. As a project manager she has submitted over 55 projects for competitions, concept and design. As a researcher she focuses on topics of resilience, liveability and ecological planning in a city scale, and specifically in NBS.

Maria Wirth, MSc. (F): (MSc. Environmental Technology & International Affairs) focuses on circular resource flows in cities and the application of NBS to contribute to closing urban water and nutrient cycles. Her research also includes financing schemes for replication of NBS for regenerative (circular) agriculture.

Paolo Menconi, B.Hon. (M): holds an honour's degree in Economics and Banking from the University of Pretoria, South Africa. As senior analyst and CFO, Paolo manages the accounting and financing and contributes to economic impact forecasting at project level.

Relevant publications

Kisser, J., M. Wirth, B. De Gusseme, M. Van Eekert, G. Zeeman, A. Schoenborn, et al. (2020). *A review of nature-based solutions for resource recovery in cities.* Blue-Green Systems 2*(*1), 137–171. https://doi.org/10.2166/bgs.2020.930.

Reinberg, V., T. Steffl, M. Gronalt, E. Ganglberger, J. Thaler, M. Müller, A. Biebl, J. Niederwieser, J. Kisser. *Austrian Biocycles. Biobasierte Industrie als Bestandteil der Kreislaufwirtschaft (EN: Bio-based industry in contribution to a circular economy).* NACHHALTIG wirtschaften 13/2020. https://nachhaltigwirtschaften.at/resources/nw_pdf/schriftenreihe/schriftenreihe-2020-13-austrian-biocycles.pdf

Zraunig, A., Estelrich, M., Gattringer, H., Kisser, J., Langergraber, G., Radtke, M., Rodriguez-Roda, I., & Buttiglieri, G. (2019). *Long term decentralized greywater treatment for water reuse purposes in a tourist*

facility by vertical ecosystem. Ecological Engineering, 138, 138–147. https://doi.org/10.1016/j.ecoleng.2019.07.003

Langergraber, G., Pucher, B., Simperler, L., Kisser, J., Katsou, E., Buehler, D., Mateo, M. C. G., & Atanasova, N. (2020). *Implementing nature-based solutions for creating a resourceful circular city.* Blue-Green Systems, 2(1), 173–185. https://doi.org/10.2166/bgs.2020.933

T. Steffl, J. Kisser, V. *Reinberg*, Sajtos, B. (2018). Stoffliche Nutzung von fossilen Rohstoffen mit Blick auf eine biobasierte Substitution in Österreich [*EN: Bio-based substitution of fossil raw materials and products in Austria*]. *Nachhaltig Wirtschaften* 3/2018. Bundesministerium für Verkehr, Innovation und Technologie. https://nachhaltigwirtschaften.at/resources/nw_pdf/ schriftenreihe/201803_stoffliche-nutzung-fossile-rohstoffe.pdf

Relevant projects or activities

HYDROUSA/ Demonstration of water loops with innovative regenerative business models for the Mediterranean region (H2020-CIRC-2-2017; GA 776643), 2018-2022, www.hydrousa.org, Development and demonstration of NBS for communal WWT and treated WW reuse for agriculture; business models and stakeholder engagement are a central component for post-project sustainability of HYDROUSA.

HOUSEFUL/ Innovative circular solutions and services for new business opportunities in the EU housing sector (H2020-CIRC-1-2017; GA 776708), 2018-2022, https://houseful.eu, Development and demonstration of building integrated NBS for building WWT and reuse of water and nutrients for food production on site; all of HOUSEFUL solutions will be integrated into a building service business model.

DEEP PURPLE/ Conversion of diluted mixed urban bio-wastes into sustainable materials and products in flexible purple photobiorefineries (H2020-BBI.2018.SO1.D2), 2019-2023, deep-purple.eu, Synergic biological treatment of relevant waste streams of urban origin (mixed waste streams, separately collected organic waste, wastewater and the organic fraction of sewage sludge) and production of high value-added products for industrial sectors, e.g. cosmetics, fertilizers and bioplastic production.

Green INSTRUCT/ Green INtegrated STRUCTural elements for retrofitting and new construction of buildings (H2020-EeB-04-2016; GA 723825), 2017-2020, https://www.greeninstruct.eu, ALCN developed a vegetated façade panel for greywater treatment, using secondary materials (construction & demolition waste) and conducted stakeholder workshops for product development.

Austrian Biocycles/ Austrian Biocycles: Biobased industry in contribution to a circular economy (Austrian Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology: FFG Produktion der Zukunft), 2019-2020, https://www.alchemia-nova.net/projects/austrian-biocycles/, Qualitative and quantitative assessment of secondary biomass streams and development of a logistics concept for an integrated biorefinery network**,** profitability assessments and economic and ecological impacts

Significant infrastructure and/or any major items of technical equipment

The laboratory is equipped with analytical and sensor equipment to extensively characterize water quality in inflows and outflows, and to continuously measure main parameters online. Currently, a nature-based wastewater treatment test unit (indoor vertical constructed wetland) is installed at its facilities with an area footprint of about 3 m2 and an active root volume of 50 L.

4.1.5 FER: Forum za enakopraven razvoj, drustvo

Partner number and name	5. Forum for Equitable Development (Forum za enakopraven razvoj, društvo)	FORUM FOR EQUITABLE DEVELOPMENT
Short name	FER	

Description of the legal entity

FER is a non-for profit non-governmental organisation functioning in the field of equitable global development. Its priority strategic areas are research, awareness raising and training, and advocacy, with the focus on the thematic priority areas of gender equality and migration. FER's priority countries are Slovenia, Albania and Uganda.

Competence and main role(s) in the project

FER's role is to mainstream gender into the project and ensure its outputs will be equitable for all actors of local communities, by constructing a participatory and inclusive operational model that will ensure the active involvement of a broad range of actors in all WP of the project, in order to contribute to a widespread use of appropriate NBS solutions.

Profile of key staff members who will be undertaking the work

Ana Kalin (F): gender and development expert with more than 17 years of experience. Her expertise stems from her work at the Slovene MFA, focusing on development cooperation, gender equality and migration; being a researcher and policy maker at FER, focusing on inclusive equitable development, gender and migration in Slovenia, Albania and Uganda; and academic work on migration, identity creation and othering.

Relevant publications

A. Kalin (ed), Glocalisation - Flipping Around the Development Paradigm: Research on the Role of New Donors in Global Development (LAPAS, 2015)

A. Kalin and J. Urh Lesjak, Regionalni razvoj v mednarodni perspektivi: preslikava globalnih politik na lokalne izzive ali lokalnih pristopov na globalne politike? in J. Nared, K. Polajnar Horvat and N. Razpotnik Visković (eds), Globalni izzivi in regionalni razvoj (Založba ZRC, 2015), p. 13-19 (Regional development from a global perspective: To translate global policies to the local level or to apply local approaches to global policies?)

Relevant projects or activities

Tackling the root causes of discrimination against women in Albania (Ministry of Foreign Affairs of Slovenia), 2020 – 2022.The project aims at eliminating the root causes of discrimination against girls and women in Prrenjas and Devoll, Albania, and strengthening the rights of girls and women in the private and public sphere, also through including women in waste management processes. **More food and equality, less crises** (Ministry of Foreign Affairs of Slovenia), 2020-2022, The goal of the project is to Increase resilience to crises and food security, and improve access to drinking water for refugees and local population in Ndejje and Kampala, Uganda. The project mainstreans gender equality and focuses on sexual and gender-based violence, and uses the integrated farming system.

Increased food and drinking water security among refugees and local population in Uganda (Ministry of Foreign Affairs of Slovenia), 2017-2019, The goal was to increase food security and access to drinking water through climate smart agriculture. Gender was mainstreamed in the project.

That's it! (Ministry of Labour, Family, Social Affairs and Equal Opportunities of Slovenia), 2019, The project developed a board game aimed at deconstructing gender stereotypes, which used a gamification approach to promote learning and then changing of behavioural patterns. The game was used as a learning tool in workshops for youth and adults.

Global Responsibility for the future (Global Education Network Europe and Ministry of Foreign Affairs), 2018-2019, The project aimed at mainstreaming sustainable and equitable development into entrepreneurships, aimed at young entrepreneurs. FER's role was to mainstream gender into all stages of shaping and executing a business idea.

Significant infrastructure and/or any major items of technical equipment

N/A

4.1.6 UFZ: Helmholtz-Zentrum fuer Umweltforschung GmbH

Partner number and name	6. Helmholtz-Zentrum fuer Umweltforschung GmbH – UFZ
Short name	UFZ

Description of the legal entity

The Helmholtz Centre for Environmental Research - UFZ, Germany, was established in 1991 as the first and only centre in the Helmholtz Association of National Research Centres to be exclusively devoted to environmental research in a great variety of fields. UFZ has become a world-wide acknowledged centre of expertise in the remediation and re-naturation of contaminated landscapes, as well as the preservation of biodiversity and natural

landscapes. UFZ is and was participating in more than 100 Projects funded within FP7 and Horizon 2020, 40 of them coordinated by UFZ (collaborative and individual projects). UFZ is or was the host for 3 ERC grants, 2 Starting Grants and 1 Advanced Grant, and has coordinated 3 ITNs. UFZ is leading the European Topic Centre on Inland, coastal and marine waters funded by the European Environment Agency (EEA). Since 2020, UFZ leads the Long-Term Ecosystem Research (LTER) PPP (H2020) to implement the European LTER (eLTER), critical zone and socio-ecological systems Research Infrastructure, listed on the European Strategy Forum on Research Infrastructures (ESFRI) Roadmap.

Competence and main role(s) in the project

At UFZ the project will be located at the Department of Catchment Hydrology (CATHYD) and at the Centre for Environmental Biotechnology (UBZ). CATHYD focuses on analysis and modelling of hydrological processes at catchment scales including remote sensing and intensive field campaigns. CATHYD is further involved in several EU funded projects. UBZ focuses on biotechnology and decentralized wastewater technology and management. The project will further benefit from UFZ hosted infrastructures such as the research green roof as well as from the modelling resources such as the EVE computing cluster and the data management portal. UBZ members have recently been awarded with the prestigious German Environmental Award for their work on policy advice and wastewater management. UFZ will lead WP5 'MULTISOURCE Planning Tool' developing an open-source planning tool for NBS^{WT}. In addition, UBZ will contribute to WP1 with the green roof infrastructure as an urban NBS pilot and to WP3 through the joint development of planning tool scenarios based on business models.

Profile of key staff members who will be undertaking the work

Dr. Jan Friesen (M): is a research associate at the Department of Catchment Hydrology, Helmholtz Centre for Environmental Research – UFZ and is also associated to the UFZ's UBZ department. Within MULTISOURCE he will mainly support WP5 MULTISOURCE Planning Tool. He has extensive experience in working with the wastewater management tool ALLOWS as well as in urban forestry and water management. His research interests are in ecohydrology, sensor development, and remote sensing. Since 2019 he is an alumni member of the Arab-German Young Academy of Sciences and Humanities.

Dr. Manfred van Afferden (M): is the deputy head of the Centre for Environmental Biotechnology (UBZ), Helmholtz Centre for Environmental Research – UFZ. He developed the wastewater management tool ALLOWS and has extensive experience in wastewater management and technology development. In 2018 he was a member of the UBZ team that was awarded German Environmental Prize for their pioneering work on wastewater management and capacity development in Jordan.

Relevant publications

Al Marzouqi, B.; Khurelbaatar, G.;van Afferden, M.; Al Rawahi, M.; Lee, M-Y.; Mueller, R.; Friesen, J. (2019) *Analysis of wastewater management scenarios for different rural settlement structures in Oman*, Geophysical Research Abstracts. Vol. 21, EGU2019-18746. EGU General Assembly 2019.

Michelsen, N., Laube, G., Friesen J., Weise S., Bait Said A., Müller, T. (2019) *A microcontroller-based automatic rain sampler for stable isotope studies*. Hydrol. Earth Syst. Sci., 23, 2637-2645, https://doi.org/10.5194/hess-23-2637-2019.

Friesen, J., Rodríguez-Sinobas L. (Eds.) (2018) *Advanced Tools for Integrated Water Resources Management. Advances in Chemical Pollution, Environmental Management and Protection*, Elsevier, Volume 3, 276 p., ISBN 9780128142998.

Van Stan, J.T., Underwood, S.J., Friesen, J. (2018) *Urban forestry: An underutilized tool in water management*. In: Advances in Chemical Pollution, Environmental Management and Protection: Advanced Tools for Integrated Water Resources Management, Volume 3. Eds. J. Friesen and L. Rodriguez-Sinobas. Elsevier. ISBN: 978-0-12-814299-8, doi:10.1016/bs.apmp.2018.04.003.

van Afferden, M., Cardona, JA., Lee, MY., Subah, A., Mueller, RA. (2015). *A new approach to implementing decentralized wastewater treatment concepts*. Water Science & Technology, 72(11), 1923-1930. doi:10.2166/wst.2015.393

Relevant projects or activities

TWIGA/ Transforming Weather Water data into value-added Information services for sustainable Growth in Africa (EU), 2018-2022, http://twiga-h2020.eu, Linking *in situ* data with remote sensing, use of large-scale remote sensing data for modelling, data management.

IATI-WW/ Establishment of a "Research, Demonstration and Training Facility for Decentralized Wastewater and Sludge Management" in Oman (TRC, Oman), 2015-2020, n.a., Decentralized wastewater treatment decision support development and infrastructure planning.

SMART-MOVE/ Sustainable management of available water resources with innovative technologies management of Highly variable water resources in semi-arid regions (BMBF), 2015-2018, http://www.iwrm-smart-move.de, Development of geographic information system (GIS)-based approach Assessment of Local Lowest-Cost Wastewater Solutions (ALLOWS). ALLOWS serves as a starting platform for the planning tool.

SOLUTIONS/ Solutions for present and future emerging pollutants in land and water resources management (EU), 2013-2018, https://www.solutions-project.eu, Risk and water quality assessment of European rivers, risk assessment for NBS.

Significant infrastructure and/or any major items of technical equipment

UFZ operates multiple large experiment sites including several green roof setups. For computing and data analysis UFZ operates a high-performance computing (HPC) cluster. Code can be shared and developed using UFZ's git repository and the UFZ data management portal is used to manage and automatically collect online monitoring data as well as link to UFZ's HPC computing resources.

4.1.7 HCMUT: Truong Dai hoc Bach Khoa hoc Quoc Gia Tp Ho Chi Minh

Partner number and name	7. Truong Dai hoc Bach Khoa hoc Quoc Gia Tp Ho Chi Minh	
Short name	HCMUT	

Description of the legal entity

Ho Chi Minh City University of Technology (HCMUT) – a member of Vietnam National University, Ho Chi Minh City, is the flagship university in technology teaching and research activities in Vietnam National University, Ho Chi Minh City. HCMUT, which was established in 1957, is a center of technology - industry and management training in the South of Vietnam. HCMUT has 11 Faculties, 10 research and development (R&D) centers, 4 training centers, 10 functioning offices and one limited company. Among the R&D member centers, the Asian Center for Water Research (CARE) is the most closely related to the MULTISOURCE project. Mission of CARE is to develop interdisciplinary research on water, environment and climate change and to build up cooperation among universities in Vietnam, Southeast Asian region and the members of "The Network of Excellence in Engineering Sciences of the French-Speaking Community" (RESCIF). CARE is a hub that promotes efficient linkage between national and international experts to carry out research and training activities in the field of water conservation and water resources. So far CARE has received hundreds of internship students from University members of RESCIF and other Asian countries, who join research activities under supervision of scientists from CARE or HCMUT.

Competence and main role(s) in the project

HCMUT will connect to the local water stakeholders in Vietnam, cover socio-economic and cultural backgrounds in attempts to ensure applicability of the MULTISOURCE tools in urban settings worldwide (WP6). HCMUT will also participate to the validation stages of the developed tools and business models (WP7).

The concrete measures to be taken as follows:

- To mobilize local stakeholders including authority officers/managers, companies, academic experts and community concerning the water/sanitation fields.
- To collect data on local policies, strategies or regulations and the concerned document
- To organize local surveys for implementing work packages
- To hold seminars/meetings or short training of local stake holders
- To look for the local potential trainees or candidates for long-term training

Profile of key staff members who will be undertaking the work

Tuan Duc HO (M): PhD in Physics; Director of Asian Centre for Water Research (CARE-RESCIF); Research interest: Hydrodynamic modelling and analysis, Optical measurement technique (PIV, PTV).

Phuoc Dan NGUYEN (M): Currently a researcher and lecturer from CARE, HCMUT. The key research and training areas include: (i) Water & wastewater treatment processes; (ii) Water resources management; (iii) Water supply & sanitation for the rural area; (iv) Solid waste treatment & management and (v) Wastewater reuse and organic waste recycling.

Relevant publications

Thomas, P., Orencio, D., Ho, T.D., Alexandre, V., Jasper, K. (2015). *The fluctuation energy balance in non-suspended fluid-mediated particle transport*. Phys. of Fluids, 27.

Benoît, C., Guillaume, D., Jérôme L.C., Ho, T.D., Nicolas, G., Stéphane, P. (2017). *Estimation of a water level - discharge rating curve for a river influenced by the tide*, La Houille Blanche, 5, pp.16-21.

Dan, N.P. and Viet, N.T. (2009). *Status and strategies on solid waste management in Ho Chi Minh City. International Journal of Environment and Waste and Management* (IJEWM), Vol. 4, Nos. ¾, pp.412-421, 2009 4. Fumiko Oritate, Y. Yuyama, M.Nakamura, M. Yamaoka, Phuoc Dan Nguyen, D.V.B.Hanh, K.Mochidzuki and A. Sakoda (2015). *Regional Diagnosis of Biomass Use in Suburban Village in Southern Vietnam*. Journal of the Japan Institute of Energy. 94. 80-5-829.

Cornelis J van Leeuwen, Nguyen P Dan and Carel Dieperinkz (2016). *The Challenges of Water Governance in Ho Chi Minh City*. Integrated Environmental Assessment and Management, Volume 12, Issue 2, April 2016, Pages: 345–352. IF=2.32 DOI: 10.1002/ieam.1664.

N. P. Dan, L.V. Khoa, B. X. Thanh, P. T. Nga and C. Visvanathan (2011). *Potential of Wastewater Reclamation to Reduce Fresh Water Stress in Ho Chi Minh City-Vietnam*. Journal of Water Sustainability, p.p. 21-29, Vol. 1, Issue 3, Dec 2011. ISSN: 1839-1516.

Relevant projects or activities

Regional water and carbon cycles in the context of human-environment interaction in the lower Mekong basin, Vietnam. SARCS project (Taiwan). 2005-2007.

Study on Sustainable Integration of local agriculture and biomass industries**.** JICA 2005-2007

Benchmarking on environmental infrastructure management in selected cities of southeast Asia (for Hue City), UEEM-AIT, 2008-2009

Study on Sustainable Integration of local agriculture and biomass industries. JICA. 2010-2014

Vulnerability and adaptation to climate change of Asian Cities-Case study in Vietnam. AIT, 2013-2014

Significant infrastructure and/or any major items of technical equipment

N/A

4.1.8 ICLEI: ICLEI Europasekretariat GmbH

Partner number and name	8. ICLEI Europasekretariat GmbH	ICLEI Local Governments for Sustainability
Short name	ICLEI	

Description of the legal entity

The ICLEI European Secretariat (ICLEI ES) is the European regional office of ICLEI – Local Governments for Sustainability, a global network of more than 1,750 cities, towns and regions committed to building a sustainable future. In Europe, ICLEI has some 160 members who are served by its offices in Freiburg, Berlin (Germany) and Brussels (Belgium). ICLEI's activities include training and consultancy services, study visits, peer-to-peer exchanges, conferences, knowledge brokerage events between science and practice, and political advocacy with and for its members and other local governments. Topics span numerous sectors for which local authorities are in charge and include urban water management, green/blue infrastructure, nature-based solutions, and climate mitigation/adaptation.

Competence and main role(s) in the project

WP3, Business Models: collaboration with WP lead for co-development of business models

WP4, Technology Selection Tool: collaboration with WP lead for co-development of tool

WP5, MULTISOURCE Planning Platform: collaboration with WP lead for co-development of tool

WP6, Stakeholder engagement: lead partner

WP7, Clustering and dissemination: support of dissemination activities targeting public authorities.

Profile of key staff members who will be undertaking the work

Holger Robrecht (M): Deputy Regional Director for Europe, leader of ICLEI ES´ Sustainable Resources, Climate & Resilience (SRCR) team; Diploma in Spatial Planning (Dipl. Eng. equivalent to MSc). Renowned expert for sustainability management, resource efficiency, climate adaptation and nature-based solution

Barbara Anton (F): Senior Coordinator in SRCR team, focus urban water management; Diploma in Education, Certificate as EU Consultant. With long track record in leading ICLEI teams in international projects related to integrated urban water management, climate change adaptation and blue-green infrastructure development.

Daniela Rizzi (F): Officer in SRCR team with focus on nature-based solutions. Diploma in architecture and urbanism and doctoral degree in landscape architecture and planning. Previously involved in planning sustainable measures for rainwater control and water quality improvement as urban landscape researcher in Sao Paulo.

Nea Pakarinen (F), Officer in the Communications and Member Relations team. M.Sc. in Environmental Sciences – Sustainable Development, MA Coursework on International Journalism and BA in Business Administration. Leading the communication and dissemination of several NBS projects at ICLEI, including NetworkNature.

Relevant publications

Trémolet S. et al. (2019). Investing in Nature for Water Security. The Nature Conservancy, Ecologic Institute and ICLEI. London, United Kingdom

Reil, A., Anton, B. (2014). Institutional Analysis Module - A step-by-step guide to understanding and improving urban water governance systems supporting integrated urban water management solutions (IUWM). Prepared for Global Water Partnership (GWP).

Reil, A., Anton, B. (2014) Background Paper – An Overview of Water Governance, Institutions and Institutional Agencies for IUWM. Prepared for Global Water Partnership (GWP).

Philip, R., Anton, B. et al. (2011) SWITCH Training Kit – Integrated Urban Water Management in the City of the Future. Published by ICLEI European Secretariat on SWITCH Training Desk

Green, C., Anton, B. (2012). Why is Germany 30 years ahead of England? International Journal of Water (IJW), Vol. 6, No. 3/4, 2012. DOI: 10.1504/IJW.2012.049496

Relevant projects or activities

NetworkNature (Horizon 2020), 2020-2023, (website still under construction), ICLEI coordinates the project which is the successor of the earlier ThinkNature project to establish and maintain a multi-stakeholder dialogue platform to promote nature-based solutions to societal challenges.

CLEVERCities (Horizon 2020), 2018-2023, https://clevercities.eu/, ICLEI's main roles are to lead the work packages on replication and dissemination.

Water Security Europe (The Nature Conservancy), 2019, ICLEI worked on identification of entry points for local governments to help mainstream nature-based solutions in water resources management as input for the Investing in Nature for Water Security report.

INCOVER: Innovative Eco-Technologies for Resource Recovery from Wastewater (Horizon 2020), 2016-2019, https://incover-project.eu/, ICLEI organised the engagement of stakeholders via the Advisory Board.

Urban Water Agenda 2030: (European Commission, DG Environment), 2017-2018, ICLEI co-developed the strategy to reach out to local authorities in water management through the establishment of a new platform to stimulate more effective, integrated urban water management.

GREEN SURGE: Green Infrastructure and Urban Biodiversity for Sustainable Urban Development and the Green Economy (Horizon 2020), 2013-2017, (www.greensurge.eu), ICLEI led the establishment and coordination of the Focal Learning Alliances in five European cities to advance urban green infrastructure implementation and link green spaces, biodiversity, people and the green economy.

Significant infrastructure and/or any major items of technical equipment

N/A

4.1.9 ICRA: Fundacio Institut Catala de Recerca de l'Aigua

Partner number and name	9. Fundacio Institut Catala de Recerca de l'Aigua	
Short name	ICRA	

Description of the legal entity

ICRA (http://www.icra.cat) was founded in 2006 as an initiative for multidisciplinary research dealing with the integral water cycle, hydraulic resources, water quality and treatment and assessment technologies for treatment, recycling and reuse of water, especially in conditions of scarcity. The specific characteristic of ICRA is the aggregation of most strategic areas in water research (chemistry, ecology, water technology, microbiology, etc.) in a single Institute by enhancing integration and promoting a Mediterranean perspective of water issues. ICRA's lines of research are organized in three main areas: (i) Resources and ecosystems, dealing with the spatial and temporal dynamics of water resources and its potential effects; (ii) Water Quality, providing a complete and efficient response to the problems and challenges related to water quality; (iii) Technologies and evaluation, evaluating methodologies and technologies for optimizing resources, energy efficiency, and cost minimization of processes related to the urban water system. The 3 areas will participate in MULTISOURCE.

Competence and main role(s) in the project

ICRA will be leading WP4 and coordinating the Girona pilot, together with Municipality of Girona. ICRA will also have a small participation in the other WPs.

Profile of key staff members who will be undertaking the work

Prof. Joaquim Comas (M): Leading the Modelling and integrated assessment research line of ICRA and Ass. Prof. of the University of Girona. Membrane technologies, nature-based solutions and decision support tools to implement circular management of urban water systems. 120+ SCI papers, h-index 30 (Scopus 18/06/20).

Dr. Vicenç Acuña (M): Research scientist at the area of Resources and Ecosystems at ICRA. Effects of global change on the functioning of freshwater ecosystems, and integration of ecosystem services in management. 90+ SCI papers, h-index 42 and 4439 citations (Scholar 18/06/2019).

Dr. Sara Rodríguez-Mozaz (F): Research scientist at the area of Quality at ICRA. Fate of different emerging contaminants (pharmaceuticals, Endocrine Disruptors and their transformation products) in fresh waters as well as in other environmental matrices such as biota. 130+ SCI publications, h-index 47 (Scopus 18/06/2020).

Dr. Lluis Corominas (M): Research scientist at the area of Technologies and Evaluation at ICRA. management of urban water systems and sustainability assessment. Involved (as IP and/or partner) in more than 20 public/private R+D+I projects. 60+ SCI papers, h-index of 26 and 2392 citations (Scholar 18/6/2020).

Prof. Ignasi Rodriguez-Roda (M): Head of the area of Technologies and Evaluation at icra and Full Professor at the Chemical Engineering Department (UdG). DSS, MBRs and other technologies for wastewater treatment and reuse. 130+ SCI publications, h-Index 32 (Scopus 18/06/2020).

Relevant publications

Rodriguez-Mozaz, S., Vaz-Moreira, I., Varela Della Giustina, S., (...), Walsh, F., Manaia, C.M., 2020. Antibiotic residues in final effluents of European wastewater treatment plants and their impact on the aquatic environment. *Environment International*, 140,105733.

Radinja, M., Comas, J., Corominas, L., Atanasova, N., 2019. Assessing stormwater control measures using modelling and a multi-criteria approach. *Journal of Environmental Management* 243: 257-268.

Zraunig, A., Estelrich, M., Gattringer, H., Kisser, J., Langergraber, G., Radtke, M, Rodriguez-Roda, I., Buttiglieri, G., 2019. Long term decentralized greywater treatment for water reuse purposes in a tourist facility by vertical ecosystem. *Ecological Engineering*, 138, 138-147.

Hadjimichael, A., Morera, S., Benedetti, L, Fleming, T., Weijers, S., Corominas, L., Comas, J., 2016. Assessing urban wastewater system upgrades using integrated modeling, life cycle analysis and shadow pricing. *Environmental Science and Technology* 50(23): 12548-12556.

Poch, M., Comas, J., Rodríguez-Roda, I., Sànchez-Marrè, M., Cortés, U. , 2004. Designing and building real environmental decision support systems. *Environmental modelling and software*, 19(9), 857-873.

Relevant projects or activities

SNAPP/Sanitation for and by nature project (The Nature Conservancy-NCEAS), 2018-2020, https://snappartnership.net/teams/water-sanitation-and-nature/. Prototype decision support system, initial data and knowledge base, to be expanded with NBSWT and ENTS.

HYDROUSA/Demonstration of water loops with innovative regenerative business models for the Mediterranean region (Horizon 2020). 2018-2022, www.hydrousa.org. Risk management in resource recovery, regenerative business models for urban water management in the context of the EU Green Deal.

CircularCity Re.Solution/Implementing Nature Based Solutions for creating a resourceful circular city (COST Action), 2018-2022, https://circular-city.eu/. Catalogue of urban NBS for resource recovery and circular economy possibilities.

EdiCitNet/Integrating edible city solutions for socially resilient & sustainably productive cities. (Horizon 2020), 2018-2023, www.edicitnet.com Database of NBS for food production, to be included in technology selection tool; web-based tools for NBS selection, serious game for urban planning.

CLEaN-TOUR/ Circular economy to facilitate water reuse in a touristic city: centralized or decentralized? (MINECO, Spain), 2018-2020, http://clean-tour.000webhostapp.com/. Study of vertical wetland for greywater treatment with edible plants, removal of micropollutants, evaluation of risks.

Significant infrastructure and/or any major items of technical equipment

ICRA is located in the Scientific and Technological Park of the University of Girona and it belongs to the "Centres de Recerca de Catalunya (CERCA)" which demonstrates its capacity to carry out high quality and relevant interdisciplinary research. ICRA's main building (H2O Building) has space for 550 m^2 of offices, 1150 m^2 of labs and 800 m^2 of workshop facilities and has different facilities that provide highly qualified scientific support to all research demands: the chemical analysis unit, the mass spectrometry unit, the biological and molecular techniques unit, the microscopy unit, the water science and technologies-research platform (PLANTEA), and a High-Performance Computing (HPC) cluster.

4.1.10 INRAE Transfert S.A.S (IT)

Partner number and name	10. INRAE Transfert S.A.S	
Short name	IT	

Description of the legal entity

INRAE Transfert (IT) is a private company under the direct control of INRAE, dedicated to providing professional support services in the fields of technology transfer, research project development, project management and exploitation. INRAE Transfert leverages and manages INRAE's portfolio of technologies via operating agreements with industrial firms and supports the development of innovative young start-ups. To carry out its missions, IT has a staff of over 100 employees from a wide range of professions to support research and innovation throughout the research and development chain. The European Projects Department at IT has a staff of 28 professional project managers, administrators and in-house consultants who support INRAE researchers and their partners in setting-up and managing collaborative research projects as well as in developing and implementing project communication, dissemination and exploitation plans. The Department has developed its own methodology, tools and best practice based on 15 years' experience of developing and managing over 100 projects going back to the beginning of FP6. The Department is currently managing 35 collaborative research projects in the field of agriculture, environment, food and biotech

Competence and main role(s) in the project

IT will support the Project Coordinator (INRAE), the MULTISOURCE decision-making and implementing bodies of the project and the whole consortium (WP8). Amongst others, IT will support the consortium on administrative and financial issues, meeting logistics, etc. and will develop and update the project collaborative workspace (internal website for information exchange and storage).

Profile of key staff members who will be undertaking the work

Bénédicte BARD (F): is Team Leader and holds a Master in corporate management and EU project engineering. Since 2006, she has managed several EU projects ranging from Europaid project (URB-AL), Network of Excellence (FP6-ENDURE), Infrastructure (H2020-AQUAEXCEL2020) and Collaborative projects (NoAW, EcoBioCAP), She also has strong experience in the building of European proposals.

Cloé PAUL-VICTOR (F): is a Project Manager. She holds a PhD in Natural Sciences (University of Zurich). She gained a solid research experience in plant sciences after two postdocs. She has also project management experience both in private companies and in European research (H2020-EUCLEG, H2020 EPPN2020).

Serena MAURIES (F): is a Project Administrator. She holds a master's degree in international Cultural Strategies. She gained project management experience both in private companies and international relations offices in higher education.

Relevant projects or activities

The projects listed below are not linked to the thematic of MULTISOURCE are H2020 RIA projects:.

NoAW No Agricultural Waste (Horizon 2020), 2016-2020

IBISBA 1.0/, 2017-2021. Industrial Biotechnology Innovation and Synthetic Biology Accelerator, H2020 infrastructure project www.ibisba.eu.

SolACE "Solutions for improving Agroecosystem and Crop Efficiency for water and nutrient use". (Horizon 2020, 2017-2022

NEFERTITI/Networking European Farms to Enhance Cross Fertilisation and Innovation Uptake through Demonstration. (Horizon 2020, 2018-2021)

AGRILINK/Agricultural knowledge: linking farmers, advisors and researchers to boost innovation (Horizon 2020, 2017-2021)

Significant infrastructure and/or any major items of technical equipment

IT holds a SharePoint license to establish collaborative workspaces for each project managed by IT. This tool will allow MULTISOURCE partners and stakeholders to access project resources and documents at a central point for smooth knowledge management and information flow.

4.1.11 INSA: Institut National des Sciences Appliquées de Lyon

Partner number and name	11. Institut National des Sciences Appliquées de Lyon – INSA
Short name	INSA

Description of the legal entity

INSA Lyon (National Institute of Applied Sciences of Lyon) is a leading engineering school with more than 1400 graduates each year, and a total of 5400 students (including 4500 engineering students). INSA Lyon hosts 23 research laboratories, more than 700 faculty members, 650 PhD students, and over 1000 industrial contracts with the socio-economic world. INSA Lyon participated in 33 FP7 projects and is now involved in 24 H2020 projects.The DEEP laboratory (Wastes, Water, Environment & Pollutions) includes 25 faculty members, 10 technicians and administrative staff, and around 30 doctoral and post-doctoral fellows who bring their respective expertise in civil engineering, process engineering and environmental chemistry to develop multi-disciplinary research in environmental engineering. DEEP develops research particularly in urban drainage, stormwater management and sewerage in cities, and in characterization and treatment of solid waste, soil and sediment. DEEP conducts multidisciplinary research in environmental engineering, from pilot-scale experimentation to the long-term monitoring on real sites in industrial and urban environments.

Competence and main role(s) in the project

INSA will contribute in WP5 for the development of the MULTISOURCE planning tool. DEEP will develop a numerical tool able to optimize the disconnection of stormwater from sewer network in urban areas and to predict the dynamic pollutant loads. DEEP skills are crucial to capture key processes at various spatio-temporal scales.

Profile of key staff members who will be undertaking the work
Gislain LIPEME KOUYI (M): is Associate Professor, Director and scientific chair of OTHU research federation FED 4161 (field observatory for urban water management - www.othu.org). His main research fields in the laboratory DEEP are urban drainage and urban water systems, particularly modelling of hydrodynamics and multiphase flow, stormwater management, NBS hydrological modelling and multiscale modelling and experiments for urban water systems. Teaching fields: numerical modelling, decision aid method, hydrology, hydraulics, fluid mechanics **Hélène CASTEBRUNET (F):** is Associate Professor, working on urban hydrology, urban stormwater management - monitoring and modelling of alternative techniques (stormwater control measures): analysis of water and pollutant flows; metrology, data processing and analysis. Supervision of the technical team of the field observatory for urban water management (www.othu.org). Teaching fields: general physics, hydrology, hydrogeology, geosciences
Relevant publications
Sun, S., Barraud, S., Castebrunet, H., Aubin, J.-B., & Marmonier, P. (2015). Long-term stormwater quantity and quality analysis using continuous measurements in a French urban catchment. Water Research, 85, 432-442. Garnier, R., Castebrunet, H., Sébastian, C., & Barraud, S. (2019). Micropollutants removal efficiency of stormwater control measures: comparison of a centralized system with source control structures. In 10th international conference on sustainable urban water management – NOVATECH, Lyon, France Bouarafa, S., Lassabatere, L., Lipeme-Kouyi, G., & Angulo-Jaramillo, R. (2019). Hydrodynamic Characterization of Sustainable Urban Drainage Systems (SuDS) by Using Beerkan Infiltration Experiments. Water, 11(4), 660. Large dataset from field observatory for urban water management: https://geonetwork-othu.data.grandlyon.com/geonetwork Canoe software for urban drainage modelling – www.canoe-hydro.com
Relevant projects or activities
MICROMEGAS: (funded by French national bureau for biodiversity), 2015-2019, http://graie.org/micromegas-lyon, Performances of SCMs (Source Control Measures) for the management of micropollutants in stormwater urban discharges - Comparison between centralized and source-based management systems in Lyon. **CONSCEQUANS:** (granted by Water Agency), 2019-2021, Development of an operational tool to evaluate the value of implementing NBS at watershed scale under global changes (urbanisation and climate change). **INFILTRON:** (funding by French national research agency) 2018-2022 - https://infiltron.org/ assessing filtration and infiltration functions of NBS soils for stormwater management.
Significant infrastructure and/or any major items of technical equipment
Experimental sites and large dataset from Field Observatory on Urban Drainage – www.othu.org: three SUDs facilities (a permeable parking lot, a swale and an infiltration trench) and a field detention basin (more than 20 years inlet and outlet monitoring for quantity and quality purposes).

4.1.12 IRIDRA: IRIDRA srl

Partner number and name	12. IRIDRA srl	
Short name	IRIDRA	

Description of the legal entity
IRIDRA (www.iridra.com) is a small (6 associated + 2 staff) engineering and consulting company (SME), born in 1998 and based in Florence. IRIDRA realizes any activity connected with analysis, planning and design for sustainable water management and sanitation, mainly by NBS. IRIDRA members are actively collaborating since about 20 years with the main national environmental organizations and relevant associations of the water sector like

the International Water Association. IRIDRA is also one of the founding companies of Global Wetland Technology, a consortium of 10 companies which have been operating for almost 20 years in the Environmental Engineering sector, with particular specialisation in wastewater treatment and water pollution control by Treatment Wetlands. IRIDRA is member of the Constructed Wetland Association (CWA), based in UK.

Competence and main role(s) in the project

IRIDRA will mainly contribute to WP1 by executing monitoring activities at the Merone CSO CW and analysing the obtained datasets; Iridra, being a SME with more than 20 years of field experience in the NBS sector, will also contribute providing inputs to the business models elaboration, to the selection and design WP, to the planning tool setup. It will also collaborate with CMM to the Italian stakeholder's involvement and actively participate to all the possible dissemination events (workshops, international conferences) and peer-reviewed open access publications.

Profile of key staff members who will be undertaking the work

Giulio CONTE (M): is a biologist, freelance consultant, Technical Director at Ambiente Italia (www.ambienteitalia.it) and water policy expert at IRIDRA, has 30 years of experience in environmental analysis, planning and design, mainly focused on water resources, water ecosystems and river basins management. Currently, beside working with Ambiente Italia and Iridra, is consultant as ecologist for the Italian Observatory of River Contracts of the Ministry of the Environment, ERSAF (Lombardy Regional Body providing technical assistance for agriculture and forestry), UNDP GEF Kura Project "Advancing Integrated Water Resource Management (IWRM) across the Kura river basin through implementation of the trans-boundary agreed actions and national plans". Author of more than 50 articles (including scientific – peer reviewed – and informative papers) and of a book on sustainable water management in the domestic sector (Nuvole e Sciacquoni. Edizioni Ambiente – Milano 2008. ISBN 978-88-89014-76-9).

Riccardo BRESCIANI (M): is an Environmental Engineering expert in sustainable water management, wastewater process and hydraulic design and construction with a particular specialization in the use of Constructed Wetlands, Environmental Accounting, Auditing and Assessment. Riccardo graduated in 2001 and in the same year has received the professional Engineer License from the Chamber of Engineers of Florence. Riccardo is project manager for the Italian engineering company IRIDRA Srl since 2001 and since 2005 is also member and Quality processes responsible for the same company. He is the project co-author for over 450 Designs of Constructed Wetlands for wastewater treatment and reuse; he has also followed several realisation works as Supervisor or for assistance in the supervision and as responsible for safety plans. He has been consulting for Sustainable Water Management projects in Europe, Asia, North-Africa, Central America, collaborating with several UN agencies (UNOPS, UNEP, UNDP) and NGOs as OXFAM, GVC, ICEI. He is currently involved in EC funded projects in the ENI CBCMED and Horizon 2020 programs.

Anacleto RIZZO (M): is M.Sc. in Civil Engineering, PhD in Engineering for Natural and Built Environment in 2013. Expert in water sustainable management (saving, reuse, recycling); nature-based solutions for wastewater treatment (constructed wetland); water management and climate change adaptation policy; ecosystem services; green infrastructure; sustainable drainage systems (SuDS). Post-Doc in Numerical modelling of hydro-chemical processes in wetlands in 2014 (Politecnico di Torino). From January 2015 in-house consultant in Research, Development, Dissemination and Design for Iridra Srl; from April 2018 he became partner of Iridra Srl. He is author of 17 papers peer reviewed papers and 3 book chapters.

Relevant publications

Rizzo A., Tondera K., Pálfy T.G., Dittmer U., Meyer D., Schreiber C., Zacharias N., Ruppelt J.P., Esser D., Molle P., Troesch S., Masi F., (2020). Constructed wetlands for combined sewer overflow treatment: A state-of-the-art review, Science of the Total Environment https://doi.org/10.1016/j.scitotenv.2020.138618

Rizzo A., Bresciani R., Masi F., Boano F., Revelli R., Ridolfi L., (2018). Role of constructed wetlands used to treat combined sewer overflow in urban runoff management. Journal of Hydrology, 560, 150-159, DOI: 10.1016/j.jhydrol.2018.03.020.

Masi F., Rizzo A., Bresciani R., Conte G., (2017). Constructed Wetlands for Combined Sewer Overflow treatment: ecosystem services at Gorla Maggiore, Italy, Ecological Engineering, 98, 427–438, doi:10.1016/j.ecoleng.2016.03.043.

Liquete C., Udias A., Conte G., Grizzetti B., Masi F., (2016). Integrated valuation of a nature-based solution for water pollution control. Highlighting hidden benefits. Ecosystem Services, 22, 392-401, ISSN 2212-0416, DOI: 10.1016/j.ecoser.2016.09.011.

Meyer D., Molle P., Esser D., Troesch S., Masi F., Dittmer U. (2013). Constructed Wetlands for Combined Sewer Overflow Treatment—Comparison of German, French and Italian Approaches. Water.; 5(1):1-12.

Relevant projects or activities
OpenNESS / Operationalisation Of Natural Capital And Ecosystem Services: From Concepts To Real-World Applications (EU contract 308428 FP7-ENV-2012-two-stage) 2013-2017, www.openness-project.eu – Under this project IRIDRA has collaborated with JRC Ispra in monitoring a CSO CW located in Gorla Maggiore (Varese province) evaluating main and side benefits in terms of provided Ecosystem Services. **WMED /** Sustainable domestic water use in Mediterranean Regions (ENPI CBCMED –Priority 2 - Contract Number: BI/2.1/548), 2011 – 2014, www.swmed.eu/ , Elaboration of Feasibility Studies, of a DSS and Dissemination activities for promoting NBS in the Mediterranean basin countries. **NaWaTech /** Natural Water System and Treatment Technologies to Cope with Water Shortage in Urbanized Areas in India (EU contract 308336 of the 7th FP ENV-2012-6.6-1), 2012-2015, https://cordis.europa.eu/project/id/308336 , Design, monitoring and promotion of different NBS in India. **HYDROUSA** / Demonstration of Water Loops with innovative Regenerative Business models for Mediterranean Region (H2020 CIRC-02-2016-2017 Water - Grant Agreement No. 776643), 2018-2023, https://www.hydrousa.org, Use of NBS for testing possible ways to create the Water-Energy-Food nexus. **NAWAMED** / Nature Based Solutions for Domestic Water Reuse in Mediterranean Countries (ENI CBCMED), 2019-2023, www.enicbcmed.eu/projects/nawamed, Implementation of NBS for water reuse and increasing resilience to climate change in Mediterranean cities.
Significant infrastructure and/or any major items of technical equipment
N/A

4.1.13 GLYON: Métropole de Lyon

Partner number and name	13. Metropole de Lyon	GRANDLYON la métropole
Short name	GLYON	

Description of the legal entity
Metropole de Lyon is a local authority created on January 1st of 2015. It brings together 59 municipalities and 1.3 million inhabitants over 533.7 km^2. It has many skills including economic development, development of the living environment, roads, town planning, management of the large and small water cycles, management of aquatic environments, flood prevention, collective and non-collective sanitation. In the field of water management, Metropole de Lyon has displayed for many years strong ambitions in terms of management at the source of water and innovates through establishment of nature-based water management infrastructure.
Competence and main role(s) in the project
GLYON will bring its analysis as a local authority but also as a consulting office to identify the political, societal and regulatory constraints and techniques related to the development of decentralized water management from nature-based solutions on its territory. GLYON will also support the development of the MULTISOURCE tools.
Profile of key staff members who will be undertaking the work
Caltran HERVE, (M): With a PhD in ecology, he worked in several public bodies on the large and the small water cycle. He collaborates with research teams in ecology, urban planning and urban hydraulics. He works as a university professor and leads a cooperation project with Quebec on surface water management practices in the city. **Matthieu HERVE**, (M): Head of the strategy, research and development unit of the water department, which works on the definition and respect of priorities in terms of water management within the management team but also within public policies led by other metropolitan departments and other players in the territory (industrial, municipalities, private, etc.)
Relevant publications
" La démarche Ville perméable de la Métropole de Lyon : retours d'expérience et perspectives." E. SIBEUD , M. FLORIAT , E. BOULOGNE . TSM 4 2018

" Espace d'eau et de nature en ville. Rationalités et imaginaires au sein des collectivités européennes, l'expérience de la métropole lyonnaise." N. COSSAIS, E. SIBEUD, 2017, in Ecologie politique de l'eau. Rationalités, usages et imaginaires, Hermann.

" Comment développer l'utilisation des nouvelles technologies à la parcelle ? La stratégie de la Métropole de Lyon." B. CHACAT, E. SIBEUD, M. VALDELFENER. 2019. Novatech.

" Logiciel Parapluie : logiciel de dimensionnement grand public pour les techniques de gestion alternatives des eaux"

Relevant projects or activities

Ville Perméable: 2015-2019, Rainwater management policy which primarily aims to limit the waterproofing of the city. The placement of porous surfaces on new projects to avoid runoff.

https://www.grandlyon.com/fileadmin/user_upload/media/pdf/eau/20170926_guide-projet-ville-permeable.pdf

LIVE ARTISAN: Accroître la Résilience des Territoires au changement climatique par l'Incitation aux Solutions d'adaptation Fondées sur la Nature. (Programme Life Européen). 2020-2028. https://www.afbiodiversite.fr/index.php/actualites/lancement-du-projet-life-integre-artisan. Stormwater management policy which primarily aims to disconnect stormwater and create demonstration sites for citizens and the professional public.

Cooperation Quebec City/Métropole de Lyon. (Fonds Franco-Quebecois pour la cooperation décentralisée). 2019-2020. Cooperation for pooling innovations in urban surface water management practices (rainwater and waterways)

Système de traitement de surverse de DO par filtre planté de roseaux de Marcy l'étoile

Parapluie software: https://www.alison-envir.com/v3/hydrologie/logiciel-parapluie

Significant infrastructure and/or any major items of technical equipment

Metropole de Lyon has detailed hydraulic models of its sanitation systems on its territory, DTMs allowing the modelling of surface flows, zoning (AC/ANC), data on land use planning and existing infrastructure (self-monitoring of networks and stations such as reeds planted filter) and other databases that can be made available to the project as needed. A database of management structures at the source of rainwater has been initiated and will be completed.

Concrete measures to obtain operational capacity (if relevant only)

The work of GLYON in this project is in the continuity of the permeable city project, allowing time to make the inventory of the existing structures of the metropolis and to meet the actors of the territory and subject to understand then lift constraints on development of decentralized water techniques with solutions based on nature on its territory. This work is only possible by devoting time to the subject which will be made possible by the employment of an agent dedicated to this work over a period of one year.

4.1.14 CMM: Città Metropolitana di Milano

Partner number and name	14. Città Metropolitana di Milano	Città metropolitana di Milano
Short name	CMM	

Description of the legal entity

The Metropolitan City of Milan (CMM) is a local public authority established by the Italian Law 56/2014 and operating from the 1st of January 2015. The Metropolitan City of Milan governs the vastest metropolitan urban area in Italy. It includes the city of Milan and other 132 municipalities, representing a functional area of more than 5 million people. CMM implements and coordinates activities of strategic planning, sustainable mobility and urban public transports, including greening issues, territorial development, digital agenda and European policies and programming.

Competence and main role(s) in the project

The environment and territorial protection department of the metropolitan city of milan has a good knowledge of the climate and NBS issues thanks to the various projects and skills developed over the years. CMM manages a database of NBS cards in urban areas. CMM is also a public body that brings together 133 municipalities and

manages numerous functions in the environmental field. CMM will act as a network hub with its territory and other metropolitan cities to promote and disseminate the project results. It will also support the development of the MULTISOURCE tools.

Profile of key staff members who will be undertaking the work

Dr. Emilio De Vita (M) has a degree in law and has been working as a manager in the metropolitan city of Milan for many years. Until 2018 he was manager of the Department of Spatial Planning and Infrastructure. Since 2019 he has been Director of the Department of Environment and Land Protection, with expertise in air quality, waste management, soil remediation, landfill, quarry, etc. He is also Director of the Parco Agricolo Sud Milano.

Dr. Cinzia Davoli (F). Graduated in urban and environmental spatial planning at the department of Architecture of the Politecnico di Milano. She works in the Department of Environment and land protection of the Metropolitan City of Milan as head of the Service for Planning and Coordination of Strategic Projects and Management of Decision Support Systems. She is an expert in the analysis and production of spatial data and spatial information systems. She manages the European projects dedicated to the environment and designs and coordinates the activities for the formation of the Metropolitan Agenda for Sustainable Development 2030.

Relevant publications

The Department of Environment and land Protection of the Metropolitan city of Milan manages:

INLINEA application, with which it manages the environmental authorizations and controls that technicians issue or activate for any request. thanks to this management software we could know the extent of the landfill phenomenon in the metropolitan area.

DECIMENTRO application, as an advanced publication tool for integrated data and indicators

METRO ADAPT PLATFORM: a platform showing climate change and an abacus of NBS useful for adaptation.

Internet Site within the institutional portal of the metropolitan city of Milan

Relevant projects or activities

LIFE17 CCA/IT/000080 - METRO ADAPT - Enhancing climate change adaptation strategies and measures in the Metropolitan City of Milan, EU contribution: € 670,417 from 03/09/2018 to 30/09/2021 Coord.: Città Metropolitana di Milano. Partner: ALDA, Ambiente Italia, CAP Holding, e-GEOS, Legambiente Lombardia http://www.lifemetroadapt.eu/it/

NATURE4CITIES – Be part of the green transition (grant agreement No 730468) From 01/11/2016 to 30/04/2021. The partnership is composed as follows: lead partner of the NOBATEK project - French Research Institute, 4 Public Administrations, including the Metropolitan City of Milan, 5 research institutes and technological organizations, 4 Universities, 2 Industries, 8 small and medium enterprises, 2 stakeholder clusters. www.nature4cities.eu

Metropolitan Agenda for Sustainable Development 2030. Contribution from contribution from the Ministry of the Environment, Land and Sea Protection. From 1/1/2020 to 30/6/2021 Coord: the Department of Environment and Land Protection. The project deals with the implementation of the United Nations Agenda 2030, implementing the national strategy for sustainable development

Significant infrastructure and/or any major items of technical equipment

N/A

4.1.15 MSU: Montana State University – Bozeman

Partner number and name	15. Montana State University - Bozeman	MONTANA STATE UNIVERSITY
Short name	MSU	

Description of the legal entity

Montana State University-Bozeman is the flagship Land-Grant (Public) university for the State of Montana. Founded in 1893, MSU-Bozeman has approximately 15,000 undergraduate and 2000 graduate students across 9 colleges. It is a Carnegie Tier-1 research institution averaging $150 million in annual research expenditures. The Norm Asbjornson College of Engineering houses the internationally-recognized Center for Biofilm Engineering www.biofilm.montana.edu/ and the Department of Civil Engineering which offers undergraduate and graduate

degrees in both Civil and Environmental Engineering. The key staff members are faculty in both the Department of Civil Engineering and the Center for Biofilm Engineering and are the lead faculty in Wetland Research Group with expertise in Wastewater Engineering and Wetland Science.

Competence and main role(s) in the project

MSU is responsible for operation and monitoring of a pilot in Bozeman, Montana (USA), which will contribute to data collection efforts in WP1. The data from the pilot will be risk assessed in WP2. The methodology for cost-benefit analysis and NBS^{WT} business models (WP3) will be transferred to MSU for engagement with local stakeholders, including local municipalities (City of Bozeman) and state agencies (Montana Department of Environmental Quality- MDEQ). MSU has treatment performance data and cost data for various NBS^{WT} operating in cold climate conditions, which will be included in the Technology Selection Tool (WP4), Life Cycle Analysis (WP4), and Decision Support Tool (WP5).

Profile of key staff members who will be undertaking the work

Dr Otto STEIN (M): Professor of Civil Engineering is the coordinator of the Environmental Engineering program with 30 years of experience of teaching, research and public outreach. He is on the management committee for the IWA specialist group Wetland Systems for Water Pollution Control and works with MDEQ to develop design criteria/guidelines for water quality remediation. Dr. Stein will be the key contact for the MSU partnership.

Dr Christopher ALLEN (M): Assistant Teaching Professor of Civil Engineering earned his PhD in 2016 and specializes in wetland systems for water quality remediation. He is also co-principal in the consulting firm Constructed Wetlands Design, LLC which implements wetland technology in Montana.

Dr Ellen LAUCHNOR (F): Associate Professor of Civil Engineering earned her PhD in 2011 and specializes in biofilm processes associated with nitrogen cycling, bio-mineralization and remediation of emerging contaminants.

Relevant publications

Woodhouse, S.L., C.R. Allen, E.G. Lauchnor, O.R. Stein. 2018. Influence of Recycle with Partial Saturation on Denitrification in a Two-Stage, Vertical Flow Treatment Wetland. Proc. 16th Inter. Conf. on Wetland Systems for Water Pollution Control.

Dotro, G., G. Langergraber, P. Molle, J. Nivala, J. Puigagut, O. Stein, and M. von Sperling. 2017. Treatment Wetlands. Biological Wastewater Treatment Series, Vol. 7. IWA Publishing London, UK. 178 pgs. ISBN: 9781780408767, eISBN: 9781780408774.King, S. (2010). The best wines and where to find them. In: Loftus, E., ed., Fine Wine: A Guide, 1st ed. Nottingham: Delectable Publications, pp. 28-46.

Zhang, L., T. Lv, Y. Zhang, O.R. Stein, C.A. Arias, H. Brix, P.N. Carvalho 2017. Effects of Constructed Wetland Design on Ibuprofen Removal –A Mesocosm Scale Study. Science of the Total Environment. 609:38-45.

Allen, C.R. O.R. Stein, P.B. Hook, M.D. Burr, A.E. Parker and E.C. Hafla. 2013. Temperature, Plant Species and Residence Time Effects on Nitrogen Removal in Model Treatment Wetlands. Water Science and Technology. 68(11):2337-2343.

Faulwetter, J.L., V. Gagnon, C. Sundberg, F. Chazarenc, M.D. Burr, J. Brisson, and O.R. Stein. 2009. Microbial Processes Influencing Performance of Treatment Wetlands: A Review. Ecological Engineering. 35(6):987-1004.

Relevant projects or activities

Piloting Modern Treatment Wetland Technology for Montana. Montana Department of Environmental Quality and City of Bozeman. $355,000. 7/1/2020 - 6/30/2024. Design, construct and monitor three unique treatment wetland technologies (French raw wastewater, post-lagoon ammonia removal and post mechanical tertiary) for application in Montana.

Vertical Flow Subsurface Constructed Wetland Technology to Mitigate Aquaculture Effluent Flows at Ennis National Fish Hatchery. US Fish and Wildlife Service. 5/1/2013 - 5/31/2019. Design and construct a vertical flow treatment wetland for solids removal at the hatchery.

Monitoring of a Pilot Vertical Flow Treatment Wetland System. Montana Department of Environmental Quality. 10/1/2013 - 10/31/2016. Developed design criteria for vertical flow wetlands systems treating high-strength wastewater.

Profiling Community Drug Abuse by Municipal Wastewater Analysis. US National Institute of Health 8/1/2018 - 7/31-2019. Developed methodologies to measure opioids in wastewater and used results to assess at-risk communities and degradation rates within mechanical and lagoon municipal wastewater systems

Story Mill Site Wetland Restoration Monitoring. Montana Department of Environmental Quality. $74,000. 6/1/2014 - 6/15/2016. Assessed water quality improvement for a rehabilitated urban wetland.
Significant infrastructure and/or any major items of technical equipment
Full environmental engineering laboratory facilities including IC, GC, ICP-MS, + access to full range of Center for Biofilm Engineering laboratory facilities (confocal microscope, microbial genomics etc.).

4.1.16 NIVA: Norsk Institutt for Vannforskning

Partner number and name	16. Norsk Institutt for Vannforskning	NIVA Norwegian Institute for Water Research
Short name	NIVA	

Description of the legal entity
NIVA is Norway's leading institute for basic and applied research on marine and freshwaters. The institute's research comprises a wide array of environmental, climatic and resource-related fields. NIVA's world-class expertise is multidisciplinary with a broad scientific scope. NIVA combines research, monitoring, evaluation, problem-solving and advisory services at international, national and local levels. NIVA's broad scope of competence, research expertise and extensive data collections represent an important resource for Norwegian business activities and industries, public administration on a municipal, regional and national level, and for Norwegian interests in the international arena.
Competence and main role(s) in the project
NIVA will have a main responsibility for monitoring the pilot in Oslo (WP1). In addition, NIVA will be responsible for microplastic analysis using pyrolysis GC-MS (WP2). In WP2, NIVA will be WP leader and have a main responsibility for the risk assessment of the water quality (treated and untreated) measured in the ENTS. This will be done by using computational toxicology with NIVA RAdb tool and Bayesian Network Modelling. NIVA will take part in stakeholder engagement (WP6) with a special emphasis on the Norwegian pilot. There will be a close collaboration with Oslo municipality, and we will engage with companies and public in general during activities related to the pilot (e.g. demonstration, meetings/workshop). NIVA will take part in transfer of data and output from WP2 to WP4 and WP5. In addition, take a minor role in WP4 and WP5 as a discussion partner, e.g. how to utilise output from WP2.
Profile of key staff members who will be undertaking the work
Dr. Sondre Meland (M): Research manager. Have high expertise in topics related to highway and urban stormwater pollution including environmental chemistry, ecotoxicology, impacts and measures. He has good skills in stakeholder interaction. **Prof. Dr. Knut Erik Tollefsen (M):** Lead research scientist. Leader of NIVA's computational Toxicology Program (www.niva.no/nctp). His core work includes experimental and computational approaches for effect (hazard) assessment, adverse outcome pathway development, environmental monitoring, and cumulative hazard and risk assessment He is the main developer of NIVA RAdb. **Dr. Jannicke Moe (F):** Senior research scientist. Expertise in data management, statistics and ecological modelling, focusing on multiple stressors and biological indicators in aquatic environments. Her recent research focuses on applications of Bayesian networks in ecotoxicology and environmental risk assessment.
Relevant publications
Moe, S.J., Madsen, A.L., Connors, K.A., Rawlings, J.M., Belanger, S.E., Landis, W.G., et al. (2020). Development of a hybrid Bayesian network model for predicting acute fish toxicity using multiple lines of evidence. Environmental Modelling & Software 2020; 126: 104655, doi: https://doi.org/10.1016/j.envsoft.2020.104655. Meland, S., Sun, Z., Sokolova, E., Rauch, S., Brittain, J.E. (2020). A comparative study of macroinvertebrate biodiversity in highway stormwater ponds and natural ponds. Science of The Total Environment 2020; 740: 140029, Doi: https://doi.org/10.1016/j.scitotenv.2020.140029

Faust, M., Backhaus, T., Altenburger, R., Dulio, V., van Gils, J., Ginebreda, A., Kortenkamp, A:, Munthe, J., Posthuma, L., Slobodnik, J., Tollefsen, K.E., van Wezel, A. and Brack, W. (2019). Prioritisation of water pollutants: the EU Project SOLUTIONS proposes a methodological framework for the integration of mixture risk assessments into prioritisation procedures under the European Water Framework Directive. Environmental Sciences Europe 2019; 31: 66. Doi: https://doi.org/10.1186/s12302-019-0239-4

Rødland, E.S., Okoffo, E.D., Rauert, C., Heier, L.S., Lind, O.C., Reid, M., Thomas, K.V., and Meland, S. (2020). Road de-icing salt: Assessment of a potential new source and pathway of microplastics particles from roads. Science of The Total Environment 2020: 139352. Doi: https://doi.org/10.1016/j.scitotenv.2020.139352

Altenburger, R., Ait-Aissa, S., Antczak, P., Backhaus, T., Barceló, D., Seiler, T.B., Brion, F., Busch, W., Chipman, K., de Alda, M.L., de Aragão Umbuzeiro, G., Escher, B.I., Falciani, F., Faust, M., Focks, A., Hilscherova, K., Hollender, J., Hollert, H., Jäger, F., Jahnke, A., Kortenkamp, A., Krauss, M., Lemkine, G.F., Munthe, J., Neumann, S., Schymanski, E.L., Scrimshaw, M., Segner, H., Slobodnik, J., Smedes, F., Kughathas, S., Teodorovic, I., Tindall, A.J., Tollefsen, K.E., Walz, K.H., Williams, T.D., Van den Brink, P.J., van Gils, J., Vrana, B., Zhang, X., Brack, W. (2015). Future water quality monitoring — Adapting tools to deal with mixtures of pollutants in water resource management. Science of The Total Environment 2015; 512-513: 540-551. https://doi.org/10.1016/j.scitotenv.2014.12.057

Relevant projects or activities

MIXRISK / Cumulative hazard and risk assessment of complex mixtures and multiple stressors (Norwegian Research Council 268294), 2017-2020, https://www.niva.no/en/projectweb/mixrisk, Computational and experimental identification and characterisation of cumulative hazard and risk of complex mixtures and multiple stressors under ecologically-relevant exposure scenarios.

New Water Ways / New Water Ways Sustainable Urban Water Management (Norwegian Research Council), 2017-2021, https://newwaterways.no/, NEW WATER WAYS researches and explores ways to move beyond today's conventional urban water management (UWM), particularly stormwater management.

SOLUTIONS / SOLUTIONS for present and future emerging pollutants in land and water resources management (FP7-ENV-2013), 2013-2018, https://www.solutions-project.eu/, Short description (2 lines) of the input of or link with PROJECT.

Significant infrastructure and/or any major items of technical equipment

NIVA Risk Assessment database (NIVA RAdb). NIVA has developed a database tool that facilitates rapid and consistent Hazard and Risk Assessment of single chemicals and mixtures of these. The Database tools utilize concepts outlined by Adverse Outcome Pathways (AOPs) to compile, assemble, integrate and visualize data from different levels of biological organization. Potential outcome from different modules of the database include identification of risk drivers (most toxic chemicals), relevant toxic endpoints (i.e. mode of action), susceptible species and species sensitivity distributions for a given aquatic exposure scenario.

4.1.17 OSLO: Oslo Kommune

Partner number and name	17. Oslo Kommune	Oslo
Short name	OSLO	

Description of the legal entity

The City of Oslo (Oslo kommune) is the capital of Norway and is both a county and a municipality. Currently, Oslo has a population of around 680.000 inhabitants, while 1,5 million people reside in the Oslo functional urban area in the neighbouring Viken county. Oslo was European Green Capital in 2019, is an active innovator city in C40, and has ambitious goals to reduce emissions by 95% by 2030. The City of Oslo will be represented in this project by the Agency for Urban Environment which is organised under the Department for Environment and Transport. The Agency is responsible for planning, development, management,operation and maintenance of public spaces in the city, including common areas such as roads and streets, squares and meeting places, parks and free areas. The Agency is also responsible for municipal sports facilities and outdoor facilities, as well as municipal landscape spaces in the forest and the islands of the inner Oslo Fjord.

Competence and main role(s) in the project

Oslo Kommune will manage the road runoff pilot in WP1 (HoffsveienPilot 1). Oslo Kommune aim to establish new future-oriented solutions for surface water purification. The Hoffsveien project will serve as a host for new ideas. OSLO will also support the development of the MULTISOURCE tools.

Profile of key staff members who will be undertaking the work

Project Manager Per- Arne Selmer (M): M Sc (NMBU 2013) Selmer has long experience in planning and design of systems for urban areas with a special competence in area development and environmental planning. He has been managing projects for more than 30 years. He has 7 years of experience in treatment of Stormwater to the North Sea in the Trondheim Municipality's environmental department, Inland municipalities and Enebakk municipality with wastewater treatment plants and wastewater systems.

Construction Manager Christine Mossum, (F) M Sc (University of Agder 2018): Mossum have a bachelor's degree in Construction Design (construction engineer) and a master's in Industrial Economics and Technology Management from the University of Agder. Of the relevant subjects from the bachelor, I have (in addition to road subjects) several subjects in the field of water management, including the bachelor's thesis on the calculation of quantities of water, designing a new water system and assessment of the reorganization of water and wastewater pipes for a defined area in Kristiansand.

Assistant Construction Manager Sara Færestrand Ellefsen, (F) M Sc (NMBU 2019): Ellefsen graduated as a Landscape engineer in the Spring of 2019. She has worked as an Assistant Construction Manager since June of the same year. Since then she has been involved in several exciting projects, and mostly bicycle projects.

Construction Manager Technical, Frank Sarastuen-Kleven (M): Sarastuen-Kleven is an electrician with long experience in planning and design of systems for road-project with a high competence in area development. He has been managing projects for more than 30 years as entrepreneur and Construction Manager

Relevant publications

City policy and ongoing program for reopening streams and rivers and stormwater strategy

Ongoing flood modelling and mapping

Collaboration with Norwegian Water and Energy Directorate on urban hydrology (monitoring, data collection and storage, modelling, research)

Public PhD 2016 – 2020 (Funded by Norwegian Research Council and Oslo Agency for Water and Wastewater services) Julia Kvitsjøen Resilient stormwater management systems Continuous monitoring of discharge and water quality

Relevant projects or activities

EditCitNet: Edible Cities Network - Integrating Edible City Solutions for social resilient and sustainably productive cities. Horizon 2020 Grant Agreement Number 776665. EdiCitNet will leverage the substantial benefits that NBS and edible city solutions (ECS) can have on local levels and catalyse their replication in the EU and worldwide by launching a fully open and participatory network of cities and by empowering their inhabitants to explore existing ECS and to plan and implement successful ECS in their specific urban areas. This will be done through Living Labs.

GreenGov. Project financed by the Research Council of Norway. The project focuses on innovative green governance and co-creation processes in four cities (Oslo, Gothenburg, Copenhagen and Cape Town). The main objective is to contribute cutting-edge knowledge on co-creational leadership as a means to enhance capacity for governing the green shift, through transdisciplinary research and shared learning in co-creation Living Labs, and to develop knowledge and policy lessons on governing the green shift at city level.

Significant infrastructure and/or any major items of technical equipment

The project includes compact installations adapted to dense urban areas comprising concrete elements for infiltration media, concrete manholes and pipelines for discharged stormwater. In preparation for research and development

4.1.18 RIETLAND: Rietland bvba

Partner number and name	18. Rietland bvba	
Short name	RIETLAND	

Description of the legal entity

Rietland bvba, founded in 1994 by Mr. Dion van Oirschot, is an SME, specializing in the design and construction of constructed wetlands for wastewater treatment. As part of an international consortium, Global Wetland Technology, Rietland has access to a wide range of expertise in natural treatment systems. Projects that Rietland has done were mainly located in Belgium and the Netherlands plus some in the Middle East and China. During the past decade Rietland has focussed on aerated treatment wetlands and developed and patented the Phytoparking treatment system.

Competence and main role(s) in the project

Rietland will contribute mainly to WP1, monitoring a Phytoparking system in Belgium. Next to that RIETLAND participates with a minor role in WP3, WP6 and WP7

Profile of key staff members who will be undertaking the work

Dion van Oirschot (M), owner/founder of Rietland, studied Physics and Technology & Society at the Eindhoven University of Technology in the Netherlands. In 1994 he founded Rietland. Key qualifications are the design and engineering of (aerated) wetlands and product development.

Mireille Martens (F), employee of Rietland since 2019, obtained her master's degree in applied environmental sciences in 2017 at Halmstad University Sweden and has been employed at HZ (Zeeland University, the Netherlands) and combines this with a part-time job for Rietland.

Relevant publications

Van Oirschot, D.: "RietLand vertical flow wetlands: 16 years of experience in the Netherlands and Belgium", proceedings 12th IWA International Conference on Wetland Systems for Water Pollution Control, October 4 - 8, 2010, Venice, Italy.

Van Oirschot, D, Wallace S.D., Van Deun, R.:.Wastewater treatment in a compact intensified wetland system at the Badboot: a floating swimming pool in Belgium, Nov 2014, Environmental Science and Pollution Research 22(17)

Arias, C.A., Van Oirschot, D et al. (2015) Design and performance evaluation of a highly loaded aerated treatment wetland managing effluents from a food processing industry in Denmark, Dec 2015 Water Practice & Technology 10(4):644-651

Wallace, S.D., Van Oirschot, D. Stefanakis A.: Aerated Wetlands, Wetland Technology: Practical Information on the Design and Application of Treatment Wetlands - Chapter 5.7, IWA Publishing, January 2020

Patent Water treatment – Phytoparking: WO EP BE BE1025249A1 Oirschot Dionysius Cornelius Antonius Maria Van Rietland Bvba, Priority 2017-05-22 • Filed 2017-05-22 • Published 2018-12-14

Relevant projects or activities

i-Qua Bernheze: (Interreg), 2019-2021, https://www.i-qua.eu/, Project studying decentralized wastewater treatment systems, including a Phytoparking system treating the grey water of soccer locker rooms / cafetaria

Significant infrastructure and/or any major items of technical equipment

All necessary office equipment for planning and design, supervision and logistics planning is available.

4.1.19 UFSC: Universidade Federal de Santa Catarina

Partner number and name	19. Universidade Federal de Santa Catarina	UNIVERSIDADE FEDERAL DE SANTA CATARINA
Short name	UFSC	

Description of the legal entity

The Universidade Federal de Santa Catarina (UFSC) has its main campus located in Florianópolis, capital of the state of Santa Catarina, Brazil. Founded on 18 December 1960 with the goal of promoting teaching, research and outreach, UFSC delivers free and public education and is placed among the best universities in Brazil and in Latin America. UFSC's mission is to produce, systematize, and socialize philosophical, scientific, artistic, and technological knowledge, broadening and deepening students' education for the professional practice, critical thinking, and national and international solidarity with a view to building a just and democratic society and also guaranteeing quality of life. UFSC's achievements are seen as reference in Brazil and abroad and its internationalization process includes cooperation agreements with educational institutions all over the world.

Competence and main role(s) in the project

UFSC will lead T2.3 and be involved in WP2, WP3, WP4, WP5, WP6 and WP7. UFSC has a good relationship with local water stakeholders, mainly some water and sanitation companies and regulatory agency. In WP 7 their good relationship with regulatory agency allows them to reach at least 200 municipalities in Santa Catarina States (South of Brazil). Most of these municipalities are small and need to improve the water and sanitation governance and are thus interesting situations in which to implement NBS^{WT}.

Profile of key staff members who will be undertaking the work

Dr. Pablo Heleno Sezerino (**M**): Associate Professor and Head of the Department of Sanitary and Environmental Engineering at UFSC. He coordinates the Decentralized Sanitation Research Group focusing on wastewater treatment, constructed wetlands technology and sewerage systems governance.

Dr. Maria Elisa Magri (F): Associate Professor in the Department of Sanitary and Environmental Engineering at UFSC. Coordinates a research group in environmental sanitation focused on resource recovery and nutrient recycling.

Relevant publications

Decezaro, Samara T.; Wolff, Delmira B.; Pelissari, Catiane; Ramírez, Rolando J.M.G.; Formentini, Thiago A.; Goerck, Janaína; Rodrigues, Luiz f.; Pablo Heleno. Influence of hydraulic loading rate and recirculation on oxygen transfer in a vertical flow constructed wetland, Science of the total environment. v. 668. p. 988-995, 2019.

Rousso, Benny Zuse; Pelissari, Catiane; Santos, Mayara Oliveira Dos; Pablo Heleno. Hybrid constructed wetlands system with intermittent feeding applied for urban wastewater treatment in south brazil, Journal of water sanitation and hygiene for development. v. 9. p. 559-570, 2019.

Pelissari, Catiane; Guivernau, Miriam; Viñas, Marc; García, Joan; Velasco-Galilea, María; Souza, Samara Silva; Sezerino, Pablo Heleno; Avila, Cristina; Effects of partially saturated conditions on the metabolically active microbiome and on nitrogen removal in vertical subsurface flow constructed wetlands, Water research. v. 141. p. 185-195, 2018.

Elmahdy, M.E.I.; Magri, M.E.; Garcia, L.A.; Fongaro, G.; Barardi, C.R.M.. Microcosm environment models for studying the stability of adenovirus and murine norovirus in water and sediment. International journal of hygiene and environmental health, v. 221, p. 734-741, 2018.

Magri, M.E.; Francisco, J.G.Z.; Sezerino, P.H.; Philippi, L.S. Constructed wetlands for sludge dewatering with high solids loading rate and effluent recirculation: characteristics of effluent produced and accumulated sludge. Ecological engineering, v. 95, p. 316-323, 2016.

Relevant projects or activities

Wetlands Brasil: Brazilian Research Group on Constructed Wetlands for Wastewater Treatment, 2011 – present, https://gesad.ufsc.br/apresentacaowetlandsbrasil/.

HUPANAM: Panamerican Group on Constructed Wetlands applied to Wastewater Treatment and Water Pollution Control, 2012 – present, https://www.facebook.com/hupanam . WC-GESAD: Constructed Wetlands applied to decentralized wastewater treatment (FUNASA / Convênio n.o 399/2011), 2013 – 2017, https://gesad.ufsc.br/pesquisa/.The main objective of this project was to evaluate operational parameters that enable decision making towards adoption of this ecotechnology.
Significant infrastructure and/or any major items of technical equipment
N/A

4.1.20 WE: Water Europe

Partner number and name	20. Water Europe	
Short name	WE	

Description of the legal entity
Water Europe (WE) is the recognized voice and promotor of water related RTD and innovation in Europe. WE strives to increase coordination and collaboration, to enhance the performance of the water service providers, water users, and technology providers, in a sustainable and inclusive way, and to contribute to solving water-related societal challenges. With over 200 members across Europe on board, WE is recognised by the European Commission as the industry-led European Technology Platform (ETP) for Water. WE envisions a smart-water society, in which the true value of water is recognised and realised and all available water sources are managed in such a way that water scarcity and pollution of groundwater are avoided.
Competence and main role(s) in the project
WE will be leading **work package (WP7)** in the development of a dissemination strategy, tailored to the needs of the project's partners, with the aim to maximise the visibility of the project outputs by sharing its outcomes with other partners, relevant institutions, organisations, and individuals. In consultation with the project partners, WE will deliver a communication and dissemination plan that takes into consideration the messages that have to be disseminated, the target audience, the methods that have to be applied and the most appropriate timing to put everything into practice. Additionally, WE will organize a different number of clustering activities to foster collaboration and synergies amongst projects with similar scope.
Profile of key staff members who will be undertaking the work
Durk KROL (M): is the director of WE. He has worked in the water sector at the European level for the last 10 years. Initially as senior legal policy officer for the water department of provincial government of Friesland (NL). As deputy secretary general of EUREAU (the European federation of national water associations of water suppliers and wastewater services), he was actively promoting the common interests of the European water service sector to the EU institutions and stakeholders. Durk has a master's degree in both International law and Latin American literature from the University of Leiden (NL) and an MBA from United Business Institutes in Brussels (Belgium). **Andrea RUBINI (M):** is the Director of Operations of the WE. He holds a master's degree in water resource engineering and worked in Asia and Africa for several WASH projects for the private sector and the UN. Starting from the late 90s he undertook the responsibility as Head of EU Project Department within the Chamber of Commerce system of the Lombardy Region and subsequently he was assigned to work as R&I Policy Advisor of the Lombardy Region Presidency Delegation to the EU in Brussels. He is regular lecturer of the International Labour Organisation for the Public Procurement Masters and for the Master on Energy Efficiency organised by the Faculty of Engineering of the La Sapienza University of Rome. **Ana DE LEON SUNDHEIM (F):** oversees Project Management. She is a graduate of Business Administration and she recently completed her master's degree in marketing research from the University of Seville. She is also specialised on Graphic & Web Design. Ana has been Marketing & PR officer of WE since February 2013 and she has previously worked for Abengoa Water in the Strategy & Corporate Development Department.

Maria MIRACHTSI (F): is the WE Communications and events officer. She has substantial experience in corporate and marketing communications and dissemination of information through traditional and new (social) media, as well as event management.

Loic CHARPENTIER (M): is the Water Innovation Policy officer. He is graduate in law and European Studies from the University of Bordeaux IV and the Institute for European studies from the university of Brussels. He has experience in the R&D sector at the European and international level. He is participating in the European Junior Water Programme.

Relevant publications

WE Water Vision (2016). Editors: Ron Weerdmeester (PNO), Andrea Rausa (PNO), Marijn Mulder (PNO), Violeta Kuzmickaite (Water Europe/Vlakwa), Durk Krol (Water Europe). ISBN: 9789028362130

WE Strategic Research Agenda (2007, 2010,2016). Editors: Ron Weerdmeester (PNO), Andrea Rausa (PNO), Marijn Mulder (PNO), Durk Krol (Water Europe), Violeta Kuzmickaite (Water Europe/Vlakwa). ISBN: 9789028362161

Water in 2030 Agenda for sustainable development: How Europe can act? (2019). Editors: Gaetano Casale - IHE Delft Institute for Water Education, Delft, the Netherlands, Angela Renata Cordeiro Ortigara - UNESCO World Water Assessment Programme (WWAP), Perugia, Italy. ISBN: 978-90-8277064-3

Atlas of the EU Water Oriented Living Labs (2019) – Editors: Cemre Mutlu (PNO), Ron Weerdmeester (PNO), Andrea Rubini (Water Europe), Durk Krol (Water Europe). • ISBN: 9789082770650

Water Europe contributions to the European Green Deal & Horizon Europe: Water Europe Vision Implementation 2020-2027 – Editors: Andrea Rubini (Water Europe), Durk Krol (Water Europe). Data analyses: Cemre Mutlu (PNO). ISBN: 9789464003062

Relevant projects or activities

EnergyWater: (H2020; GA 696112, 2016-2019-Finished) (www.energywater-project.eu): Improving energy efficiency in water treatment processes through benchmarking and benchlearning tools in Europe manufacturing industries. Role: communication and dissemination WP Leader

SIM4NEXUS: (H2020, GA 689150, 2016-2020-Ongoing) (http://www.sim4nexus.eu). Sustainable Integrated Management FOR the NEXUS of water-land-food-energy-climate for a resource-efficient Europe. Role: online communication leaders and stakeholder engagement

NEXGTGEN: (H2020; GA 776541, 2018-2022-Ongoing) (www.nextgenwater.eu): Towards a next generation of water systems and services for the circular economy. Role: communication and dissemination + stakeholder engagement

HYDROUSA: (H2020; GA 776643, 2018-2022-Ongoing) (https://www.hydrousa.org/): Demonstration of water loops with innovative regenerative business models for the Mediterranean region. Role: organization of workshops

ZERO BRINE: (H2020; GA 730390, 2017-2021) (https://zerobrine.eu/):Re-designing the value and supply chain of water and minerals: a circular economy approach for the recovery of resources from saline impaired effluent (brine) generated by process industries. Role: communication and dissemination WP Co-Leaders

Significant infrastructure and/or any major items of technical equipment

N/A

4.2 Third parties involved

9-ICRA –

Does the participant plan to subcontract certain tasks?	**Yes**
ICRA will subcontract a professional designer to support the design of style and formats of the WP4 Selection and Design tool user interfaces; also support for the user experience design of the WP4 tool (in total 4000€)	
Does the participant envisage that part of its work is performed by linked third parties?	No
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)?	No
Does the participant envisage that part of the work is performed by International Partners3 (Article 14a of the General Model Grant Agreement)?	No

11-INSA –

Does the participant plan to subcontract certain tasks?	No
Does the participant envisage that part of its work is performed by linked third parties?	No
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)?	**Yes**

Art. 11 of the "Model grant agreement" in-kind contributions against payment: INSAVALOR

This third party is a spin off created and controlled by INSA (beneficiary) for the benefit of INSA Lyon research laboratories. It has been created to handle the financial administration of INSA in research projects involving INSA labs. The fact that it is a private company facilitates the negotiation with private companies as well as the day-to-day management of the public research projects. A specific frame-agreement has been signed since 1988 between INSA and INSAVALOR which explains how INSAVALOR works for INSA and the links between them. INSAVALOR acts on behalf of INSA for the administrative and financial management of every costs engaged by INSA. As such, it receives the EU grant on behalf of INSA and handles the means and expenses necessary for the fulfilment of INSA's tasks in the project, amongst others:

- hiring and paying the non-permanent researchers (which will work on the premises of INSA and under its responsibility),
- purchase of consumables and equipment,
- reimbursing the travel and accommodation costs for the researchers involved in the project,
- or any other expenses necessary for its execution.

All the costs supported by INSAVALOR will be recorded in the INSAVALOR accounts and charged by INSA in its financial statement. The costs will therefore not be considered as receipts.	**Personnel direct costs**	**Other direct costs**[1]
INSAVALOR	1 post-doc: 22 person months Costs: €91,667	14,000 €

[1]For travel & accommodation costs, conference fees and OA publications

Art. 12 of the "Model grant agreement", in-kind contribution free of charge

- French Government

The permanent staff of INSA are public servants; they are nominated and paid by the French Government: Hélène Castebrunet, Gislain Lipeme

Does the participant envisage that part of the work is performed by International Partners3 (Article 14a of the General Model Grant Agreement)?	No

5 Ethics and security

5.1 Ethics

1. Research on human embryos/ foetuses		**Yes/no**	**Page**
Does your research involve Human Embryonic Stem Cells (hESCs)?		No	
Does your research involve the use of human embryos?		No	
Does your research involve human foetal tissues/ cells?		No	
2. Humans		**Yes/no**	**Page**
Does your research involve human participants?		No	
Does your research involve physical interventions on the study participants?		No	
3. Human cells/ tissues		**Yes/no**	**Page**
Does your research involve human cells or tissues (other than from human embryos/foetuses, *i.e.* section 1)?		No	
4. Personal data		**Yes/no**	**Page**
Does your research involve personal data collection and/or processing?		**Yes**	36-38; 40-42; 48-50
If yes:	Does it involve the collection and/or processing of sensitive personal data (*e.g.,* health, sexual lifestyle, ethnicity, political opinion, religious or philosophical conviction)?	**Yes**	
	Personal data from stakeholders will be collected over the course of the project, including: name and (if applicable) contact information (GDPR-compliant), gender, occupation, nationality and (if applicable) migratory background/ ethnicity, indicative income level, education level, and attitudes towards e.g. relevant project outputs under development and/or evaluation. This is necessary in order to ensure a range of stakeholders are engaged in the development of project outputs (WP6). Data disaggregation (e.g. according to gender, ethnicity, income, level of education) is relevant to evaluating possible links between nature-based wastewater management and social inequalities, as well the project's aims for social inclusion and gender mainstreaming. The personal data gathered for engaging stakeholders in WP1-3-6 will be collected in the respect of the General Data Protection Regulation (GDPR). Data related to gender and ethnicity will not be accessible by the public, or, otherwise in an anonymized way, and stored separately from the personal administrative data. Concerned WPs: WP1-3-6. Concerned partners: ICLEI, FER		
	Does it involve processing of genetic information?	No	
	Does it involve tracking or observation of participants?	No	
Does your research involve further processing of previously collected personal data (secondary use)?		No	
5. Animals		**Yes/no**	**Page**
Does your research involve animals?		No	
6. Third countries		**Yes/no**	**Page**
In case non-EU countries are involved, do the research related activities undertaken in these countries raise potential ethics issues?		No	
Do you plan to use local resources (*e.g.,* animal and/or human tissue samples, genetic material, live animals, human remains, materials of historical value, endangered fauna or flora samples, etc.)?		No	
Do you plan to import any material – including personal data - from non-EU countries into the EU?		No	
Do you plan to export any material – including personal data - from the EU to non-EU countries?		No	
7. Environment & health and safety		**Yes/no**	**Page**
Does your research involve the use of elements that may cause harm to the environment, to animals or plants? (For research involving animal experiments, see **5. Animals**)		**Yes**	36-40

Water pollutants cause harm to the environment including animals and plants. However, the proposal deals with safeguarding water quality - thus the research is focused on how to control the release of the harmful substances to the environment. The usage of harmful pollutants will be limited to analytical work to measure their concentration in environmental samples. No compounds will be released or emitted to the environment. Harmful pollutants may be occurring on the real samples that will be collected. Concerned WPs: WP1 and 2. Concerned partners: WP1-2 contributors		
Does your research deal with endangered fauna and/or flora and/or protected areas?	No	
Does your research involve the use of elements that may cause harm to humans, including research staff?	**Yes**	36-40
Water pollutants can cause harm to humans, including handling untreated wastewater. However, this situation is not new for any of the partners dealing with the pilots, samples and analytical work. The research institutes and SMEs are established in the respective fields for many years. Therefore, the ethical issue is covered by the working environment procedures and regulatory framework implemented and followed by each of the participating partners in compliance with the respective national working environment authority. Concerned WPs: WP1 and 2. Concerned partners: WP1-2 contributors		
8. Dual Use	**Yes/no**	**Page**
Does your research involve dual-use items in the sense of Regulation 428/2009, or other items for which an authorisation is required?	No	
9. Exclusive focus on civil applications	**Yes/no**	**Page**
Could your research raise concerns regarding the exclusive focus on civil applications?	No	
10. Misuse	**Yes/no**	**Page**
Does your research have the potential for malevolent/criminal/terrorist abuse?	No	
11. Other ethics issues	**Yes/no**	**Page**
Are there any other ethics issues that should be taken into consideration? Please specify	No	

5.2 Security

This project does not involve:

- Activities or results raising security issues.
- EU-classified information as background or results.

Annex 1: Letters of support from the International Advisory Board (IAB)

Denmark: Trine Stausgaard Munk (Ramboll)

RAMBØLL

WATER

Jaime Nivala
Irstea – UR REVERSAAL
5 rue de la Doua
69625 Villeurbanne, France

Letter of Support

This letter confirms interest of Ramboll in supporting the H2020 project **MULTISOURCE**, to be submitted in response to the European Commission's Horizon 2020 call for proposals SC5-27-2020 – "*Strengthening international collaboration: enhanced natural treatment solutions for water security and ecological quality in cities*". As a member of the International Advisory Board, I confirm my support in terms of the following contributions, once the project has been approved for funding:

- provide feedback, additional quality control, and advice for aligning the project outcomes with the needs of end-users and stakeholders;
- link the project to other local and/or international initiatives;
- promote the project outcomes within my own network;
- support the route to market for the tools and business models developed;
- suggest strategic actors who can contribute insight, expertise, or further the project's aim of fair and equitable inclusion across gender, and other relevant elements.

Ramboll welcomes the opportunity to collaborate with the **MULTISOURCE** project, as the objectives described in the proposal are interesting and in line with our own activities on sustainable urban water management and nature-based water treatment technologies.

I have read the provided Terms of Reference for participation on the **MULTISOURCE** project and understand that 1) my participation is voluntary; 2) I am expected to attend five 1-day project meetings (travel and accommodation covered by the **MULTISOURCE** project budget); and 3) my agreement to participate may be withdrawn any time without reason or rationale.

Yours sincerely

Trine Stausgaard Munk
Head of Resilience
International Water & Climate Resilience

D +1 857 277 4689
M +45 5161 2827
trsv@ramboll.dk

Date January 23, 2020

Rambøll
Hannemanns Allé 53
DK-2300 København S

T +45 5161 1000
F +45 5161 1001
https://dk.ramboll.com

1/1

South Africa: Sudhir PiIlay (Water Research Commission)

WATER RESEARCH COMMISSION

Lynnwood Bridge Office Park, 2nd Floor, Bloukrans Building,
4 Daventry Street, Lynnwood Manor, Pretoria

Private Bag X03, Gezina, 0031, South Africa

Tel: +27 (0)12 330 0340
Fax: +27 (0)12 331 2565
Email: info@wrc.org.za
Web: www.wrc.org.za

15 January 2020

Jaime Nivala
INRAE – UR REVERSAAL
5 rue de la Doua
69625 Villeurbanne, France

Dear Sir/Madam

RE: LETTER OF SUPPORT FOR PARTICIPATION IN THE MULTISOURCE INTERNATIONAL ADVISORY BOARD

The **Water Research Commission** (WRC) is statutory entity with legal personality, established in terms of Section 2 of the Water Research Act No. 34 of 1971 of the Republic of South Africa. The WRC is a public research funding and steering entity with a mission to be a global water knowledge node and South Africa's premier water knowledge hub active across the Innovation Value Chain.

This letter confirms interest of Dr Sudhir Pillay, Research Manager: Sanitation at the WRC, in supporting the H2020 project MULTISOURCE, to be submitted in response to the European Commission's Horizon 2020 call for proposals SC5-27-2020 – "Strengthening international collaboration: enhanced natural treatment solutions for water security and ecological quality in cities". As a member of the International Advisory Board, I confirm my support in terms of the following contributions, once the project has been approved for funding:

- provide feedback, additional quality control, and advice for aligning the project outcomes with the needs of end-users and stakeholders;
- link the project to other local and/or international initiatives;
- promote the project outcomes within my own network;
- support the route to market for the tools and business models developed;
- suggest strategic actors who can contribute insight, expertise, or further the project's aim of fair and equitable inclusion across gender, and other relevant elements.

I welcome the opportunity to collaborate with the MULTISOURCE project, as the objectives described in the proposal are interesting and in line with our own activities on sustainable urban water management and nature-based water treatment technologies. It is estimated that the proportion of urban dwellers in South Africa will increase to over 70% in the next ten years. At the same time, almost all surface water supplies are allocated and under increasing challenges from water pollution and climate change events. In this context, enhancing water security with a shift in diversifying water sources will be important for future water supply and demand reconciliation strategies. Enhanced nature-based treatment systems have the potential of promoting multiple sources of urban water and can deliver wider benefits when compared to traditional infrastructure.

I have read the provided Terms of Reference for participation on the MULTISOURCE project and understand that 1) my participation is voluntary; 2) I am expected to attend five project meetings (travel and accommodation is to be covered by the MULTISOURCE project budget; and 3) my agreement to participate may be withdrawn any time without reason or rationale.

Best Regards

Dr. Sudhir Pillay
Research Manager: Sanitation
Water Use & Waste Management
Water Research Commission
Email: sudhirp@wrc.org.za

Supporting sustainable development through research funding, knowledge creation and dissemination

Switzerland: James Dalton (International Union for Conservation of Nature)

IUCN
Rue Mauverney 28
1196 Gland
Switzerland

Tel. +41 22 999 0000
Fax +41 22 999 0002
water@iucn.org
www.iucn.org

To: Jaime Nivala
Irstea – UR REVERSAAL
5 rue de la Doua
69625 Villeurbanne, France

18 December 2019

Letter of Support to join the Advisory Board of the project MULTISOURCE, addressing the H2020 call "SC5-27-2020".

This letter confirms the interest of the International Union for Conservation of Nature and Natural Resources (IUCN) to support the H2020 project MULTISOURCE, to be submitted in response to the European Commission's Horizon 2020 call for proposals SC5-27-2020 *"Strengthening international collaboration: enhanced natural treatment solutions for water security and ecological quality in cities"*.

As a member of the International Advisory Board, I confirm my support in terms of the following contributions, should the project has been approved for funding:

- provide feedback, additional quality control, and advice for aligning the project outcomes with the needs of end-users and stakeholders;
- link the project to other local and/or international initiatives;
- promote the project outcomes within our own network and across our non-State and State Membership;
- support the route to market for the tools and business models developed;
- suggest strategic actors who can contribute insight, expertise, or further the project's aim of fair and equitable inclusion across gender, and other relevant elements.

IUCN welcomes the opportunity to collaborate with the MULTISOURCE project, as the objectives described in the proposal are directly in-line with our own activities on sustainable urban water management and nature-based water treatment technologies. IUCN, and more specific, its Global Water Programme, has extensive experience working on nature-based solutions in urban environments, particularly through the ongoing H2020 *GrowGreen* project. Additionally, our Programme has a good record of accomplishment on communications and knowledge management in our field of work. We are convinced not only of the necessity of the activities outlined in the proposal, but also in the MULTISOURCE consortium's ability to successfully implement them.

I have read the provided Terms of Reference for participation on the MULTISOURCE project and understand that 1) our participation is voluntary; 2) we are expected to attend five project meetings (travel and accommodation is to be covered by the MULTISOURCE project budget); and 3) our agreement to participate may be withdrawn any time without reason or rationale.

INTERNATIONAL UNION FOR CONSERVATION OF NATURE

Sincerely,

Dr James Dalton

Thailand: Katharine Cross (International Water Association – IWA)

the international water association

Alliance House
12 Caxton Street
London SW1H 0QS
Tel: +44 (0)20 7654 5500
Fax: +44 (0)20 7654 5555
E-mail: water@iwahq.org
www.iwa-network.org

Jaime Nivala, MULTISOURCE Coordinator
INRAE – UR REVERSAAL
5 rue de la Doua
69625 Villeurbanne, France

5 August 2020

Letter of Support

This letter confirms interest of the International Water Association (IWA) in supporting the H2020 project **MULTISOURCE**, to be submitted in response to the European Commission's Horizon 2020 call for proposals SC5-27-2020 – "*Strengthening international collaboration: enhanced natural treatment solutions for water security and ecological quality in cities*".

If the project is funded, we welcome the opportunity to support MULTISOURCE by:

- providing feedback and advice for aligning the project outcomes with the needs of end-users and stakeholders;
- linking the project to other local and/or national initiatives;
- helping shape policy recommendations that the project will develop;
- providing input for and participating in dissemination activities and exploitation of project results and outcomes;
- advocating in the context of the processes and networks in which we are involved the benefits arising from city-wide planning of NBS in urban water cycles;
- suggest other strategic actors who can contribute insight, expertise, or advance the project's aims of fair and equitable inclusion across gender and other relevant aspects.

IWA welcomes the opportunity to collaborate with the **MULTISOURCE** project, as the objectives described in the proposal are interesting and in line with our own activities on sustainable urban water management and nature-based water treatment technologies. The project complements ongoing activities including the IWA task group on NBS for water and sanitation, the Sanitation for and by Nature Working Group- https://snappartnership.net/teams/water-sanitation-and-nature/, and ongoing efforts to mainstream nature based solutions in water infrastructure planning and spending by responding to IWA members interest in incorporating catchment management among the responsibility of utilities and their regulators.

I have read the provided Terms of Reference for participation on the **MULTISOURCE** project and understand that 1) my participation is voluntary; 2) I am expected to participate in meetings (travel and accommodation for physical meetings is to be covered by the **MULTISOURCE** project budget; and 3) my agreement to participate may be withdrawn any time without reason or rationale.

Yours sincerely,

Katharine Cross
Strategic Programmes Manager
International Water Association (IWA)

Page **1** of **1**

United States: Paula Kehoe (San Francisco Public Utilities Commission)

San Francisco
Water Power Sewer
Services of the San Francisco Public Utilities Commission

January 3, 2020

Jaime Nivala
Irstea – UR REVERSAAL
5 rue de la Doua
69625 Villeurbanne, France

This letter confirms interest of Paula Kehoe, Director of Water Resources with the San Francisco Public Utilities Commission, in supporting the H2020 project **MULTISOURCE**, to be submitted in response to the European Commission's Horizon 2020 call for proposals SC5-27-2020 – "*Strengthening international collaboration: enhanced natural treatment solutions for water security and ecological quality in cities*". As a member of the International Advisory Board, I confirm my support in terms of the following contributions, once the project has been approved for funding:

- provide feedback, additional quality control, and advice for aligning the project outcomes with the needs of end-users and stakeholders;
- link the project to other local and/or international initiatives;
- promote the project outcomes within my own network;
- support the route to market for the tools and business models developed;
- suggest strategic actors who can contribute insight, expertise, or further the project's aim of fair and equitable inclusion across gender, and other relevant elements.

The SFPUC welcomes the opportunity to collaborate with the **MULTISOURCE** project, as the objectives described in the proposal are interesting and in line with our own activities on sustainable urban water management and nature-based water treatment technologies. The SFPUC is actively promoting multiple solutions to improve water security.

I have read the provided Terms of Reference for participation on the **MULTISOURCE** project and understand that 1) my participation is voluntary; 2) I am expected to attend five project meetings (travel and accommodation is to be covered by the **MULTISOURCE** project budget; and 3) my agreement to participate may be withdrawn any time without reason or rationale.

Yours sincerely,

Paula Kehoe
Director of Water Resources
San Francisco Public Utilities Commission

OUR MISSION: To provide our customers with high-quality, efficient and reliable water, power and sewer services in a manner that values environmental and community interests and sustains the resources entrusted to our care.

United States: Robert McDonald (The Nature Conservancy)

The Nature Conservancy
Protecting nature. Preserving life.

Worldwide Office
4245 North Fairfax Drive, Suite 100
Arlington, VA 22203

Tel (703) 841-5300
Fax (703) 555-1111

nature.org

Jaime Nivala, MULTISOURCE Coordinator
INRAE – UR REVERSAAL
5 rue de la Doua
69625 Villeurbanne, France

September 1, 2020

Letter of Support – MULTISOURCE

This letter confirms interest of Rob McDonald (The Nature Conservancy) in supporting the H2020 project **MULTISOURCE**, to be submitted in response to the European Commission's Horizon 2020 call for proposals SC5-27-2020 – "*Strengthening international collaboration: enhanced natural treatment solutions for water security and ecological quality in cities".*
If the project is funded, I will support ICRA and the MULTISOURCE consortium as they extend the Prototype tool developed within SNAPP-NCEAS "Sanitation For and By Nature" project. I am excited by the opportunity to support MULTISOURCE by serving to advise the project, by:

- providing feedback and advice for aligning the project outcomes with the needs of end-users and stakeholders;
- linking the project to other relevant work on nature-based solutions by The Nature Conservancy;
- helping shape policy recommendations that the project will develop;
- providing input for and participating in dissemination activities and exploitation of project results and outcomes;

I welcome the opportunity to collaborate with the **MULTISOURCE** project, as the objectives described in the proposal are interesting and in line with our own activities on sustainable urban water management and nature-based water treatment technologies. I work as Lead Scientist for the The Nature Conservancy, supporting much of its research into nature-based solutions for human well-being and climate adaptation. As part of that job, I have worked with ICRA on the development of the decision-support Prototype tool developed within SNAPP-NCEAS "Sanitation For and By Nature" project, and I look forward to the opportunity to help the MULTISOURCE project build upon this work.

I have read the provided Terms of Reference for participation on the MULTISOURCE project and understand that 1) my participation is voluntary; 2) I am expected to participate in meetings (travel and accommodation for physical meetings is to be covered by the MULTISOURCE project budget); and 3) my agreement to participate may be withdrawn any time without reason or rationale.
Yours sincerely,

Robert McDonald

Robert McDonald
Lead Scientist, Nature-Based Solutions

Annex 2: Letters of support from the MULTISOURCE Stakeholder Network

Canada: Kela Weber (Royal Military College of Canada)

MULTISOURCE
enhanced natural treatment solutions

ROYAL MILITARY COLLEGE OF CANADACOLLÈGE MILITAIRE ROYALE DU CANADA
PO Box 17000 • Station Forces Kingston, Ontario • K7K 7B4

Jaime Nivala, MULTISOURCE Coordinator
INRAE – UR REVERSAAL
5 rue de la Doua
69625 Villeurbanne, France

August 26, 2020

Letter of Support for MULTISOURCE

This letter confirms interest of The Environmental Science Group (ESG) at the Royal Military College of Canada in supporting the H2020 project **MULTISOURCE**, to be submitted in response to the European Commission's Horizon 2020 call for proposals SC5-27-2020 – *"Strengthening international collaboration: enhanced natural treatment solutions for water security and ecological quality in cities"*.

If the project is funded, the ESG directed by Dr. Kela Weber (Royal Military College of Canada) welcomes the opportunity to collaborate with the **MULTISOURCE** project, as the objectives described in the proposal are interesting and in line with our own activities on sustainable urban water management and nature-based solutions for water treatment.

I confirm my support as a co-author of *Treatment Wetlands, Third Edition*, which will be authored by Scott Wallace, Jaime Nivala, Pascal Molle, Kela Weber and Marcos von Sperling and published by CRC Press, and acknowledge that the textbook and its supporting electronic content is proposed to be published open access in connection with **MULTISOURCE** project.

I believe the **MULTISOURCE** project, coordinated by Jaime Nivala, will have an exceptional impact. The strength of the team, leadership, and projected outcomes is of the highest standard. This project will be a strategic and fruitful investment. I will track and engage with maximal interest.

Yours sincerely,
Dr. Kela Weber

Director, Environmental Sciences Group
Associate Professor, Royal Military College of Canada
613-541-6000, xt. 6610; kela.weber@rmc.ca

Brazil: Adir Faccio (Agência Reguladora Intermunicipal de Saneamento – ARIS)

ARIS
Agência Reguladora Intermunicipal de Saneamento

Jaime Nivala, MULTISOURCE Coordinator
INRAE – UR REVERSAAL
5 rue de la Doua
69625 Villeurbanne, France

July 21th, 2020

Letter of Support

This letter confirms interest of AGÊNCIA REGULADORA INTERMUNICIPAL DE SANEAMENTO (ARIS) in supporting the H2020 project **MULTISOURCE**, to be submitted in response to the European Commission's Horizon 2020 call for proposals SC5-27-2020 – *"Strengthening international collaboration: enhanced natural treatment solutions for water security and ecological quality in cities"*.
If the project is funded, we welcome the opportunity to support MULTISOURCE by:

- providing feedback and advice for aligning the project outcomes with the needs of end-users and stakeholders;
- linking the project to other local and/or national initiatives;
- helping shape policy recommendations that the project will develop;
- providing input for and participating in dissemination activities and exploitation of project results and outcomes;
- advocating in the context of the processes and networks in which we are involved the benefits arising from city-wide planning of NBS in urban water cycles;
- suggest other strategic actors who can contribute insight, expertise, or advance the project's aims of fair and equitable inclusion across gender and other relevant elements.

AGÊNCIA REGULADORA INTERMUNICIPAL DE SANEAMENTO (ARIS) welcomes the opportunity to collaborate with the **MULTISOURCE** project, as the objectives described in the proposal are interesting and in line with our own activities on sustainable urban water management and nature-based water treatment technologies.
ARIS acts in 203 brazilian counties and regulate basic sanitation services (water, wastewater, solid wast and drainage) for a population around 4 milion people. We believe that many of our counties need the support to develop suitable techniques to manage their sanitation services. We are pleased of being part of this process.

Yours sincerely,
Adir Faccio

ADIR FACCIO
Executive Director
Agência Reguladora Intermunicipal de Saneamento

www.aris.sc.gov.br

Brazil: Marcos von Sperling (Federal University of Minas Gerais)

UNIVERSIDADE FEDERAL DE MINAS GERAIS
Departamento de Engenharia Sanitária e Ambiental
Av. Antônio Carlos 6627 – Escola de Engenharia, Bloco 1, 4º andar, sala 4622
31270-901 Belo Horizonte – BRASIL
Tel: (31) 3409-1935 Fax: (31) 3409-1879 marcos@desa.ufmg.br

Letter of Support – MULTISOURCE

Jaime Nivala, MULTISOURCE Coordinator
INRAE – UR REVERSAAL
5 rue de la Doua
69625 Villeurbanne, France

Belo Horizonte, 24 August 2020

Letter of Support for MULTISOURCE

This letter confirms my interest, as a Professor of the Department of Sanitary and Environmental Engineering of the Federal University of Minas Gerais, Brazil, in supporting the H2020 project **MULTISOURCE**, to be submitted in response to the European Commission's Horizon 2020 call for proposals SC5-27-2020 – *"Strengthening international collaboration: enhanced natural treatment solutions for water security and ecological quality in cities"*.

If the project is funded, I welcome the opportunity to collaborate with the **MULTISOURCE** project, as the objectives described in the proposal are interesting and in line with our own activities on sustainable urban water management and nature-based solutions for water treatment.

I confirm my support as a co-author of *Treatment Wetlands, Third Edition*, which will be authored by Scott Wallace, Jaime Nivala, Pascal Molle, Kela Weber and Marcos von Sperling and published by CRC Press, and acknowledge that the textbook and its supporting electronic content are proposed to be published open access in connection with **MULTISOURCE** project.

I strongly believe that, as important as the generation of knowledge, is its dissemination at large scale. The book *Treatment Wetlands* is a classic in the field of natural treatment solutions, and its new third edition may represent a milestone in the consolidation of traditional and recent methods that aim at providing solutions for water security and ecological quality in cities, as is the scope of **MULTISOURCE**. The proposal of open access publication, available to everyone, everywhere, is very exciting in its perspective of assisting in that these goals may be reached at global scale, what is entirely in accordance with **MULTISOURCE** objectives.

Yours sincerely,

Dr. Marcos von Sperling
Full professor at UFMG

Brazil: Roberta Maas Dos Anjos (Aanta Catarina Company of Water and Sanitation – CASAN)

Companhia Catarinense de Águas e Saneamento

Jaime Nivala, MULTISOURCE Coordinator
INRAE – UR REVERSAAL
5 rue de la Doua
69625 Villeurbanne, France

August 7th, 2020

Letter of Support

This letter confirms interest of Santa Catarina Company of Water and Sanitation (CASAN) in supporting the H2020 project **MULTISOURCE**, to be submitted in response to the European Commission's Horizon 2020 call for proposals SC5-27-2020 – "*Strengthening international collaboration: enhanced natural treatment solutions for water security and ecological quality in cities".*

If the project is funded, we welcome the opportunity to support MULTISOURCE by:

- Provision of official CASAN data to feed the GIS database;
- Support, as co-coordination, to conduct a workshop about the subject, and providing a space for the workshop.

Santa Catarina Company of Water and Sanitation (CASAN) welcomes the opportunity to collaborate with the **MULTISOURCE** project, as the objectives described in the proposal are interesting and in line with our own activities on sustainable urban water management.

CASAN acts in 195 cities in Santa Catarina State by the provision of basic sanitation services (water and sewage) for a population around 2,7 million people. We believe that many of our counties need the support to develop suitable techniques to manage their sanitation services. We are pleased of being part of this process.

We would like to notice that CASAN will only support with the mentioned actions above, no financial, or other sort of support will be provided.

Yours sincerely,

ROBERTA MAAS DOS ANJOS:02594576980

Assinado de forma digital por ROBERTA MAAS DOS ANJOS:02594576980
Dados: 2020.08.08 15:35:38 -03'00'

Roberta Maas dos Anjos
President
Santa Catarina Company of Water and Sanitation

France: Philippe Dupont (French Biodiversity Agency of the Ministry of the Environment – OFB)

Office français de la biodiversité
Pôle de Vincennes
"Le Nadar", 5 square Félix Nadar
94300 Vincennes
ofb.gouv.fr

Jaime Nivala, MULTISOURCE Coordinator
INRAE – UR REVERSAAL
5 rue de la Doua
69625 Villeurbanne, France

Research and Science support Direction
Letter of support

Vincennes, August 19th, 2020

Our Ref.: D_PCE20_015

Dear Dr. Nivala,

This letter confirms interest of French Biodiversity Agency in supporting the H2020 project **MULTISOURCE**, to be submitted in response to the European Commission's Horizon 2020 call for proposals SC5-27-2020 – "*Strengthening international collaboration: enhanced natural treatment solutions for water security and ecological quality in cities*".
If the project is funded, we welcome the opportunity to support MULTISOURCE by:

- providing feedback and advice for aligning the project outcomes with the needs of end-users and stakeholders;
- linking the project to other local and/or national initiatives;
- helping shape policy recommendations that the project will develop;
- providing input for and participating in dissemination activities and exploitation of project results and outcomes;
- advocating in the context of the processes and networks in which we are involved the benefits arising from city-wide planning of NBS in urban water cycles;
- suggest other strategic actors who can provide insight, expertise, or advance the project's aims

On behalf of the French Biodiversity Agency, I welcome the opportunity to collaborate with the **MULTISOURCE** project, as the objectives described in the proposal are relevant and in line with our own activities on sustainable urban water management and nature-based water treatment technologies. Indeed, this project, submitted by a high scientific consortium quality, will increase knolewdge and operational tools for stakeholders to develop nature-based solutions implementation. French Biodiversity Agency strongly supports the fact that nature-based solutions need to be technically improved,, tested and developed in cities areas to enhance urban water management and biodiversity preservation. MULTISOURCE project will contribute to this objective.

Yours sincerely,

Philippe DUPONT
Research and Science support Director
General Directorate for Police, Knowledge and Expertise

France: Dirk Esser (Global Wetland Technology – GWT)

GLOBAL WETLAND TECHNOLOGY

Jaime Nivala, MULTISOURCE Coordinator
INRAE – UR REVERSAAL
5 rue de la Doua
69625 Villeurbanne, France

La Chapelle du Mont du Chat, August 26th 2020

Letter of Support

GLOBAL WETLAND TECHNOLGY (GWT) is the international professional organization of leading select companies in the Environmental Engineering sector, with specialization in wastewater treatment and water pollution control by Nature based Solutions (NBS). This letter confirms the interest of Global Wetland Technology (GWT) in supporting the H2020 project **MULTISOURCE**, to be submitted in response to the European Commission's Horizon 2020 call for proposals SC5-27-2020 – *"Strengthening international collaboration: enhanced natural treatment solutions for water security and ecological quality in cities"*.

As GWT member companies implement NBS worldwide and two of new technologies which have been patented by GWT members are tested in MULISOURCE, GWT is strongly interested in exploiting MULTISOURCE results, including the planning tool, during and after the project. If the project is funded, we welcome the opportunity to support MULTISOURCE by

- providing feedback and advice for aligning the project outcomes with our needs as end-users and stakeholders ;
- linking the project to other projects in which GWT members are involved ;
- helping shape policy recommendations that the project will develop ;
- providing input for and participating in dissemination activities and exploitation of project results and outcomes ;
- advocating in the context of the processes and networks in which we are involved the benefits arising from city-wide planning of NBS in urban water cycles ;
- suggest other strategic actors who can contribute insight, expertise, or advance the project's aims of fair and equitable inclusion across gender and other relevant elements.

Global Wetland Technology welcomes the opportunity to collaborate with the **MULTISOURCE** project, as the objectives described in the proposal are interesting and in line with our own activities on sustainable urban water management and nature-based water treatment technologies. We think that at present, the potential of NBS for circular cities has not yet been fully exploited and that the results of the project can, especially through the demonstration of NBS and ENTS as well as the planning tools to be developed, greatly improve the acceptance and the role of NBS and ENTS in an urban setting, and thus open new markets for our member companies.

Yours sincerely,

Dirk ESSER, President

Global Wetland Technology
Registered office: Chef-Lieu, F-73370,
La Chapelle du Mont du Chat, FRANCE
Tel: +33 (0)6 07 21 61 07
Email: administrator@globalwettech.com
Web: www.globalwettech.com
Registered in France, number W732004043
SIRET 848 738 233 00016

France: Yves Picoche (Rhone Mediterranean Corsica Water Agency)

agence de l'eau
RHÔNE MÉDITERRANÉE CORSE

Affaire suivie par : Katy POJER
☎ : 04.72.71.28.32
✉ : katy.POJER@eaurmc.fr

Jaime Nivala, MULTISOURCE Coordinator
INRAE – UR REVERSAAL
5 rue de la Doua
69625 Villeurbanne, France

Lyon, le - 1 SEP. 2020

This letter confirms interest of water agency Rhône-Méditerranée-Corse in supporting the H2020 project **MULTISOURCE**, to be submitted in response to the European Commission's Horizon 2020 call for proposals SC5-27-2020 – *"Strengthening international collaboration : enhanced natural treatment solutions for water security and ecological quality in cities"*.
If the project is funded, we welcome the opportunity to support MULTISOURCE by :

- providing feedback and advice for aligning the project outcomes with the needs of end-users and stakeholders ;
- linking the project to other local and/or national initiatives ;
- helping shape policy recommendations that the project will develop ;
- providing input for and participating in dissemination activities and exploitation of project results and outcomes ;
- advocating in the context of the processes and networks in which we are involved the benefits arising from city-wide planning of NBS in urban water cycles ;
- suggest other strategic actors who can contribute insight, expertise, or advance the project's aims of fair and equitable inclusion across gender and other relevant elements.

Water agency Rhône-Méditerranée-Corse welcomes the opportunity to collaborate with the **MULTISOURCE** project, as the objectives described in the proposal are interesting and in line with our own activities on sustainable urban water management and nature-based water treatment technologies.

Yours sincerely,

Le Directeur du Programme
et des Interventions

Yves PICOCHE

2-4, allée de Lodz 69363 LYON Cedex 07
Téléphone 04 72 71 26 00 I Site Web www.eaurmc.fr
Etablissement public de l'Etat | SIRET 186 901 559 00069

SAUVONS L'EAU !

France: Amélie Coantic (Water and Biodiversity Directorate of the Ministry of Ecological Transition)

MINISTÈRE
DE LA TRANSITION
ÉCOLOGIQUE

Liberté
Égalité
Fraternité

Direction générale de l'aménagement, du logement et de la nature

Direction de l'eau et de la biodiversité

Sous-direction de la protection et de la gestion de l'eau, des ressources minérales et des écosystèmes aquatiques

Bureau de la lutte contre les pollutions domestiques et industrielles

Paris, le 12 AOUT 2020

La sous-directrice de la protection et de la gestion de l'eau, des ressources minérales et des écosystèmes aquatiques

à

Jaime Nivala, MULTISOURCE Coordinator
INRAE – UR REVERSAAL
5 rue de la Doua
69625 Villeurbanne, France

Objet : letter of support MULTISOURCE project

The Water and Biodiversity Directorate of the Ministry of ecological Transition confirms is interest in the project MULTISOURCE and supports the project submission to the European Commission's Horizon 2020 call for proposals SC5-27-2020 – "Strengthening international collaboration: enhanced natural treatment solutions for water security and ecological quality in cities".

If the project is funded, we welcome the opportunity to support MULTISOURCE by:

- linking the project to other national initiatives;
- participating in dissemination activities of project results;
- advocating in the context of the processes and networks in which we are involved the benefits arising from city-wide planning of nature-based solutions in urban water cycles;
- suggesting other strategic actors who can contribute insight, expertise and other relevant elements to Multisource.

Enhanced natural treatment system and nature-based solutions can offer a range of environmental, economic and social benefits. MULTISOURCE can demonstrate benefits of those solutions according to life cycle analysis.

This project is in line with our national priorities. This project can increase confidence in the practice of urban water reuse in full compliance with the national circular economy and water resource objectives.

The Water and Biodiversity Directorate is willing to collaborate with the MULTISOURCE project, as the objectives described in the proposal are consistent with the French public policies especially in terms of sustainable rainwater management and promotion of nature-based solutions.

La sous-directrice de la protection et de la gestion de l'eau, des ressources minérales et des écosystèmes aquatiques

Po
Amélie COANTIC

C. SOULIAC

Greece: Daniel Mamais (National Technical University of Athens)

ΕΘΝΙΚΟ ΜΕΤΣΟΒΙΟ ΠΟΛΥΤΕΧΝΕΙΟ
NATIONAL TECHNICAL UNIVERSITY OF ATHENS

Εργαστήριο Υγειονομικής Τεχνολογίας — ΕΥΤ
ΣΧΟΛΗ ΠΟΛΙΤΙΚΩΝ ΜΗΧΑΝΙΚΩΝ
ΤΟΜΕΑΣ ΥΔΑΤΙΚΩΝ ΠΟΡΩΝ
ΚΑΙ ΠΕΡΙΒΑΛΛΟΝΤΟΣ

Sanitary Engineering Laboratory — SEL
FACULTY OF CIVIL ENGINEERING
DEPARTMENT OF WATER RESOURCES
AND ENVIRONMENTAL ENGINEERING

Jaime Nivala, MULTISOURCE Coordinator
INRAE – UR REVERSAAL
5 rue de la Doua
69625 Villeurbanne, France

Athens 21/72020

Letter of Support

This letter confirms interest of the Sanitary Engineering Laboratory of the School of Civil Engineering of the National Technical University of Athens in supporting the H2020 project **MULTISOURCE**, to be submitted in response to the European Commission's Horizon 2020 call for proposals SC5-27-2020 – "*Strengthening international collaboration: enhanced natural treatment solutions for water security and ecological quality in cities*".

If the project is funded, we welcome the opportunity to support MULTISOURCE by:

- providing feedback and advice for aligning the project outcomes with the needs of end-users and stakeholders;
- linking the project to our ongoing National and EU funded projects
- providing input for and participating in dissemination activities and exploitation of project results and outcomes
- Implement common activities with our ongoing H2020 project HYDROUSA which we are coordinating

The Sanitary Engineering Laboratory of the School of Civil Engineering of the National Technical University of Athens welcomes the opportunity to collaborate with the **MULTISOURCE** project, as the objectives described in the proposal are interesting and in line with our own activities on sustainable urban water management and nature-based water treatment technologies. The solutions and results can be compared with HYDROUSA project where we apply decentralized NBS solutions to recover non-conventional water sources.

Sincerely,

Daniel Mamais,
Professor
Director of the Sanitary Engineering Laboratory
Department of Water Resources and Environmental Engineering
National Technical University of Athens

Ηρώων Πολυτεχνείου 5, 15780, Αθήνα 5, Iroon Polytechniou Str., 15780 Athens, Greece
Tel.: 30-210-772 2900, 772 2797 • Fax: 30-210-772 2899 • e-mail: mamais@central.ntua.gr; www.eyt.gr

Italy: Roberto Laffi (Regione Lombardia)

Regione Lombardia

Regione Lombardia - Giunta
DIREZIONE GENERALE TERRITORIO E PROTEZIONE CIVILE

Piazza Città di Lombardia n.1
20124 Milano

Tel 02 6765.1

www.regione.lombardia.it
territorio_protezionecivile@pec.regione.lombardia.it

Spettabile

CITTA' METROPOLITANA DI MILANO
VIA VIVAIO, 1
20122 MILANO (MI)
Email: protocollo@pec.cittametropolitana.mi.it
c.a. D.ssa Davoli

LORO SEDI

Oggetto : Manifestazione di interesse al progetto ModULar Tools for Integrating enhanced natural treatment SOlutions into Urban wateR CyclEs – MULTISOURCE – Programma HORIZON 2020 – Call for proposal "Strengthening international collaboration: enhanced natural treatment solutions for water security and ecological quality in cities" - H2020-SC5-27-2020.

Gentile Dottoressa Davoli,

preso atto delle finalità della proposta progettuale, si attesta l'apprezzamento e l'interesse rispetto alla candidatura del progetto "ModULar Tools for Integrating enhanced natural treatment SOlutions into Urban wateR CyclEs" – MULTISOURCE, da presentare sul bando "Strengthening international collaboration: enhanced natural treatment solutions for water security and ecological quality in cities" - H2020-SC5-27-2020 e relativa al Programma HORIZON 2020 finanziato dalla Commissione europea.

Regione Lombardia ritiene particolarmente strategico l'obiettivo di creare un processo innovativo per l'implementazione di ENTS (sistemi di trattamento naturali ottimizzati) nei cicli idrici urbani, attraverso l'utilizzo e la creazione di Sistemi idrici basati su soluzioni naturali (NBSWT), che il partenariato si prefigge di perseguire. Per queste ragioni Regione Lombardia è interessata a promuovere e a dare sostegno istituzionale all'iniziativa per permettere, in particolare, di raggiungere i seguenti risultati, coerenti e strategici per la programmazione regionale:

- miglioramento di sei ENTS che trattano sei diversi tipi di acqua urbana in condizioni climatiche e operative variabili;

Referente per l'istruttoria della pratica **Roberto Cerretti mail:** roberto_cerretti@regione.lombardia.it

- creazione di un MULTISOURCE Planning Tool: uno strumento di pianificazione urbana open-source che consente la valutazione sistematica delle NBSWT su scala urbana per vari archetipi e scenari urbani; classifica delle soluzioni in base al costo, con particolare attenzione all'Analisi del Ciclo di Vita (LCA).

Distinti saluti.

IL DIRETTORE GENERALE

ROBERTO LAFFI

Italy: Eugenio Morello (Politecnico Milano)

POLITECNICO
MILANO 1863

Milan, 31st of July 2020

DIPARTIMENTO DI
ARCHITETTURA E STUDI
URBANI

To:
Jaime Nivala, MULTISOURCE Coordinator
INRAE – UR REVERSAAL
5 rue de la Doua
69625 Villeurbanne, France

Letter of Support – MULTSOURCE

This letter confirms interest of the Department of Architecture and Urban Studies (Dastu) at the Politecnico di Milano in supporting the H2020 project **MULTISOURCE**, to be submitted in response to the European Commission's Horizon 2020 call for proposals SC5-27-2020 – "*Strengthening international collaboration: enhanced natural treatment solutions for water security and ecological quality in cities*".
If the project is funded, we welcome the opportunity to support MULTISOURCE by:

- providing feedback and advice for aligning the project outcomes with the needs of end-users and stakeholders;
- linking the project to other up-running research initiatives;
- disseminate the project outcomes to our university students at the Politecnico, organizing dedicated presentations, activities and visits.
- helping shape policy recommendations that the project will develop;
- providing input for and participating in dissemination activities and exploitation of project results and outcomes;
- advocating in the context of the processes and networks in which we are involved the benefits arising from city-wide planning of NBS in urban water cycles;
- suggest other strategic actors who can contribute insight, expertise, or advance the project's aims of fair and equitable inclusion across gender and other relevant elements.

Dastu welcomes the opportunity to collaborate with the **MULTISOURCE** project, as the objectives described in the proposal are interesting and in line with our own activities on sustainable urban water management and nature-based water treatment technologies. In particular, the project represents a great opportunity to extend our research and teaching interests on nature-based solutions and specifically to water-related applications.

Yours sincerely,
Eugenio Morello
Associate Professor in Urban Planning

DIPARTIMENTO ARCHITETTURA E STUDI URBANI
IL DIRETTORE
Prof. Massimo Bricocoli

Dipartimento di Architettura e Studi Urbani
Via Bonardi, 3
20133 Milano

Tel. 02 2399 5400-5401-5406
Fax 02 2399 5435
www.dastu.polimi.it

Partita Iva 04376620151
Codice Fiscale 80057930150

Italy: Francesco Musco (Universita di Venezia – IUAV)

I
U
A
V

Università Iuav di Venezia

www.iuav.it/ricerca

AREA RICERCA SISTEMA
BIBLIOTECARIO E DOCUMENTALE
DIVISIONE RICERCA

The Deputy Rector for Research
prof. **Francesco Musco**
t. +39 041 257 2572178
mob. +39 320 7918986

francesco.musco@iuav.it
delegato.ricerca@iuav.it

Venice, 30th July, 2020

To the attention of

Jaime Nivala, MULTISOURCE Coordinator
INRAE – UR REVERSAAL
5 rue de la Doua
69625 Villeurbanne, France

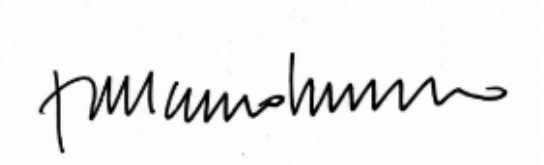
Object: Letter of Support H2020 MULTISOURCE

This letter confirms interest of **Università Iuav di Venezia** (Planning and Climate Change Lab) in supporting the H2020 project **MULTISOURCE**, to be submitted in response to the European Commission's Horizon 2020 call for proposals SC5-27-2020 – "*Strengthening international collaboration: enhanced natural treatment solutions for water security and ecological quality in cities*".
If the project is funded, we welcome the opportunity to support MULTISOURCE by:

- providing feedback and advice for aligning the project outcomes with the needs of end-users and stakeholders;
- linking the project to other local and/or national initiatives;
- helping shape policy recommendations that the project will develop;
- providing input for and participating in dissemination activities and exploitation of project results and outcomes;
- advocating in the context of the processes and networks in which we are involved the benefits arising from city-wide planning of NBS in urban water cycles and spatial planning tools;

Università Iuav di Venezia welcomes the opportunity to collaborate with the **MULTISOURCE** project, as the objectives described in the proposal in particular with potential interaction with climate change and adaptation measures and nature-based systems.

Yours sincerely,
Prof. Francesco Musco
Deputy Rector for Research



Italy: Alessandro Russo (Gruppo CAP)

GRUPPO CAP
LA TUA ACQUA IN BUONE MANI

Letter of Support – MULTISOURCE

Jaime Nivala, MULTISOURCE Coordinator
INRAE – UR REVERSAAL
5 rue de la Doua
69625 Villeurbanne, France

09th of July 2020

Letter of Support

This letter confirms interest of GRUPPO CAP in supporting the H2020 project **MULTISOURCE**, to be submitted in response to the European Commission's Horizon 2020 call for proposals SC5-27-2020 – *"Strengthening international collaboration: enhanced natural treatment solutions for water security and ecological quality in cities"*.

If the project is funded, we welcome the opportunity to support MULTISOURCE by:

- providing feedback and advice for aligning the project outcomes with the needs of end-users and stakeholders;
- linking the project to other local and/or national initiatives;
- providing input for and participating in dissemination activities and exploitation of project results and outcomes;
- advocating in the context of the processes and networks in which we are involved the benefits arising from city-wide planning of NBS in urban water cycles;
- suggest other strategic actors who can contribute insight, expertise, or advance the project's aims of fair and equitable inclusion across gender and other relevant elements.

GRUPPO CAP welcomes the opportunity to collaborate with the **MULTISOURCE** project, as the objectives described in the proposal are interesting and in line with our own activities on sustainable urban water management and nature-based water treatment technologies.

Yours sincerely,

Alessandro Russo
President, Gruppo CAP

www.gruppocap.it

Netherlands: Stefan Weijers (Waterboard De Dommel)

Waterschap De Dommel

Postbus 10.001
5280 DA Boxtel
Bosscheweg 56
5283 WB Boxtel

(0411) 618 618
info@dommel.nl
www.dommel.nl

Jaime Nivala, MULTISOURCE Coordinator
INRAE – UR REVERSAAL
5 rue de la Doua
69625 Villeurbanne, France

Boxtel	: 24 juli 2020	behandeld door	: Stefan Weijers
ons kenmerk	: Z62533/U130825	doorkiesnummer	: (0411) 618 618
uw kenmerk	:	e-mailadres	: SWeijers@dommel.nl
onderwerp	: Letter of Support	bijlagen	: -
		verzonden	: 24 juli 2020

Dear madam/sir,

Waterboard 'Waterschap De Dommel' is the regional authority responsible for water management of the Dommel river basin in the of south-eastern part of the province of Brabant, The Netherlands. The working area is approx. 1.540 km² with near 1 million inhabitants. Tasks include river quantity and quality management, flood protection, river restoration, sewage transport and wastewater treatment.

This letter confirms interest of Waterschap De Dommel in supporting the H2020 project **MULTISOURCE**, to be submitted in response to the European Commission's Horizon 2020 call for proposals SC5-27-2020 – "*Strengthening international collaboration: enhanced natural treatment solutions for water security and ecological quality in cities*".
If the project is funded, we welcome the opportunity to support MULTISOURCE by:

- providing feedback and advice for aligning the project outcomes with the needs of end-users and stakeholders;
- linking the project to other local and/or national initiatives;
- helping shape policy recommendations that the project will develop;
- providing input for and participating in dissemination activities and exploitation of project results and outcomes;
- advocating in the context of the processes and networks in which we are involved the benefits arising from city-wide planning of NBS in urban water cycles;
- suggest other strategic actors who can contribute insight, expertise, or advance the project's aims of fair and equitable inclusion across gender and other relevant elements.

Waterschap De Dommel welcomes the opportunity to collaborate with the **MULTISOURCE** project, as the objectives described in the proposal are interesting and in line with our own activities on sustainable urban water management and nature-based water treatment technologies.

Yours sincerely,

Stefan Weijers
Manager Policy and Innovation Wastewater

Norway: Cecilie Kristiansen and Ingunn Lindeman (Norwegian Environment Agency)

NORWEGIAN ENVIRONMENT AGENCY

Jaime Nivala, MULTISOURCE Coordinator
INRAE - UR REVERSAAL
5 rue de la Doua
69625 Villeurbanne
France

Oslo, 19.08.2020

Your ref.:	Our ref. :	Contact person:
[Your ref.]	2020/10475	Ingunn Lindeman

Multisource - letter of support

This letter confirms interest of the Norwegian Environment Agency in supporting the H2020 project MULTISOURCE, to be submitted in response to the European Commission's Horizon 2020 call for proposals SC5-27-2020 - "Strengthening international collaboration: enhanced natural treatment solutions for water security and ecological quality in cities". If the project is funded, we welcome the opportunity to support MULTISOURCE by linking the project to other local and/or national initiatives and helping shape policy recommendations that the project will develop.

The Nowegian Environment Agency welcomes the opportunity to collaborate with the MULTISOURCE project, as the objectives described in the proposal are interesting and in line with our own activities on sustainable urban water management and nature-based water treatment technologies. We are particularly interested in cold weather performance of small footprint nature-based water treatment technologies.

Best regards
Norwegian Environment Agency

This document has been signed electronically

Cecilie Kristiansen	Ingunn Lindeman
seksjonssjef	sjefingeniør

Norway: Ola Rosing Eide, (Norwegian Public Roads Administration)

MULTISOURCE
enhanced natural treatment solutions

Statens vegvesen
Norwegian Public Roads Administration

Norwegian Public Roads Administration

Jaime Nivala, MULTISOURCE Coordinator
INRAE – UR REVERSAAL
5 rue de la Doua
69625 Villeurbanne, France

August 24, 2020

Letter of Support

This letter confirms interest of Norwegian Public Roads Administration in supporting the H2020 project **MULTISOURCE**, to be submitted in response to the European Commission's Horizon 2020 call for proposals SC5-27-2020 – *"Strengthening international collaboration: enhanced natural treatment solutions for water security and ecological quality in cities"*.

If the project is funded, we welcome the opportunity to support MULTISOURCE by:

- providing feedback and advice for aligning the project outcomes with the needs of end-users and stakeholders;
- linking the project to other local and/or national initiatives;
- helping shape policy recommendations that the project will develop;
- providing input for and participating in dissemination activities and exploitation of project results and outcomes;

The Norwegian Public Roads Administration welcomes the opportunity to collaborate with the **MULTISOURCE** project, as the objectives described in the proposal are interesting and in line with our own activities on sustainable urban water management and nature-based water treatment technologies.

Yours sincerely,

Ola Rosing Eide
Senior engineer
Norwegian Public Roads Administration

Norway: Geir Sogge Johnsen (Basal AS)

MULTISOURCE
enhanced natural treatment solutions

Basal AS

Jaime Nivala, MULTISOURCE Coordinator
INRAE – UR REVERSAAL
5 rue de la Doua
69625 Villeurbanne, France

12.08.2020

Letter of Support

This letter confirms interest of Basal AS in supporting the H2020 project **MULTISOURCE**, to be submitted in response to the European Commission's Horizon 2020 call for proposals SC5-27-2020 – *"Strengthening international collaboration: enhanced natural treatment solutions for water security and ecological quality in cities"*.

If the project is funded, we welcome the opportunity to support MULTISOURCE by:

- providing feedback and advice for aligning the project outcomes with the needs of end-users and stakeholders;
- linking the project to other local and/or national initiatives;
- helping shape policy recommendations that the project will develop;
- providing input for and participating in dissemination activities and exploitation of project results and outcomes;
- advocating in the context of the processes and networks in which we are involved the benefits arising from city-wide planning of NBS in urban water cycles;
- suggest other strategic actors who can contribute insight, expertise, or advance the project's aims of fair and equitable inclusion across gender and other relevant elements.

Basal AS welcomes the opportunity to collaborate with the **MULTISOURCE** project, as the objectives described in the proposal are interesting and in line with our own activities on sustainable urban water management and nature-based water treatment technologies. Basal AS is the biggest stormwater supplier in Norway and would like to share and contribute to better solutions for stormwater treatment and reuse. Treatment, reuse and reduction of clean drinking water must be implemented in every project and therefore it is important to facilitate low cost Stormwater solutions.

Yours sincerely,

Geir Sogge Johnsen
Product manager
BASAL AS

1

Norway: Tor Håkonsen (Multiconsult)

MULTISOURCE

Letter of Support – MULTISOURCE

Multiconsult

Jaime Nivala, MULTISOURCE Coordinator
INRAE – UR REVERSAAL
5 rue de la Doua
69625 Villeurbanne, France

25.08 2020

Letter of Support

This letter confirms interest of Multiconsult Norge AS in supporting the H2020 project **MULTISOURCE**, to be submitted in response to the European Commission's Horizon 2020 call for proposals SC5-27-2020 – *"Strengthening international collaboration: enhanced natural treatment solutions for water security and ecological quality in cities"*.

If the project is funded, we welcome the opportunity to support MULTISOURCE by:

- providing detail design and description of compact installations for collection, infiltration and treatment of urban runoff from roads adjusted to densely urban areas with limited available space for natural based solutions;
- participating in identifying and test out different filter media and monitor the research work in cooperation with NIVA, NMBU and Oslo Municipality;
- providing feedback and advice for aligning the project outcomes with the needs of end-users and stakeholders as research institutes, universities, municipalities and road agencies;
- linking the project to other local and/or national initiatives using the extensive network of Multiconsult's national and international offices;
- being involved in distribution of project results
- helping shape policy recommendations that the project will develop;
- providing input for and participating in dissemination activities and exploitation of project results and outcomes;

Multiconsult Norge AS welcomes the opportunity to collaborate with the **MULTISOURCE** project, as the objectives described in the proposal are interesting and in line with our own activities on sustainable urban water management and nature-based water treatment technologies. Qualified personnel with highly relevant academic Phd degree will be available for interaction in the project and secure that the research project will be executed in a practical way using the latest available technology and knowhow.

Yours sincerely,

for Tor Håkonsen
Marketing manager Water / Section manager Water Plans and Water quality
Division of Water, Environment and Geology

Norway: Anne Cathrine Gjærde (Norwegian University of Life Sciences – NMBU)

Norwegian University of Life Sciences (NMBU)
Faculty of Science and Technology (REALTEK)

Jaime Nivala, MULTISOURCE Coordinator
INRAE – UR REVERSAAL
5 rue de la Doua
69625 Villeurbanne, France

Date
25.08.2020

Letter of support

This letter confirms the interest of the Faculty of Science and Technology (REALTEK) at NMBU, Norway, in supporting the H2020 project **MULTISOURCE**, to be submitted in response to the European Commission's Horizon 2020 call for proposals SC5-27-2020 – *"Strengthening international collaboration: enhanced natural treatment solutions for water security and ecological quality in cities".*

If the project is funded, we welcome the opportunity to support MULTISOURCE by:

- linking MSc students at our faculty to MSc thesis topics in the project
- linking the project to other local and/or national initiatives;
- helping shape policy recommendations that the project will develop;
- providing input for and participating in workshops and dissemination activities and exploitation of project results and outcomes;
- advocating in the context of the processes and networks in which we are involved the benefits arising from city-wide planning of NBS in urban water cycles;
- suggest other strategic actors who can contribute insight, expertise, or advance the project's aims of fair and equitable inclusion across gender and other relevant elements.

REALTEK welcomes the opportunity to collaborate with the **MULTISOURCE** project, as the objectives described in the proposal are interesting and in line with our own activities on sustainable urban water management and nature-based water treatment technologies. MSc topics within this area are in high demand by our students, and we would be very pleased to give our students the opportunity to do their thesis work in collaboration with **MULTISOURCE**.

Yours sincerely,

Anne Cathrine Gjærde

Anne Cathrine Gjærde
Dean, REALTEK

P.O. Box 5003
NO-1432 Ås, NORWAY

www.nmbu.no
post@nmbu.no

+47 67 23 00 00

South Africa: Teddy Gounden (Ethekwini Municipality, Durban Area)

Trading Services Cluster
Water & Sanitation Unit
3 Prior Road,
Durban, 4001
PO Box 5588, Durban, 4000
Tel: 031 311 1111, Fax 031 311 88225
www.durban.gov.za

Our Reference : 870283
Contact Details : Mr G Gounden
Telephone : 031 311 8793
Date : 16 January 2020

Jaime Nivala
INRAE – UR REVERSAAL
5 rue de la Doua
69625 Villeurbanne, France

Dear Jaime Nivala

Letter of Support

This letter confirms the interest of Ethekwini Water and Sanitation in supporting the H2020 project **MULTISOURCE**, to be submitted in response to the European Commission's Horizon 2020 call for proposals SC5-27-2020 – "*Strengthening international collaboration: enhanced natural treatment solutions for water security and ecological quality in cities*". As a project **Early Adopter City**, I confirm the following contributions, once the project has been approved for funding:

- provide relevant input data required for using the full suite of developed planning tools, including detailed sewer network information as it is available;
- provide feedback and advice for aligning the project outcomes with the needs of end-users and stakeholders;
- link the project to other local and/or international initiatives;
- promote the project outcomes within my own network;

Ethekwini Water and Sanitation welcomes the opportunity to collaborate with the **MULTISOURCE** project to create an innovative process for implementing enhanced natural treatment systems in urban water cycles.

South Africa has limited fresh water resources and has been defined as water stressed by International standards. The water reconciliation strategy study that was conducted by the National Department of Water and Sanitation for the Kwa Zulu -Natal Metropolitan areas highlighted the need for the city to review its water security plan in light of the recent prolonged drought that affected the coastal region .Various options to manage water demand and to extend the resource have been examined .These include water conservation and demand management ,reuse of water ,desalination etc. The objectives described in the Multisource proposal are interesting and in line with our own activities on sustainable urban water management and nature-based water treatment technologies for both wastewater and storm water, hence we are happy to partner as an early adopter city to validate and refine urban water planning tools and business models .

I have read the provided Terms of Reference for participation on the **MULTISOURCE** project and understand that my participation is voluntary; I am expected to attend up to three workshops (travel and accommodation is to be covered by the **MULTISOURCE** project budget); and my agreement to participate may be withdrawn any time without reason or rationale.

Yours sincerely,

Teddy Gounden
Strategic Executive: Research and Innovation

Spain: Jordi Agusti (Consorci de la Costa Brava – CCB)

DOCUMENT	IDENTIFICADORS	
Carta: **Carta Tramesa carta suport projecte MULTISOURCE**	Any document: **2020**, Acció docum: **Tramesa**, Actuació: **carta suport projecte MULTISOURCE**, Núm. Exp:: **305**	
ALTRES DADES	SIGNATURES	ESTAT
Codi per a validació: **Q7PNX-K61PN-2ALB4** Data d'emissió: **29 de juliol de 2020 a les 13:45:30** **Pàgina 1 de 1**	El document ha estat signat per : 1.- Gerent de CONSORCI DE LA COSTA BRAVA	**APROVAT** 28/07/2020 08:58

Consorci Costa Brava

INSTITUT CATALÀ DE RECERCA DE L'AIGUA (ICRA)
Dr. Joaquim Comas
Parc Científic i Tecnològic de la Universitat de Girona
Edifici H2O
Carrer Emili Grahit, 101
17003 Girona

SUBJECT: SUPPORT LETTER TO THE RESEARCH PROJECT "MULTISOURCE"

Dear Dr. Comas,

After your letter of request of July 21st, 2020, and in the framework of the agreement between ICRA and CCB for joint cooperation, through this letter the Consorci de la Costa Brava wants to state its support to the research project MULTISOURCE that ICRA is currently developing together with other research centers.

CCB, as an organization that groups 27 municipalities in Girona's province and that provides drinking water supply, wastewater treatment and water recycling, has a great interest on the outcome of this project, for the valuable information it can provide for a better understanding of sustainable urban water management and nature-based water treatment technologies..

If the project is funded, the details for a potential collaboration will be further analyzed and discussed within the limits of its overall feasibility.

Yours sincerely,

Jordi Agustí
Manager

Electronically dated and signed in Girona.

Spain: Xavier Amores Bravo (Catalan Water Partnership – CWP)

Asociación Catalana Para La Innovación Y La Internacionalización Del Sector Del Agua, Catalan Water Partnership

Jaime Nivala, MULTISOURCE Coordinator
INRAE – UR REVERSAAL
5 rue de la Doua
69625 Villeurbanne, France

20/07/2020

Letter of Support

The Catalan Water Partnership (CWP) is the Catalan Cluster of the sustainable use of water, located in the North East of Spain. CWP is a nonprofit strategic association business oriented, formed with 100 partners, involving companies and research centers that work in the sector of sustainable use of water, which mission is to improve the competitiveness of its members. The CWP promotes projects and multilevel collaborations, for developing innovative & sustainable solutions to the global water needs, in any part of the world.

This letter confirms interest of Asociación Catalana Para La Innovación Y La Internacionalización Del Sector Del Agua, Catalan Water Partnership in supporting the H2020 project **MULTISOURCE**, to be submitted in response to the European Commission's Horizon 2020 call for proposals SC5-27-2020 – *"Strengthening international collaboration: enhanced natural treatment solutions for water security and ecological quality in cities"*.

If the project is funded, we welcome the opportunity to support MULTISOURCE by:

- providing feedback and advice for aligning the project outcomes with the needs of end-users and stakeholders;
- linking the project to other local and/or national initiatives;
- helping shape policy recommendations that the project will develop;
- providing input for and participating in dissemination activities and exploitation of project results and outcomes;
- advocating in the context of the processes and networks in which we are involved the benefits arising from city-wide planning of NBS in urban water cycles;
- suggest other strategic actors who can contribute insight, expertise, or advance the project's aims of fair and equitable inclusion across gender and other relevant elements.

Asociación Catalana Para La Innovación Y La Internacionalización Del Sector Del Agua, Catalan Water Partnership welcomes the opportunity to collaborate with the **MULTISOURCE** project, as the objectives described in the proposal are interesting and in line with our own activities on sustainable urban water management and nature-based water treatment technologies.

Yours sincerely,

Xavier Amores Bravo
Cluster Manager

1

Spain: David Güell (Aigües de Manresa S.A.)

MULTISOURCE
enhanced natural treatment solutions

AIGÜES DE MANRESA S.A.
empresa municipal

Jaime Nivala, MULTISOURCE Coordinator
INRAE – UR REVERSAAL
5 rue de la Doua
69625 Villeurbanne, France

Manresa, July 21th, 2020

Letter of Support

Aigües de Manresa is a municipal company whose business is the management of supply of drinking water and drainage, sanitation and treatment of wastewater in Manresa and other towns in the area.

This letter confirms interest of **AIGÜES DE MANRESA** in supporting the H2020 project **MULTISOURCE**, to be submitted in response to the European Commission's Horizon 2020 call for proposals SC5-27-2020 – *"Strengthening international collaboration: enhanced natural treatment solutions for water security and ecological quality in cities"*.

If the project is funded, we welcome the opportunity to support MULTISOURCE by:

- providing feedback and advice for aligning the project outcomes with the needs of end-users and stakeholders;
- linking the project to other local and/or national initiatives;
- helping shape policy recommendations that the project will develop;
- providing input for and participating in dissemination activities and exploitation of project results and outcomes;
- advocating in the context of the processes and networks in which we are involved the benefits arising from city-wide planning of NBS in urban water cycles;
- suggest other strategic actors who can contribute insight, expertise, or advance the project's aims of fair and equitable inclusion across gender and other relevant elements.

AIGÜES DE MANRESA welcomes the opportunity to collaborate with the **MULTISOURCE** project, as the objectives described in the proposal are interesting and in line with our own activities on sustainable urban water management and nature-based water treatment technologies.

Yours sincerely,

DAVID GÜELL CAMPRUBÍ - DNI 39340742R (TCAT)
Firmado digitalmente por DAVID GÜELL CAMPRUBÍ - DNI 39340742R (TCAT)
Fecha: 2020.07.21 07:26:42 +02'00'

David Güell Camprubí

Deputy Director of Production

Spain: Jordi Palacín Grau (Hotel Samba)

MULTISOURCE
enhanced natural treatment solutions

HOTEL SAMBA
Jordi Palacin Grau, CEO
C/. Francesc Cambó, nº10
17310 – Lloret de Mar
Spagne

05th. August 2020

Letter of Support

This letter confirms interest of Hotel Samba in supporting the H2020 project **MULTISOURCE**, to be submitted in response to the European Commission's Horizon 2020 call for proposals SC5-27-2020 – *"Strengthening international collaboration: enhanced natural treatment solutions for water security and ecological quality in cities"*.

If the project is funded, we welcome the opportunity to support MULTISOURCE by

- providing feedback and advice for aligning the project outcomes with the needs of end-users and stakeholders;
- linking the project to other local and/or national initiatives;
- providing input for and participating in dissemination activities and exploitation of project results and outcomes;
- suggest other strategic actors who can contribute insight, expertise, or advance the project's aims of fair and equitable inclusion across gender and other relevant elements.

Hotel Samba welcomes the opportunity to collaborate with the **MULTISOURCE** project, as the objectives described in the proposal are interesting and in line with our own activities on sustainable urban water management and nature-based water treatment technologies. Hotel Samba is expert in decentralized greywater and wastewater treatment and reuse (for example the FP7 demEAUmed project among others www.demeaumed.eu). We are aware they technically work but we believe more evaluation is needed to assure the effluent is safe to be reused for decentralized edible plants production.

Yours sincerely,

Jordi Palacin Grau
CEO Hotel Samba

1

Spain: Albert Solà i Rovira (Consorci del Besòs Tordera – CBT)

MULTISOURCE
enhanced natural treatment solutions

Letter of Support – MULTISOURCE

Consorci Besòs Tordera

Jaime Nivala, MULTISOURCE Coordinator
INRAE – UR REVERSAAL
5 rue de la Doua
69625 Villeurbanne, France

In Granollers, at the date of the electronic signature.

Letter of Support

This letter confirms interest of CONSORCI BESÒS TORDERA in supporting the H2020 project **MULTISOURCE**, to be submitted in response to the European Commission's Horizon 2020 call for proposals SC5-27-2020 – *"Strengthening international collaboration: enhanced natural treatment solutions for water security and ecological quality in cities"*.

Consorci Besòs Tordera, CBT, is composed by 64 municipalities and 4 supramunicipal entities. It is a Local Water Administration located in Catalonia, working on the water sanitation for about 450 000 inhabitants and over 5 800 industries. Currently CBT manages 27 Wastewater Treatment plants with an average of 38 Hm^3/year of treated water that is returned to the basins of Besòs and Tordera rivers.

If the project is funded, we welcome the opportunity to support MULTISOURCE by:

- Providing feedback and advice for aligning the project outcomes with the needs of end-users and stakeholders;
- Linking the project to other local and/or national initiatives;
- Helping shape policy recommendations that the project will develop;
- Providing input for and participating in dissemination activities and exploitation of project results and outcomes;
- Suggest other strategic actors who can contribute insight, expertise, or advance the project's aims of fair and equitable inclusion across gender and other relevant elements.

CONSORCI BESÒS TORDERA welcomes the opportunity to collaborate with the **MULTISOURCE** project, as the objectives described in the proposal are interesting and in line with our own activities on sustainable urban water management and nature-based water treatment technologies.

Yours sincerely,

Albert Solà i Rovira
General Manager
Consorci Besòs Tordera

Spain: Marta Sureda Costa (Associació artísitica La Volta)

Letter of Support – MULTISOURCE

Jaime Nivala, MULTISOURCE Coordinator
INRAE – UR REVERSAAL
5 rue de la Doua
69625 Villeurbanne, France

20/07/20

This letter confirms interest of Associació Cultural La Volta in supporting the H2020 project **MULTISOURCE**, to be submitted in response to the European Commission's Horizon 2020 call for proposals SC5-27-2020 – *"Strengthening international collaboration: enhanced natural treatment solutions for water security and ecological quality in cities"*.

If the project is funded, we welcome the opportunity to support MULTISOURCE by::

- providing feedback and advice for aligning the project outcomes with the needs of end-users and stakeholders;
- linking the project to other local and/or national initiatives;
- providing input for and participating in dissemination activities and exploitation of project results and outcomes;
- advocating in the context of the processes and networks in which we are involved the benefits arising from city-wide planning of NBS in urban water cycles;
- suggest other strategic actors who can contribute insight, expertise, or advance the project's aims of fair and equitable inclusion across gender and other relevant elements.

The Associació Cultural La Volta welcomes the opportunity to collaborate with the **MULTISOURCE** project, as the objectives described in the proposal are interesting and in line with our own activities on sustainable urban water management and nature-based water treatment technologies. Our commitment to the efficient and sustainable management of resources, the process of adaptation and resilience of the population to the challenges of Climate Change and the generation of proposals that favor the circular economy is part of our own goals so we will help, as far as possible, to communicate and create positive synergies between the resident artists of our association and all the actors involved in the project.

Yours sincerely,

40336548E
MARTA SUREDA
(R: G55297907)

Firmado digitalmente por 40336548E MARTA SUREDA (R: G55297907)
Fecha: 2020.07.20 18:38:49 +02'00'

Marta Sureda Costa
Presidenta Associació Cultural La Volta

United Kingdom: Rod Cookson (International Water Association Publishing - IWAP)

IWA PUBLISHING
the international water association

IWA Publishing
The Export Building, Republic
2 Clove Crescent, East India
London E14 2BE
United Kingdom
Tel: +44 (0)20 7654 5500
Fax: +44 (0)20 7654 5555
Email: publications@iwap.co.uk
www.iwapublishing.com

27th August 2020

Jaime Nivala, MULTISOURCE Coordinator
INRAE – UR REVERSAAL
5 rue de la Doua
69625 Villeurbanne, France

Dear Jaime,

Letter of Support for MULTISOURCE

This letter confirms that IWA Publishing supports the H2020 project **MULTISOURCE**, to be submitted in response to the European Commission's Horizon 2020 call for proposals SC5-27-2020 – *"Strengthening international collaboration: enhanced natural treatment solutions for water security and ecological quality in cities"*.

The following textbook is being proposed as an outcome of the MULTISOURCE project:

Wallace S.D, Nivala J., Molle P, Weber K., von Sperling S. *Treatment Wetlands, Third Edition*. CRC Press: Boca Raton, Florida. Estimated length: 700 pp.

These co-authors are highly involved in the IWA Specialist Group "Wetlands for Water Pollution Control". IWA Publishing is willing to promote the book on the IWA Publishing website by providing links to it on the landing pages of *Wetland Technology: Practical information on the design and application of treatment wetlands* and *Treatment Wetlands*.

Yours sincerely,

Rod Cookson

Rod Cookson
Managing Director

United States: Jeff Mihelich (City of Bozeman)

BOZEMAN MT
City Management

July 24, 2020

Jaime Nivala, MULTISOURCE Coordinator
INRAE – UR REVERSAAL
5 rue de la Doua
69625 Villeurbanne, France

Dear Jaime Nivala:

The City of Bozeman is delighted to lend support the H2020 project **MULTISOURCE**, to be submitted in response to the European Commission's Horizon 2020 call for proposals SC5-27-2020 – *"Strengthening international collaboration: enhanced natural treatment solutions for water security and ecological quality in cities"*.
Bozeman is a rapidly growing city (4-5% annually) dependent on snowmelt runoff for its water supply. Despite several programs to reduce water demand, water supply is limited. The City is in a closed basin as the State of Montana has made a determination that all water in the area has been fully allocated to existing uses and no new water rights are available, excluding negative effects of climate change. Thus the City is actively seeking tools to better manage its water resources. In addition, an increasingly stringent regulatory environment forces the City to look toward innovative water quality remediation technologies to meet discharge targets. In fact, the City is already in partnership with researchers at Montana State University (MSU) to pilot several natural based treatment alternatives for water reclamation. The City of Bozeman welcomes the opportunity to participate in the development and application of tools designed to enhance the decision-making process for water supply, treatment and reuse and offer its perspectives that are in line with stated goals and objectives of the MULTISOURCE project. If funded the City could contribute the following toward the objectives of the MULTISOURCE project:

- provide performance data for current water treatment systems and a proposed pilot Enhanced Natural Treatment System (ENTS) at the current water reclamation facility to corroborate data from ENTS featured in WP1.
- provide data on current water infrastructure networks and projected future growth spatial patterns to facilitate development of WP5 planning tools.
- provide feedback as a potential end-user at intermediate stages in development of tools for planning, design and infrastructure selection development.
- once developed, run example applications of the tools for planning, design and infrastructure selection.

Yours sincerely,

Jeff Mihelich
City Manager

A 121 North Rouse Avenue | M P.O. Box 1230 Bozeman, MT 59771-1230 | P 406-582-2306 | F 406-582-2344 | www.bozeman.net

TDD: 406-582-2301

THE MOST LIVABLE PLACE.

NaturallyWallace

Jaime Nivala, MULTISOURCE Coordinator
INRAE – UR REVERSAAL
5 rue de la Doua
69625 Villeurbanne, France

01 September 2020

Letter of Support for MULTISOURCE

This letter confirms the interest of Naturally Wallace Consulting LLC (NWC) in supporting the H2020 project MULTISOURCE, to be submitted in response to the European Commission's Horizon 2020 call for proposals SC5-27-2020 – "*Strengthening international collaboration: enhanced natural treatment solutions for water security and ecological quality in cities*".

If the project is funded, NWC welcomes the opportunity to collaborate with the MULTISOURCE project, as the objectives described in the proposal are interesting and in line with our own activities on sustainable urban water management and nature-based solutions for water treatment. NWC belongs to the Global Wetland Technology network, which provides a key exploitation path for many of the Enhanced Natural Treatment Solutions that will be validated as a part of MULTISOURCE.

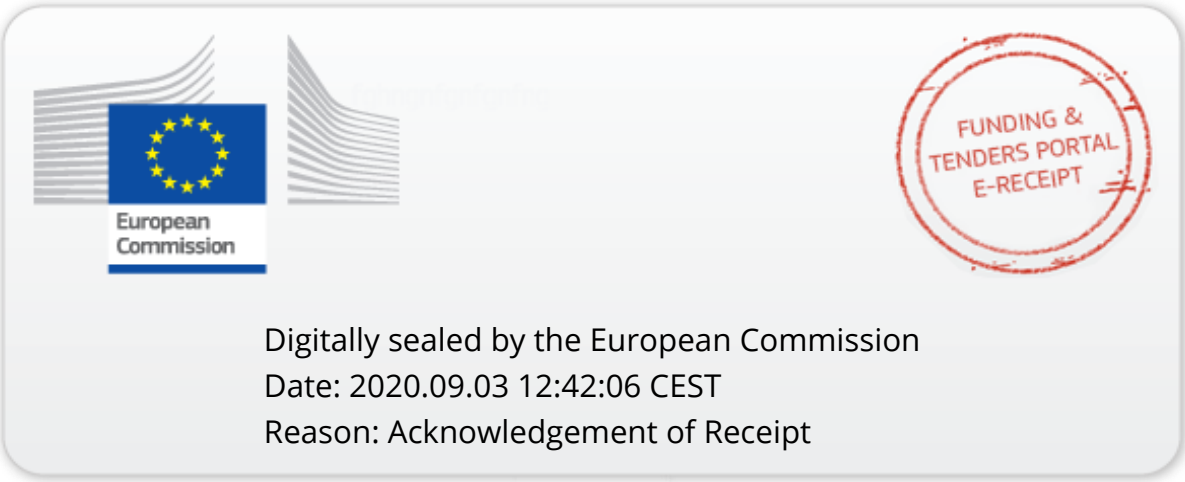
I confirm my support as a co-author of *Treatment Wetlands, Third Edition*, which will be authored by Scott Wallace, Jaime Nivala, Pascal Molle, Kela Weber and Marcos von Sperling and published by CRC Press, and acknowledge that the textbook and its supporting electronic content is proposed to be published open access in connection with the MULTISOURCE project.

Sincerely,

NATURALLY WALLACE CONSULTING, LLC

Scott Wallace, P.E.
President

112 3rd Street South
Stillwater, Minnesota 55082 USA
http://naturallywallace.com/



This electronic receipt is a digitally signed version of the document submitted by your organisation. Both the content of the document and a set of metadata have been digitally sealed.

This digital signature mechanism, using a public-private key pair mechanism, uniquely binds this eReceipt to the modules of the Funding & Tenders Portal of the European Commission, to the transaction for which it was generated and ensures its full integrity. Therefore a complete digitally signed trail of the transaction is available both for your organisation and for the issuer of the eReceipt.

Any attempt to modify the content will lead to a break of the integrity of the electronic signature, which can be verified at any time by clicking on the eReceipt validation symbol.

More info about eReceipts can be found in the FAQ page of the Funding & Tenders Portal.

(https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/support/faq)