**THEME [ENV.2013.WATER INNO&DEMO-1
ENV.2013.WATER INNO&DEMO-1]
[Water innovation demonstration projects
Water innovation demonstration projects]**

Grant agreement for: Collaborative project*

Annex I - "Description of Work"

Project acronym: DESSIN

Project full title: " Demonstrate Ecosystem Services Enabling Innovation in the Water Sector "

Grant agreement no: 619039

Version date: 2017-10-17

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Part A

Workplan Tables

A1:
Project summary

Project Number [1]	619039	Project Acronym [2]	DESSIN

One form per project

General information

Project title [3]	Demonstrate Ecosystem Services Enabling Innovation in the Water Sector		
Starting date [4]	01/01/2014		
Duration in months [5]	48		
Call (part) identifier [6]	FP7-ENV-2013-WATER-INNO-DEMO		
Activity code(s) most relevant to your topic [7]	ENV.2013.WATER INNO&DEMO-1: Water innovation demonstration projects	ENV.2013.WATER INNO&DEMO-1: Water innovation demonstration projects	

Abstract [9]

The main objectives of DESSIN are
- To demonstrate and promote innovative solutions to water-related challenges with a focus on: (i) water quality issues related to the implementation of the Water Framework Directive (WFD) and (ii) water scarcity.
- To demonstrate a methodology for the valuation of ecosystem services (ESS) as catalyser for innovation in water management.
DESSIN will launch demonstration projects of innovative solutions for the two challenges mentioned above, with special focus on urban areas. Solutions will integrate technological, monitoring, modeling and management approaches for a more resource-efficient and competitive water sector in Europe. As a second key feature, an Evaluation Framework to account for changes in the value of ecosystem services (ESS) of water bodies that result from implementation of the solutions will be developed and applied. By adopting this twofold approach, we will be able to demonstrate how innovative solutions integrated in the water cycle can increase the value of the services provided by freshwater ecosystems, thus generating additional incentives and arguments for their market uptake and practical implementation. This will support innovation and competitiveness in water management by enabling a more informed selection of the most promising solutions, as regards their impact on the water body and their economic implications. The whole project is centered around the following suite of carefully selected sites across Europe, representative of global major water challenges, where we bring together public and private water management organisations and end-users, technology providers (SMEs), supporting RTD experts and relevant public authorities to demonstrate this approach: Emscher (Germany), Hoffselva (Oslo area, Norway), Westland (The Netherlands), Athens (Greece) and Llobregat (Barcelona Area, Spain).

A2:
List of Beneficiaries

Project Number [1]	619039	Project Acronym [2]	DESSIN

List of Beneficiaries

No	Name	Short name	Country	Project entry month[10]	Project exit month
-7	INRIGO WATER AS	INRIGO	Norway	1	24
1	IWW RHEINISCH-WESTFALISCHES INSTITUT FUER WASSER BERATUNGS-UND ENTWICKLUNGSGESELLSCHAFT MBH	IWW	Germany	1	48
2	AMPHOS 21 CONSULTING SL	A21	Spain	1	48
3	ADELPHI RESEARCH GEMEINNUTZIGE GMBH	ADELPHI	Germany	1	48
4	TECHNISCH BUREAU W.M. BRUINE DE BRUIN BV	BdB	Netherlands	1	48
5	CHEMITAL TECHNOLOGY P. DIMOPOULOU -P. TAZES & CO OE	Chemitec	Greece	1	48
6	ECOLOGIC INSTITUT gemeinnützige GmbH	ECOLOGIC	Germany	1	48
7	INRIGO AS	INRIGO	Norway	24	48
8	LEIF KOLNER INGENIORFIRMA AS	LKI	Norway	1	48
9	SEGNO INDUSTRIE AUTOMATION GMBH	SEGNO	Germany	1	48
10	TELINT RTD Consultancy Services LTD	TELINT	United Kingdom	1	48
11	UFT- UMWELT-UND FLUID-TECHNIK DR H BROMBACH GESELLSCHAFT MBH	UFT	Germany	1	48
12	EMSCHERGENOSSENSCHAFT	EG	Germany	1	48
13	ETAIREIA YDREYSEOS KAI APOCHETEFSEOS PROTEYOYSIS ANONIMI ETAIREIA	EYDAP	Greece	1	48
14	OSLO KOMMUNE	VAV	Norway	1	48
15	CETAQUA, CENTRO TECNOLOGICO DEL AGUA, FUNDACION PRIVADA	CETaqua	Spain	1	48
16	DHI	DHI	Denmark	1	48
17	KWR WATER B.V.	KWR	Netherlands	1	48
18	NATIONAL TECHNICAL UNIVERSITY OF ATHENS - NTUA	NTUA	Greece	1	48
19	STIFTELSEN SINTEF	SINTEF	Norway	1	48
20	UNIVERSITAET DUISBURG-ESSEN	UDE	Germany	1	48

A3:
Budget Breakdown

Project Number [1]	619039	Project Acronym [2]	DESSIN

One Form per Project

Participant number in this project [11]	Participant short name	Fund. % [12]	Ind. costs [13]	Estimated eligible costs (whole duration of the project)					Requested EU contribution
				RTD / Innovation (A)	Demonstration (B)	Management (C)	Other (D)	Total A+B+C+D	
-7 (UTRO)	INRIGO	75.0	T	0.00	0.00	0.00	0.00	0.00	0.00
1	IWW	75.0	T	270,400.00	14,400.00	250,000.00	114,000.00	648,800.00	574,000.00
2	A21	75.0	F	116,880.00	134,640.00	0.00	0.00	251,520.00	154,980.00
3	ADELPHI	75.0	T	0.00	40,000.00	1,200.00	416,000.00	457,200.00	437,200.00
4	BdB	75.0	T	105,011.20	241,308.80	0.00	0.00	346,320.00	199,412.00
5	Chemitec	75.0	T	80,800.00	319,424.00	0.00	0.00	400,224.00	220,312.00
6	ECOLOGIC	75.0	A	430,760.00	26,344.00	5,268.80	0.00	462,372.80	341,510.80
7 (UTRO)	INRIGO	75.0	T	155,200.00	127,200.00	0.00	0.00	282,400.00	180,000.00
8	LKI	75.0	T	44,160.00	16,800.00	0.00	0.00	60,960.00	41,520.00
9	SEGNO	75.0	F	308,640.00	265,324.81	0.00	0.00	573,964.81	364,142.00
10	TELINT	75.0	T	129,600.00	68,032.00	0.00	0.00	197,632.00	131,216.00
11	UFT	75.0	T	48,800.00	156,800.00	0.00	0.00	205,600.00	115,000.00
12	EG	75.0	T	309,840.00	444,880.00	4,700.00	0.00	759,420.00	459,520.00
13	EYDAP	50.0	F	15,600.00	277,510.00	0.00	0.00	293,110.00	146,555.00
14	VAV	75.0	T	0.00	50,200.00	0.00	0.00	50,200.00	25,100.00
15	CETaqua	75.0	F	284,307.60	352,439.60	16,749.20	129,478.40	782,974.80	527,905.10
16	DHI	75.0	A	261,299.63	34,403.67	0.00	0.00	295,703.30	213,176.55
17	KWR	50.0	A	218,570.00	550,420.00	14,820.00	163,120.00	946,930.00	562,435.00
18	NTUA	75.0	T	192,640.00	206,430.74	0.00	0.00	399,070.74	247,695.36
19	SINTEF	75.0	A	705,850.00	439,850.00	15,950.00	0.00	1,161,650.00	765,262.50
20	UDE	75.0	T	152,000.00	320,000.00	0.00	0.00	472,000.00	274,000.00

A3:
Budget Breakdown

Participant number in this project [11]	Participant short name	Fund. %[12]	Ind. costs[13]	Estimated eligible costs (whole duration of the project)					Requested EU contribution
				RTD / Innovation (A)	Demonstration (B)	Management (C)	Other (D)	Total A+B+C+D	
Total				3,830,358.43	4,086,407.62	308,688.00	822,598.40	9,048,052.45	5,980,942.31

Note that the budget mentioned in this table is the total budget requested by the Beneficiary and linked Third Parties.

*** The following funding schemes are distinguished**

Collaborative Project (if a distinction is made in the call please state which type of Collaborative project is referred to: (i) Small of medium-scale focused research project, (ii) Large-scale integrating project, (iii) Project targeted to special groups such as SMEs and other smaller actors), Network of Excellence, Coordination Action, Support Action.

1. Project number

The project number has been assigned by the Commission as the unique identifier for your project, and it cannot be changed. The project number **should appear on each page of the grant agreement preparation documents** to prevent errors during its handling.

2. Project acronym

Use the project acronym as indicated in the submitted proposal. It cannot be changed, unless agreed during the negotiations. The same acronym **should appear on each page of the grant agreement preparation documents** to prevent errors during its handling.

3. Project title

Use the title (preferably no longer than 200 characters) as indicated in the submitted proposal. Minor corrections are possible if agreed during the preparation of the grant agreement.

4. Starting date

Unless a specific (fixed) starting date is duly justified and agreed upon during the preparation of the Grant Agreement, the project will start on the first day of the month following the entry info force of the Grant Agreement (NB : entry into force = signature by the Commission). Please note that if a fixed starting date is used, you will be required to provide a detailed justification on a separate note.

5. Duration

Insert the duration of the project in full months.

6. Call (part) identifier

The Call (part) identifier is the reference number given in the call or part of the call you were addressing, as indicated in the publication of the call in the Official Journal of the European Union. You have to use the identifier given by the Commission in the letter inviting to prepare the grant agreement.

7. Activity code

Select the activity code from the drop-down menu.

8. Free keywords

Use the free keywords from your original proposal; changes and additions are possible.

9. Abstract

10. The month at which the participant joined the consortium, month 1 marking the start date of the project, and all other start dates being relative to this start date.

11. The number allocated by the Consortium to the participant for this project.

12. Include the funding % for RTD/Innovation – either 50% or 75%

13. Indirect cost model

A: Actual Costs
S: Actual Costs Simplified Method
T: Transitional Flat rate
F :Flat Rate

Workplan Tables

Project number

619039

Project title

DESSIN—Demonstrate Ecosystem Services Enabling Innovation in the Water Sector

Call (part) identifier

FP7-ENV-2013-WATER-INNO-DEMO

Funding scheme

Collaborative project

WT1
List of work packages

Project Number [1]	619039	Project Acronym [2]	DESSIN

LIST OF WORK PACKAGES (WP)

WP Number [53]	WP Title	Type of activity [54]	Lead beneficiary number [55]	Person-months [56]	Start month [57]	End month [58]
WP 11	Development of an evaluation framework (to account) for impacts of changes on Ecosystem Services	RTD	1	47.00	1	24
WP 12	Innovative and innovation-friendly modes of governance, financing and payment	RTD	6	39.50	1	18
WP 13	Testing & refining the ESS evaluation framework by using mature sites	RTD	12	33.50	12	24
WP 21	Innovations for Water Quality / WFD implementation	RTD	19	74.45	1	36
WP 22	Innovations to tackle water scarcity	RTD	17	121.00	1	48
WP 23	Software framework for ESS valuation	RTD	16	14.50	18	30
WP 31	Emscher Demonstration: Improving water quality in the strongly urbanised Emscher area	DEM	12	87.50	1	42
WP 32	Hoffselva Demonstration: Improving water quality in the peri-urban Hoffselva area	DEM	19	26.50	9	42
WP 33	Westland demo site: Freshwater supply from brackish aquifers by combining ASR and desalination	DEM	17	62.00	1	48
WP 34	Athens Demonstration: Sewer Mining for Urban Re-use enabled by Advanced Monitoring Infrastructure	DEM	18	94.16	6	48
WP 35	Llobregat Demonstration: Flexible ASR system to recharge different water qualities	DEM	15	74.00	10	48
WP 41	Dissemination of DESSIN and development of its demo sites as showcases	OTHER	15	30.00	1	48
WP 42	Route to Market	OTHER	3	40.00	3	48
WP 51	Scientific Coordination	RTD	1	7.00	1	48
WP 52	Project Management	MGT	1	17.00	1	48
			Total	768.11		

WT2:
List of Deliverables

Project Number [1]	619039	Project Acronym [2]	DESSIN

List of Deliverables - to be submitted for review to EC

Delive-rable Number [61]	Deliverable Title	WP number [53]	Lead benefi-ciary number	Estimated indicative person-months	Nature [62]	Dissemi-nation level [63]	Delivery date [64]
D11.1	State of the art report on ecosystem service evaluation	11	1	15.00	R	CO	9
D11.2	Framework for evaluating changes in ecosystem services	11	6	32.00	R	PU	24
D12.1	Report on governance regime factors conducive to innovation uptake	12	17	15.00	R	PU	14
D12.2	Report on financing approaches conducive to water sector innovation	12	15	12.00	R	PU	14
D12.3	Manual for practitioners and policy makers	12	6	12.50	R	PU	18
D13.1	Quantified ESS for 3 mature sites including recommendations for application	13	12	33.50	R	PU	24
D21.1	Treatment units and instrumentation for CSO treatment solutions	21	11	22.75	P	CO	12
D21.2	Validated additional functions for the ADESBA planning tool	21	9	43.00	P	CO	36
D21.3	Technical conclusions from testing during site specific	21	7	8.70	R	CO	36

WT2:
List of Deliverables

Delive-rable Number [61]	Deliverable Title	WP number [53]	Lead benefi-ciary number	Estimated indicative person-months	Nature [62]	Dissemi-nation level [63]	Delivery date [64]
	development and specifications for final design						
D22.1	Guidelines for packaged plant selection and optimisation report	22	18	29.25	R	PU	12
D22.2	ICT platform for distributed sewer mining (technology)	22	18	21.25	P	PU	24
D22.3	Assessment reversed osmosis membrane clogging by varying redox conditions	22	17	22.00	R	PU	24
D22.4	Evaluation of pre-potable water requirements for safe injection into the aquifer through ASR	22	15	20.50	R	PU	20
D22.5	Software for the evaluation of groundwater and surface water interactions	22	2	28.00	O	PU	20
D23.1	System requirement specification and system design documents	23	16	7.50	R	PU	20
D23.2	Windows installer that can be used to install the software	23	16	5.00	P	CO	28
D23.3	User guide and system documentation	23	16	2.00	R	PU	29
D31.1	Conclusions from successful demonstration, and	31	12	80.50	R	PU	42

WT2:
List of Deliverables

Delive-rable Number [61]	Deliverable Title	WP number [53]	Lead benefi-ciary number	Estimated indicative person-months	Nature [62]	Dissemi-nation level [63]	Delivery date [64]
	specifications for final design						
D31.2	Final evaluation of the technological solution in terms of ESS and sustainability	31	12	7.00	R	PU	42
D32.1	Design criteria and documentation of performance for local CSO overflow treatment	32	7	21.00	R	PU	42
D32.2	Conclusions from the demonstrations with projected effects on water quality, ESS and sustainability	32	19	5.50	O	PU	42
D33.1	Valorisation and demonstration of an ASR/RO application	33	17	56.00	D	PU	48
D33.2	Evaluation of the improvement of Ecosystem Services as a result of ASR/RO application	33	17	6.00	R	PU	48
D34.1	An optimal configuration small packaged plant for urban sewer mining	34	5	61.00	D	PU	12
D34.2	A demonstrated intelligent software-hardware platform for monitoring and control of small packaged plants for urban sewer mining	34	10	21.00	O	PU	24

WT2:
List of Deliverables

Delive-rable Number [61]	Deliverable Title	WP number [53]	Lead benefi-ciary number	Estimated indicative person-months	Nature [62]	Dissemi-nation level [63]	Delivery date [64]
D34.3	Evaluation and guidelines and recommendation for transfer to other Water Scarcity sites	34	18	12.16	R	PU	48
D35.1	Evaluation of the results and impacts on ESS of a flexible ASR system, and recommendations for transfer	35	15	42.00	R	PU	48
D35.2	Economic analysis and proposed payment regulation of the identified ecosystem services	35	2	32.00	R	PU	48
D41.1	Project branding (logo and templates)	41	15	1.00	O	PU	3
D41.2	Official website launch	41	1	2.00	O	PU	3
D41.3	Content for dissemination and promotional material, including a policy brief, a video and re-usable illustrations	41	15	19.00	O	PU	48
D41.4	Established showcases at five demo sites	41	17	8.00	D	PU	36
D42.1	Market analysis (inside-out) for ESS software and solution packages	42	3	8.50	R	RE	12
D42.2	Sample Commercialization Process Maturity models and capacity building on strategies for SMEs	42	3	8.50	O	RE	48

WT2:
List of Deliverables

Delive-rable Number [61]	Deliverable Title	WP number [53]	Lead benefi-ciary number	Estimated indicative person-months	Nature [62]	Dissemi-nation level [63]	Delivery date [64]
D42.3	Two business environment (outside-in) reports a) Scarcity b) Quality / WFD	42	3	8.50	R	RE	10
D42.4	Recommendations from the open ESS channels: European platforms, roundtables, conferences and web platform	42	3	8.50	R	PU	48
D42.5	M+E system for innovation and continuous monitoring of framework conditions and outcomes	42	3	6.00	D	PU	48
			Total	744.11			

WT3:
Work package description

Project Number [1]	619039	Project Acronym [2]	DESSIN

One form per Work Package

Work package number [53]	WP11	Type of activity [54]	RTD
Work package title	Development of an evaluation framework (to account) for impacts of changes on Ecosystem Services		
Start month	1		
End month	24		
Lead beneficiary number [55]	1		

Objectives

• Identification of current state evaluation methodologies on ESS
• Development of an analytical framework to evaluate and account impacts from changes in ESS suitable to the water sector
• Integrating water related specific attributes into the evaluation framework
• Providing an applicable evaluation framework for development of an ESS module that can be integrated into a DSS

Description of work and role of partners

WP11 is focused on the implementation of existing or proposed new methodologies to evaluate changes in the value of ESS provision in monetary and non-monetary terms in the context of innovations in the water sector. This includes accounting for impacts from changes in ESS and the integration of economic/social values and benefits of ecosystem services and their changes into the evaluation framework. WP11 provides input to the evaluation and decision-making process in order to perform transparent and acceptable water policies. The methodology will have an end user remit and it is expected to be used by different users with different aims: by SME to demonstrate (positive) impact of the proposed technology, by water utilities to test alternative solutions, by policy makers to define objectives. The framework will support in the evaluation of the planning, design and development of new technologies and solutions prior to their application in water management frameworks. Main ecosystem services typologies from latest available literature will be used, e. g. EU WG MAES (Mapping and assessments of ecosystem services), CICES (common international classification of ecosystem services) and ESAWADI (utilizing ecosystem services for WFD implementation) and others reflecting the service types as 1) Provisioning services; 2) Regulating and maintenance services; and 3) Cultural services.

Task 11.1 – Information gathering of current state and adaptations of existing ESS evaluation approaches (M1-M9 IWW, ECOL, SINTEF, UDE, EG, DHI, KWR, CETaqua).
This task will undertake research and evidence review and will be performed on existing approaches and methodologies to assess changes in freshwater ESS provision. Referring to the complexity of different pressures on ecosystem values the review will be organised in three main categories / sub-tasks. General working steps are: a) Identifying good practices on relevant ESS implementation studies/projects; b) providing a systematic review and summary of ESS approaches generally applicable for DESSIN. The work will be subdivided by different water related emphases within the sub-tasks.
Task 11.1.1 – Scope existing evaluation frameworks of ecosystem services and their suitability for the water sector (M1-M3 ECOL, IWW, UDE, SINTEF, CETaqua)
This task will provide a basic research on quantitative and qualitative approaches to measure changes in ecosystem services and will check their suitability for the water sector and the objectives of DESSIN. This will include the identification of concepts, indicators, methods for measuring changes in ESS (inclusing monetary valuation and suitable valuation methods) and consistent definition of related concepts: e.g. marketed, non-marketed ecosystem services and other environmental impacts (e.g. revealed preference techniques, cost-based approaches, stated preference approaches, benefit transfer).
Task 11.1.2 – Linking changes in water status to changes in ecosystem services (M1-M6 UDE, EG, DHI, IWW)

Based upon current ESS evaluation methods (e.g. CICES typology, WG MAES, ESAWADI), and in close communication with task 11.1.3 and taking into account the results from the review exercise in Task 11.1.1, this task will explore how changes in water status according to the WFD translate to changes in ecosystem services, also bearing in mind the human welfare perspective on ESS (i.e. service values), meaningful indicators of ecological functions to link status indicators and ESS delivery indicators will be researched, as an input to the design of the evaluation framework. Important aspects are biophysical flows and changes that underlie changes in ecosystem services provision and its values.
Task 11.1.3 – Economic valuation of changes in ESS (M1-M6 ECOL, IWW, CETaqua, SINTEF):
Review of existing knowledge and evidence on valuation methods and analytical tools for linking marginal changes in EGS to economic impacts. This sub-task will review the available economic literature to provide guidance on the following topics: baselines/counterfactuals in the application of the EGS approach for the sustainable management of freshwater ecosystems; ways to account for the interactions (i.e. competition, complementarity) between services and service values; relevant concepts of value and ways to account for use and non-use values associated with societal preferences for changes in freshwater ecosystem services provision and identification of suitable valuation tools to account for market and non-market benefits; Assess the transferability of the values of EGS and their spatial nature; analysis of the interaction between EGS flows and stocks; and finally, development of methods to delineate and assess sensitivities, uncertainties and risks associated with quantifying the contribution of EGS to social welfare. Furthermore, this task will screen in theory the application of improvement scenarios (e.g. regionalized climate scenarios based on DYNAKLIM project, or restoration scenarios) that will be applied in practice for the quantification and valuation of changes in ESS provision in WP13. The list of topics is non-exhaustive as other topics may become relevant after screening the relevant literature in Task 11.1.1 and in close communication with task 11.1.2.
Task 11.1.4 – Sustainability assessment (M1-M6 IWW, KWR, SINTEF):
Results, tools and methodologies from the EU-TRUST project in terms of environmental and economic aspects will be incorporated into the DESSIN project to provide a full-scale perspective on ecosystem service valuation from both sustainability assessment and ecosystem valuation perspective.

Task 11.2 – Development of the framework for evaluating changes in ecosystem services at the mature sites (M7-M18 ECOL, UDE (link with 11.1.2), IWW, SINTEF (link with 11.3), DHI (link with DSS).
Based on the findings from Task 11.1, this task will develop the conceptual evaluation framework that links qualitative and quantitative (economic values) indicators to measure changes in (freshwater) ecosystem services. It will be designed to account for possible geographical and socio-economic differences across study sites. The evaluation framework will provide a schedule and guidance for qualitative reviews, quantitative assessments or implementation of monetary valuation approaches. A toolbox including commonly-used valuation techniques will be adapted to changes in ecosystem services via innovations in the water sector. The framework will be applied and tested in the mature sites (WP13) with a support tool, ESS valuation toolkit, before the final ESS module is developed for the proposed DSS (WP23).

Task 11.3 – Reflecting after testing – possible improvements and further research (M12-M24 SINTEF, EG, ECOL, IWW, DHI)
Based on the testing and experience gained in WP13, this task will improve the conceptual evaluation framework up to a final version to be used by WP23 to develop an "ESS module" implemented in the overall DSS. The "ESS module" as developed by WP23 will then be used in WA3 to evaluate the ESS impact of the innovative solutions applied to the different demo sites. The product of this task will be the ESS valuation toolkit and sustainability assessment to assist in structuring the ESS evaluation framework, the data requirements, the criteria and metrics/indicators and all the specifications that support the development of the ESS module in WP23.

Person-Months per Participant

Participant number [10]	Participant short name [11]	Person-months per participant
1	IWW	11.00
6	ECOLOGIC	15.00
12	EG	4.00
15	CETaqua	2.00

WT3:
Work package description

Person-Months per Participant

Participant number [10]	Participant short name [11]	Person-months per participant
16	DHI	3.00
17	KWR	2.00
19	SINTEF	6.00
20	UDE	4.00
	Total	47.00

List of deliverables

Delive-rable Number [61]	Deliverable Title	Lead benefi-ciary number	Estimated indicative person-months	Nature [62]	Dissemi-nation level [63]	Delivery date [64]
D11.1	State of the art report on ecosystem service evaluation	1	15.00	R	CO	9
D11.2	Framework for evaluating changes in ecosystem services	6	32.00	R	PU	24
		Total	47.00			

Description of deliverables

D11.1) State of the art report on ecosystem service evaluation: Internal state of the art report on ecosystem service evaluation regarding the items water status related changes in ESS, economic valuation and sustainability assessment of ESS [month 9]

D11.2) Framework for evaluating changes in ecosystem services: Framework for evaluating changes in ecosystem services, including feedback from practical evaluation [month 24]

Schedule of relevant Milestones

Milestone number [59]	Milestone name	Lead benefi-ciary number	Delivery date from Annex I [60]	Comments
MS12	First version of evaluation methodology available for testing at mature sites	6	12	Mature case study leaders receive a copy of the evaluation framework report
MS26	Applicability of evaluation methodology is tested and approved	19	21	Internal project report including main recommendations / suggestions from case study leaders

WT3:
Work package description

Project Number [1]	619039	Project Acronym [2]	DESSIN

One form per Work Package

Work package number [53]	WP12	Type of activity [54]	RTD
Work package title	Innovative and innovation-friendly modes of governance, financing and payment		
Start month	1		
End month	18		
Lead beneficiary number [55]	6		

Objectives

• Development of an analytical framework for the assessment of governance regimes, with particular focus on favorableness to innovation.
• Identification of good practice aspects / hindering factors for uptake of innovative measures / technologies.
• Analysis of financial models / funding mechanisms encouraging uptake of innovative and sustainable measures, with consideration of ESS valuation uptake.
• Provide concrete guidance for practitioners linking good practice and lessons-learned in governance regimes and financing options, with the ESS framework.

Description of work and role of partners

The past decades have seen a shift in the understanding of water resources governance, from being centred on single decision-making authorities, to polycentric models that emphasise the multiplicity of administrative levels and geographical scales. Whereas some aspects of governance regimes are subject to influence or change by individual actors or actor networks, many of them are located at scales or developed at timeframes beyond their direct influence in the short or medium term. In an EU context, a local or catchment-scale innovation will have to operate within a governance regime determined by EU Directives and implementation principles, national priorities, approaches and institutional contexts (including history), and actor networks at these different scales. This impedes a one-size-fits-all approach to governance regimes recommendations.
The specificity and context dependency of governance regimes (country- and region-specific) suggests a Case-Study approach that focuses on enabling conditions / hindering factors for innovation. Focus will be placed on principles of governance that are considered to favour innovation, such as: Integration between different scales, integration between sectors, collaborative planning, participatory governance. The governance assessment approach is based on the framework developed in the FP5 project EUWARENESS, which has found wide application in different governance settings and for different challenges in water management.

Task 12.1: Development of an analytical framework for governance regime assessment (M1 – M4) (ECOL, IWW, SINTEF, KWR)
In a first step, well known governance regime frameworks (e.g. EUWARENESS, TRUST, Prepared, Switch...) will be reviewed and adapted to the particular challenges of DESSIN. The adapted single framework will have a focus on ESS changes evaluation and the particular actor networks relevant for measuring implementation/innovation uptake.

Task 12.2: Case-Study analysis of governance regime factors conducive to innovation uptake (M6 - M14) (ECOL, IWW, SINTEF, EG, CETAqua, KWR and DHI)
The analysis will make use of DESSIN's mature Case Studies, where a process of successful uptake of innovative methodologies has been completed recently / is being completed currently. It will focus on the process of successful uptake and be based on the extensive data availability and partner knowledge for these areas. Based on this data, interview campaigns in the study areas will be performed to analyse in detail the research questions below. Storylines of methodology uptake and regime influence will be developed for each CS.
1. Levels/scales of governance: Who decides/influences the decision-making process around the implemented measures? Which are the key policies, incl. financing instruments?

2. Actors: How open is the decision-making process and to whom? How do actors cooperate in the relevant networks (formal and informal processes)? Links to actors in other policy sectors?
3. Perspectives (the role of discourse analysis & conceptualization): Is there a common understanding of the problem? Of the solutions that need to be developed? Role of uncertainty in the discussions?
4. Strategies/instruments: What tools do actors (public, private) use to develop the measure? Are changes anticipated? Flexible?
5. Resources: Who is responsible for what in the process? Resources (power money) available to actors? Degree of complexity of institutional arrangement? Property rights?

These results will be compared and contrasted with governance regime analyses performed in previous or current research projects, such as TRUST, Prepared, and SWITCH. The task will compile lessons learned, enabling factors, best practices and constraints to uptake of innovative measures / approaches for 1) lessons learnt for water sector innovation in general and specifically 2) for the mature case studies proposed in WP13.

Task 12.3: Economic policy instruments to foster innovation in the water sector (M6 - M14) (CETAqua, ECOL, IWW)
The implementation of economic policy instruments (EPIs) in water management has strong potential for creating comparatively rapid changes in the attractiveness and uptake of new technologies by the private sector. Understood as complementary instruments to regulatory approaches, EPIs can serve many objectives, including the achievement of (financial and environmental) cost recovery or raise revenues for financing new innovative technologies in the water sector. Based on literature and case-study research, this task will explore the potential of public sector innovation (e.g. changes in procurement decisions), pricing policies and financing frameworks (e.g. uptake of payment for ecosystem services schemes, ESS related certification schemes) to benefit the uptake of innovative technologies. The task will analyse the importance of framework stability over time on the business case for innovative approaches (e.g. the effects of political uncertainty on long-term planning, price volatility, institutions and transaction costs). This task will be built from the results obtained from existing projects on the evaluation of existing and new EPIs to achieve objectives of environmental policy: EPI-Water, POLICYMIX, CECILIA2020. The following sub-tasks will be covered:
1. Literature review to identify the most common EPIs (e.g. prices, subsidies, markets) employed to finance innovation in the water sector
2. Identification of factors of change in the water sector linked to changes in financing structures
3. Comparison and contrast of financing modes in the mature Case Studies in the light of the results of the review

Task 12.4: Synthesis: Linking good-practice/constraint identification in governance and financing regimes with the ESS valuation and innovation uptake (ECOL, CETAQ, IWW, SINTEF, EG) (M14 - M18)
This task will synthesise and summarise the results of 12.2 and 12.3 for their broader dissemination. Lessons learned, enabling factors, best practices and constraints to uptake of innovative measures / approaches will be systematised and published in a manual for practitioners and policy makers. Particular focus will be placed on the possible roles of ESS to create compelling arguments for action / solution uptake. The information synthesised in this task will also serve to provide an overview of financing structures currently in place that could facilitate the incursion into the market of the technologies/solutions assessed in DESSIN (WA3/WA4).

Person-Months per Participant

Participant number [10]	Participant short name [11]	Person-months per participant
1	IWW	2.00
6	ECOLOGIC	18.00
12	EG	2.00
15	CETaqua	6.50
16	DHI	2.00
17	KWR	6.00
19	SINTEF	3.00

WT3:
Work package description

Person-Months per Participant

Participant number [10]	Participant short name [11]	Person-months per participant
	Total	39.50

List of deliverables

Delive-rable Number [61]	Deliverable Title	Lead benefi-ciary number	Estimated indicative person-months	Nature [62]	Dissemi-nation level [63]	Delivery date [64]
D12.1	Report on governance regime factors conducive to innovation uptake	17	15.00	R	PU	14
D12.2	Report on financing approaches conducive to water sector innovation	15	12.00	R	PU	14
D12.3	Manual for practitioners and policy makers	6	12.50	R	PU	18
		Total	39.50			

Description of deliverables

D12.1) Report on governance regime factors conducive to innovation uptake: [month 14]

D12.2) Report on financing approaches conducive to water sector innovation: [month 14]

D12.3) Manual for practitioners and policy makers: Manual on enabling factors, best practices and constraints to uptake of innovative measures [month 18]

Schedule of relevant Milestones

Milestone number [59]	Milestone name	Lead benefi-ciary number	Delivery date from Annex I [60]	Comments
MS3	Analytical framework for governance regime assessments	6	4	Internal draft report outlining key elements of the review

WT3:
Work package description

Project Number [1]	619039	Project Acronym [2]	DESSIN

One form per Work Package

Work package number [53]	WP13	Type of activity [54]	RTD
Work package title	Testing & refining the ESS evaluation framework by using mature sites		
Start month	12		
End month	24		
Lead beneficiary number [55]	12		

Objectives

• Testing and refining the ESS evaluation framework (incl. the ESS valuation toolkit and sustainability assessment) developed in WP11 by using mature sites to validate the methodology
• Quantification and valuation of changes in ESS for the historic sites (changes from baseline to present status)
• Quantification and valuation of ESS for the entire case study areas for different future scenarios
• Development of a sustainability assessment in the mature sites

Description of work and role of partners

WP13 will calculate the changes in value of ESS provided by a mature sites network before and after restoration (and will quantify and valuate the associated change). This work will be linked to the development of scenarios, of which the application of new technologies could be a part of. Mature sites in WP13 cover all possible services of restoration programmes in an attempt to test the proposed ESS evaluation framework. The main distinction between the use of case studies in WP 13 and WA 3 is that in WP13, “mature” sites were selected where restoration measures have already taken place and which offer an illustration of all the service types targeted with restoration projects in the specific case study areas (and serves to re-fine the methodology). WA3 will carry out the actual application of the validated ESS valuation framework with a focus on the added value of the selected technologies in terms of services delivery (where the validated methodology will be applied).
Mature case studies have been chosen according to the availability of information (including socio-economic data) on existing restoration programmes and the wide range of ESS which are impacted by current restoration programmes.
The three proposed mature case studies in WP13 will fully apply and test the proposed valuation toolkit and sustainability assessment but each of them will have a specific focus in some of its elements. For example; the Aarhus case in Denmark will test the suitability of the ESS evaluation framework module within a DSS before application to the demo-sites, with a special emphasis on water quality issues and recreational values. The Emscher mature site will assess the application of the evaluation framework and assess the transferability of results across a multisite case study at different restoration stages, thus evaluating the suitability of the evaluation framework to illustrate a prognosis for the whole catchment. Finally, the Ebro case study will have a focus on the economic valuation of changes in ESS provision.

T13.1 – Application of ESS methodology an quantification of ESS (M12-M18, EG, DHI, IWW, CETaqua, SINTEF, UDE, ECOLOGIC)
The work consists of the following activities in each case studies below:
• Application of the analytical evaluation frameworks developed in WP11 by
- Selection of key ESS and identification of relevant indicators to measure changes in status and services provision
- For each selected ESS, definition of relevant parameters, with which the ESS can be quantified (e.g., based on GIS data or other existing data)
- Quantification of the ESS for each individual river section
- Valuation of the ESS for each individual river section
- Development of sustainability assessments
• Application of scenarios (as researched in task 11.1.3) and quantification and valuation of the ES under these scenarios

T13.1.1 - Case study of mature site Aarhus (DHI, SINTEF)
The Aarhus case study is included here in DESSIN as mature site for testing the ESS methodology since the full urban water cycle with RTC of sewers and WWTP including the recipient waters such as lakes, river, and harbor are combined into one model based real-time DSS system. The aim of the real-time DSS system is to ensure a more optimal exploration of the recreational use of the natural resorts surrounding the city of Aarhus by improving the water quality of the recipient waters and thereby protect the flora and fauna of the related wetlands. The ESS module will be tested and refined based on a large scale operational system containing the water cycle in and around an urban area. By including Aarhus as test site of the ESS module it builds on the experiences from the PREPARED project on Climate Adaptation. Aarhus and its surroundings are sensitive to climate changes and the ESS module will be used to evaluate and calculate the effect of planned initiatives.

T13.1.2 - Case study of mature site Emscher (EG, UDE, IWW)
In DESSIN we will quantify and valuate ecosystem services for the individual sections of the Emscher river network and for the catchment as a whole. The Emscher catchment includes sections of different restoration stages: Stream sections which have been restored up to 10 years ago; recently restored sections; sections for which water quality has been improved but morphology is still affected; and unrestored sections. By comparing ecosystem services for these different section types it will be possible to estimate service provision by the entire river network in unrestored, intermediately restored and fully restored stages. Service provision will be related to the costs of the restoration project (4.5 billion Euro), both for individual sections and for the river network as a whole.

T13.1.3 - Case study of mature site Ebro (CETaqua, ECOL)
The impact of existing initiatives to restore the quality of water bodies in the Ebro river basin on the provision of ESS will be assessed by applying the evaluation framework developed in WP11. The objective of this ESS valuation for the Ebro mature site is to test the ESS evaluation framework in order to provide feedback and recommendations for its further improvement with a focus on the monetary valuation of changes in ESS provision. In this context, the current and past status of the case study will be assessed, comprising ecological and socio-economic information. This sets the baseline for identifying relevant ESS as well as indicators for their measurement and quantification.

Results from existing studies on water quality and quantity in the Ebro basin will provide inputs to the analysis (e.g. the study from Barceló and Petrovic (2011) and the projects SCARCE and AquaTerra).

T13.2 - Reflecting applicability of ESS methodology (M12-M18, EG, DHI, IWW, CETaqua)
This task will formulate a summary of application of the evaluation framework for each single major site which will provide practical recommendations to inform Task 11.3 in WP11– Reflecting after testing – possible improvements and further research on the development of a final version to be applied in the demo sites (WA3).

Person-Months per Participant

Participant number [10]	Participant short name [11]	Person-months per participant
1	IWW	2.00
6	ECOLOGIC	2.00
12	EG	15.00
15	CETaqua	3.50
16	DHI	5.00
19	SINTEF	3.00
20	UDE	3.00
	Total	33.50

WT3:
Work package description

List of deliverables

Delive-rable Number [61]	Deliverable Title	Lead benefi-ciary number	Estimated indicative person-months	Nature [62]	Dissemi-nation level [63]	Delivery date [64]
D13.1	Quantified ESS for 3 mature sites including recommendations for application	12	33.50	R	PU	24
		Total	33.50			

Description of deliverables

D13.1) Quantified ESS for 3 mature sites including recommendations for application: [month 24]

Schedule of relevant Milestones

Milestone number [59]	Milestone name	Lead benefi-ciary number	Delivery date from Annex I [60]	Comments
MS21	Internal recommendations on the application of the ESS method	12	18	Internal project report outlining main recommendations / suggestions from case study leaders
MS26	Applicability of evaluation methodology is tested and approved	19	21	Internal project report including main recommendations / suggestions from case study leaders

WT3:
Work package description

Project Number [1]	619039	Project Acronym [2]	DESSIN

One form per Work Package

Work package number [53]	WP21	Type of activity [54]	RTD
Work package title	Innovations for Water Quality / WFD implementation		
Start month	1		
End month	36		
Lead beneficiary number [55]	19		

Objectives

Develop innovations that improve water quality in urban water bodies and thereby facilitate and improve the implementation of the WFD in urbanised areas by:
- Enabling enhanced particle removal in CSO tanks with innovative cross-flow lamella settlers.
- Enabling local treatment of CSO overflow with an innovative high rate filter.
- Enabling integration of local CSO treatment by innovative monitoring and data communication.
- Enabling RTC of CSOs with innovative control algorithms and communication protocols.

Description of work and role of partners

Task 21.1 – Enhancing treatment efficiency in CSO holding tanks with cross-flow lamella settlers (M1-M12 UFT, UDE, EG, SINTEF, VAV)
T21.1.1 – Development of the basic arrangement of a cross-flow lamella settler for use in a CSO tank including review of existing systems and basic theoretical considerations on cross-flow lamella settlers (UFT, UDE); Considerations on construction of this type of settlers for use in existing stormwater tanks (UFT); Considerations on operation requirements (EG, SINTEF, VAV); development and construction of the model setup (UFT).
T21.1.2 – Setup of the experimental rig for the model tests (UFT); Model tests on the basic sedimentation performance of the cross-flow lamella settler (UFT, UDE).
T21.1.3 – Evaluation and interpretation of results; expected results are curves which indicate basic sedimentation efficiency, e.g. the percentage of removed sediment, vs. hydraulic loading of the settler, taking into account its geometry. Such curves may be used e.g. in simulation approaches to assess the overall annual efficiency (UFT, UDE).
Task 21.2 Local treatment of CSO overflow by High Rate Filtration (M1-M36 INRIGO, SINTEF, VAV)
T21.2.1 – Develop basic solution for high rate filtration (HRF) of overflow from CSOs, including review of experiences from applications for primary treatment of municipal wastewater and determination of design criteria with respect to capacity for flow and suspended solids loading (INRIGO, SINTEF). Evaluate options for sludge handling and select alternative for the HRF solution (INRIGO, SINTEF, VAV).
T21.2.2 – Build HRF rig for experimental testing and verification of the design criteria for flow and suspended solids loading capacity. Evaluate, test and select option for bypass of flow exceeding design limit (INRIGO, SINTEF).
T21.2.3 – Evaluation of test results. Final design of HFR solution for demonstration. Expected results include pressure drop vs. hydraulic flow and suspended solids loading; removal efficiency for suspended solids under different hydraulic and suspended solids loading rates, sludge storage capacity and required intervals for sludge handling (INRIGO, SINTEF).
T21.2.4 –Site specific development in laboratory scale of HRF solution (INRIGO, SINTEF)

Task 21.3 Integration of local CSO treatment units by monitoring and data communication (M1-M24 LKI, SINTEF, UFT, INRIGO, VAV)
T21.3.1 – Identify, develop and deploy necessary instrumentation and communication technologies for the solutions developed in T21.1 and T21.2. Expected monitoring needs are water levels, flow and turbidity. The requirement specifications for the monitoring and data communication will be established in close collaboration with the technology owners and VAV. Separate requirement specifications (and thus technology selections) are expected for each of the solutions (LKI, SINTEF, UFT, INRIGO, VAV).

Task 21.4 Reducing CSO overflow volumes by Real Time Control (M1-M36 SEGNO, UDE, EG)
T21.4.1 – Standardization of function blocks for Siemens S7-300, S7-400, S7 1200, Sinaut ST7 and other PLC (Panasonic, Beckhoff, ...) (SEGNO); Considerations of existing devices on the demo site (EG).
T21.4.2 – Creating standardized and encapsulated ADESBA modules for use in process control systems (WinCC, iFix, Intouch, ...) (SEGNO).
T21.4.3 – Preliminary investigation of the production optimization of the encapsulated modules and their interface requirements (SEGNO).
T21.4.4 – Upgrade of the ADESBA Planner with a web-based online module for displaying the current data of a sewer system, including option for controlling; The online module will be enabled, by comparative analysis of the on-line-data with the historical data to recalibrate the zero line of level measurement (SEGNO).

Person-Months per Participant

Participant number [10]	Participant short name [11]	Person-months per participant
7	INRIGO	4.50
8	LKI	1.20
9	SEGNO	43.00
11	UFT	2.75
12	EG	3.00
19	SINTEF	12.00
20	UDE	8.00
	Total	74.45

List of deliverables

Delive-rable Number [61]	Deliverable Title	Lead benefi-ciary number	Estimated indicative person-months	Nature [62]	Dissemi-nation level [63]	Delivery date [64]
D21.1	Treatment units and instrumentation for CSO treatment solutions	11	22.75	P	CO	12
D21.2	Validated additional functions for the ADESBA planning tool	9	43.00	P	CO	36
D21.3	Technical conclusions from testing during site specific development and specifications for final design	7	8.70	R	CO	36
		Total	74.45			

Description of deliverables

D21.1) Treatment units and instrumentation for CSO treatment solutions: Treatment units and instrumentation for CSO treatment solutions that will be demonstrated at Emscher and Hoffselva [month 12]

D21.2) Validated additional functions for the ADESBA planning tool: Validated additional functions for the ADESBA planning tool including web-based visualisation of the sewer system [month 36]

D21.3) Technical conclusions from testing during site specific development and specifications for final design: Technical conclusions from testing during site specific development and specifications for final design of treatment units and instrumentation for local CSO treatment solutions. [month 36]

Schedule of relevant Milestones

Milestone number [59]	Milestone name	Lead beneficiary number	Delivery date from Annex I [60]	Comments
MS4	Concept for the development and construction of the model setup of cross-current lamella settlers	11	4	Internal project memo by UFT with description of the construction task
MS5	Design of HRF solution for pilot testing in laboratory	7	4	Internal project memo by Inrigo with description of the design and plan for laboratory testing
MS7	Concept for optimized encapsulated ADESBA modules	9	6	Internal project memo by SEGNO with description of the design for the ADESBA modules
MS14	Instrumentation and monitoring equipment installed	8	12	Instrumentation installed in demonstration unigs, tested and functioning flawlessly by LKI

WT3:
Work package description

Project Number [1]	619039	Project Acronym [2]	DESSIN

One form per Work Package

Work package number [53]	WP22	Type of activity [54]	RTD
Work package title	Innovations to tackle water scarcity		
Start month	1		
End month	48		
Lead beneficiary number [55]	17		

Objectives

Develop innovations to tackle (temporal) water scarcity in urban areas facilitating sustainable use of available water by:
• Enabling technologies for distributed sewer mining in large urban areas, integrating membrane treatment and ICT/AMI state-of-art for fast and efficient deployment by SMEs and/or water companies.
• Enabling a robust and sustainable freshwater supply from brackish and/or saline aquifers by combining Aquifer Storage and Recovery (ASR) and desalination with an innovative well design.
• Enabling improved aquifer water quantity and quality with flexible ASR systems to deal with different quality injection waters

Description of work and role of partners

Task 22.1 – Distributed Reuse in large urban areas (AMI-enabled Sewer Mining) (M1-M48 NTUA, EYDAP, CHEMITEC,TELINT)
T22.1.1 (CHEMITEC, NTUA) Optimising the configuration of modular packaged treatment solutions focusing on new membrane solutions and technologies. The objective of this action will be to optimize small scale membrane wastewater treatment systems for unrestricted urban wastewater reuse, through the evaluation of alternative small scale membrane wastewater treatment systems. A benchmark study will be undertaken resulting in the optimization of the operation of the membrane wastewater treatment system through modelling of the demonstration plant. The model will provide optimum operational rules that will be abstracted for use with the control system (T22.1.5)
T22.1.2 Development of the sewer-mining software (s/w) and hardware (h/w) platform (NTUA, Telint): The s/w platform will orchestrate, process and visualize the data recorded and measured by the h/w platform, through field sensors and provide intelligent and timely support for key application decision systems. High level fusion algorithms under the JDL framework will be wrapped as OGC high level fusion services and lead to the dynamic detection of abnormalities, while a generic OGC Sensor Alert Service (SAS) will be also implemented to provide situation awareness of the monitored packaged plant.
T22.1.3 Development of the Communication Solutions (Telint, NTUA): Provision of a self-organizing and autonomous wireless network setup that will link local events to a (possibly remote) management centre. The definition of the structure of the sensing space for the cases of urban water network dispersed in large and harsh environments will be the cornerstone of all the AMI-enabled, sewer mining system development.
T22.1.4 Development of monitoring and control optimisation algorithms (NTUA) for distributed management of multiple sewer mining sites. This will abstract optimal operation rules for the system operation to be implemented by the relevant s/w platform module, using for example neuro-fuzzy inference systems and/or fault trees. Special attention will be given to system update (with new rules) and continuous system semi-supervised learning.
T22.1.5 Design of ESS monitoring experiment and indicators (NTUA, EYDAP) for the urban green use of the treated water (incl. heat island effects). This task will design the experiment carried out in WP3 (T34.3) on the impact of treated effluent on urban green and specifically heat island effects. An important and innovative aspect of this task is the need to develop a framework for integrating multiple sources of information (satellite, local weather stations, on site monitoring, and modelling) to quantify the impact of the irrigation application at a small scale.

Task 22.2 Innovative solutions for sustainable freshwater supply from brackish/saline aquifers by combining ASR and desalination with a innovative well design (M1-M24 BdB, KWR)

T22.2.1 Quantification of the freshwater recovery increase by an innovative well design: In this task the freshwater recovery increase by Multiple Partially Penetrating Wells (MPPW), injection/recovery schemes, and the use of the Freshkeeper at the base of the freshwater bubble, will be quantified to define the optimal well configuration and potential increase in freshwater recovery in differing hydrogeological settings. (KWR, M1-12)
T22.2.2 Assessment of membrane clogging by varying redox conditions of the feedwater. Reversed Osmosis (RO) membrane clogging due to varying redox conditions of the feedwater from Freshkeeper is quantified and potential in-situ (e.g., subsurface iron removal) and ex-situ (e.g., pre-treatment of membrane feedwater) techniques to prevent membrane clogging are evaluated. (BdB, KWR, M1-24)

Task 22.3– Increase the flexibility and resilience of Aquifer Storage and Recovery (ASR) in strategic groundwater reservoirs (M1- 20 CETaqua, A21)
T22.3.1 Assessment of characteristic patterns in native groundwater and potential injection water based on chemical characterization. Special attention will be put in hazardous compounds coming from the Llobregat river water. Key parameters related to chemical equilibrium and species mobilization will also be controlled. (M1-M4, CETaqua)
T22.3.2 Adaptation of regional numerical model of flow at local scale to evaluate the expected impacts of a flexible deep injection system in terms of water availability (M4-M10, CETaqua, A21)
T22.3.3 Identification of the potential hydrogeochemical impacts occurring during ASR with pre-potable water injection using statistical and multicriteria analysis to identify the weaknesses and strengths of different recharge water combinations to select the most suitable pre-potable water (M4-M10, CETaqua).
T22.3.4 Establishment links between ASR and water systems related: Development of an interface to couple groundwater with surface water processes to establish the connections between ASR and aquatic ecosystems in strategic reservoirs (M4-M20, A21).

Person-Months per Participant

Participant number [10]	Participant short name [11]	Person-months per participant
2	A21	28.00
4	BdB	18.00
5	Chemitec	15.50
10	TELINT	9.50
13	EYDAP	2.00
15	CETaqua	20.50
17	KWR	4.00
18	NTUA	23.50
	Total	121.00

List of deliverables

Deliverable Number [61]	Deliverable Title	Lead beneficiary number	Estimated indicative person-months	Nature [62]	Dissemination level [63]	Delivery date [64]
D22.1	Guidelines for packaged plant selection and optimisation report	18	29.25	R	PU	12
D22.2	ICT platform for distributed sewer mining (technology)	18	21.25	P	PU	24

WT3:
Work package description

List of deliverables

Delive-rable Number [61]	Deliverable Title	Lead benefi-ciary number	Estimated indicative person-months	Nature [62]	Dissemi-nation level [63]	Delivery date [64]
D22.3	Assessment reversed osmosis membrane clogging by varying redox conditions	17	22.00	R	PU	24
D22.4	Evaluation of pre-potable water requirements for safe injection into the aquifer through ASR	15	20.50	R	PU	20
D22.5	Software for the evaluation of groundwater and surface water interactions	2	28.00	O	PU	20
		Total	121.00			

Description of deliverables

D22.1) Guidelines for packaged plant selection and optimisation report: [month 12]

D22.2) ICT platform for distributed sewer mining (technology): [month 24]

D22.3) Assessment reversed osmosis membrane clogging by varying redox conditions: Assessment of reversed osmosis membrane clogging by varying redox conditions of feedwater [month 24]

D22.4) Evaluation of pre-potable water requirements for safe injection into the aquifer through ASR: [month 20]

D22.5) Software for the evaluation of groundwater and surface water interactions: software for the evaluation of groundwater and surface water interactions to evaluate the impact of ASR on identified ecosystem services [month 20]

Schedule of relevant Milestones

Milestone number [59]	Milestone name	Lead benefi-ciary number	Delivery date from Annex I [60]	Comments
MS13	Completed integrated system architecture design	18	12	System architecture design completed and described
MS15	Completed evaluation of freshkeeper benefits	17	12	Evaluation completed and benefits quantified
MS16	Selection of the most suitable pre-potable water and expected impacts	15	12	Selection completed and described

WT3:
Work package description

Project Number [1]	619039	Project Acronym [2]	DESSIN

One form per Work Package

Work package number [53]	WP23	Type of activity [54]	RTD
Work package title	Software framework for ESS valuation		
Start month	18		
End month	30		
Lead beneficiary number [55]	16		

Objectives

To express the value of a proposed or implemented ecosystem service and to quasi-objectively compare different proposed ecosystem services, a pre-commercial, interoperable decision support system (DSS) must be developed to provide decision-makers with valuable information through-out the decision making process. Therefore the main objective of WP23 is:
• To develop a software framework for working with the ESS evaluation standard methodology developed in WA1 in an efficient and user-friendly environment.

Description of work and role of partners

Task 23.1 – ESS valuation software framework - Requirement elicitation and system design (M18-M20, DHI, SINTEF,ECOLOGIC, IWW, EG, KWR, NTUA, CETaqua)
Before the design and implementation of the ESS valuation software can be initiated, the functional requirements need to be identified. The functional requirements describe WHAT the final system shall do, and will be derived from the output of WP11, with support from Ecologic and SINTEF. Moreover DHI will perform interviews with WA3 participants to ensure that the requirements cover the needs of WA3.
Based on the functional requirements, an agreed and documented system design will be produced.

Task 23.2 – ESS valuation software framework – Development of the ESS valuation software framework (M21-M28, DHI)
This task covers the development and testing of the ESS valuation software framework through the following activities:
• Deliver software components for managing time series, GIS and spreadsheet-type of data in ways supporting simulation as well as ecosystem service valuation and sustainability
• Deliver a general model simulation component that can include any model adhering to a defined set of protocols and integrate it with the ESS valuation process.
• Develop the Ecosystem service valuation rules engine. The ESS valuation engine is the software implementation of the methodology proposed by WP11.
• Develop the Ecosystem service sustainability component comparing the value of the ecosystem services with selected sustainability objectives and criteria, as proposed by WP11.

Task 23.3– ESS valuation software framework - End-user and system documentation (M29-M30, DHI)
This task covers the writing of user guides and system documentation.

Person-Months per Participant

Participant number [10]	Participant short name [11]	Person-months per participant
1	IWW	0.50
6	ECOLOGIC	2.00
12	EG	0.50
15	CETaqua	0.50

WT3:
Work package description

Person-Months per Participant

Participant number [10]	Participant short name [11]	Person-months per participant
16	DHI	8.00
17	KWR	0.50
18	NTUA	0.50
19	SINTEF	2.00
	Total	14.50

List of deliverables

Delive-rable Number [61]	Deliverable Title	Lead benefi-ciary number	Estimated indicative person-months	Nature [62]	Dissemi-nation level [63]	Delivery date [64]
D23.1	System requirement specification and system design documents	16	7.50	R	PU	20
D23.2	Windows installer that can be used to install the software	16	5.00	P	CO	28
D23.3	User guide and system documentation	16	2.00	R	PU	29
		Total	14.50			

Description of deliverables

D23.1) System requirement specification and system design documents: [month 20]

D23.2) Windows installer that can be used to install the software: [month 28]

D23.3) User guide and system documentation: [month 29]

Schedule of relevant Milestones

Milestone number [59]	Milestone name	Lead benefi-ciary number	Delivery date from Annex I [60]	Comments

WT3:
Work package description

Project Number [1]	619039	Project Acronym [2]	DESSIN

One form per Work Package

Work package number [53]	WP31	Type of activity [54]	DEM
Work package title	Emscher Demonstration: Improving water quality in the strongly urbanised Emscher area		
Start month	1		
End month	42		
Lead beneficiary number [55]	12		

Objectives

To demonstrate the feasibility and effect on the ecosystem services of different innovative solutions developed to mitigate the negative effects on the water quality in the Emscher river system caused by CSOs. The solutions are in 2 groups according to the main features:
• Local treatment of CSO overflows to reduce the impact on recipient water quality
• RTC of holding volumes in the sewer system to reduce overflow volumes from CSOs

Description of work and role of partners

Task 31.1 Decentralized water treatment (M1-M42, EG, UFT, UDE)
The development in T21.1 will provide necessary information for the design of settling modules that can be implemented in a CSO in the Emscher catchment operated by EG. The demonstration of this solution at the Emscher demo site consists of the following:
• Preparation for the full-scale demonstration in WP31. Definition of criteria for suitable demonstration sites and selection of a suitable prototype structure as a demonstration site. At this site, an experimental cross-flow lamella settler unit located in a movable container will be installed temporarily. The same unit will be used afterwards in the Hoffselva demo site. The mode of operation (feeding by pumps only during rain inflow) is to be fixed with respect to the data of the site. The site requires electrical power supply and the structure should allow the use of a mobile submergible pump. Data on the CSO tank operation and its catchment area should be well documented
• Conception and CAD design of an experimental cross-flow lamella settler for use on the demo site (UFT); Numerical simulation to optimize design for smooth parallel through flow (UDE).
• Construction of the unit as a mobile container. Installation at a suitable CSO tank, experimental rigging (electrical controls for pump and data recording equipment) (UFT).
• Installation of the prototype unit (UFT), operation of the unit (EG) and sampling for monitoring of the sedimentation efficiency during a sufficiently long time interval, e.g. one year (UDE); Compilation and documentation of results (EG, UDE).
• Establishment and calibration of a “small” prediction model which allows determining the performance also of other sites where CSO tanks are to be retrofitted (decision support) and allows also the sizing and design of cross-flow lamella settlers for this application. Since there are already lots of simulation models on the market, it is not intended to create special sophisticated software, but e.g. an Excel VBA tool for use to evaluate output data (high-resolution flow hydrographs) of commercial quantity-quality simulation models (UFT, UDE, EG).

Task 31.2 – Case Emscher – Real Time Control of sewer network (M1-M42 EG, SEGNO, UDE)
Prior to a full scale implementation the interface requirements must be analysed and the function blocks implemented in the RTC system.
• Conception of RTC system for implementation in the sewer system (SEGNO, EG).
• RTC system implementation and (SEGNO, EG).
• Analysis of CSO load reduction potential (using hydrological model) (EG, UDE).
• Implementation of ADESBA RTC system (treatment of ADESBA Planner for the network, variant computation, PLC programs).
• Analysis of the congestion frequency in sewers (using hydrodynamic model) (EG, UDE).

T31.3 Evaluation of solutions. (M1-M42, EG, ECOL, DHI, ADELPHI, IWW)
• Assess the sustainability, governance/policy implications and novel financing mechanisms of the chosen technical solutions demonstrated (T32.1-3) with respect to the actual implementation processes in the local context, using the Evaluation Framework and the Manual for Practitioners and Policymakers developed in WA1 (EG).
• Perform an (Economic) valuation of changes in ESS provision resulting from the measures implemented as part of the final designed solutions proposed in T21.1, T21.2 and T21.3 using the DSS Module developed in WP23 and the application of the valuation toolkit, included as part of the Evaluation Framework to measure changes in ESS provision developed in WA1 (EG, ECOL, DHI).

Person-Months per Participant

Participant number [10]	Participant short name [11]	Person-months per participant
1	IWW	1.00
3	ADELPHI	1.00
6	ECOLOGIC	0.50
9	SEGNO	27.00
11	UFT	3.50
12	EG	28.00
16	DHI	0.50
20	UDE	26.00
	Total	87.50

List of deliverables

Deliverable Number [61]	Deliverable Title	Lead beneficiary number	Estimated indicative person-months	Nature [62]	Dissemination level [63]	Delivery date [64]
D31.1	Conclusions from successful demonstration, and specifications for final design	12	80.50	R	PU	42
D31.2	Final evaluation of the technological solution in terms of ESS and sustainability	12	7.00	R	PU	42
		Total	87.50			

Description of deliverables

D31.1) Conclusions from successful demonstration, and specifications for final design: Conclusions from successful demonstration, and specifications for final design of the solutions in T21.1 and T21.4 and documentation of their respective performance [month 42]

D31.2) Final evaluation of the technological solution in terms of ESS and sustainability: Final evaluation of the technological solution in terms of ESS and sustainability, including governance/policy implications [month 42]

WT3:
Work package description

Schedule of relevant Milestones

Milestone number [59]	Milestone name	Lead benefi-ciary number	Delivery date from Annex I [60]	Comments
MS22	Completed installation of full-scale cross-current lamella settlers	11	18	at demonstration site
MS23	Completed installation of full-scale RTC system	9	30	in the sewer network
MS31	Completed water quality monitoring and data gathering	12	36	for assessment of sustainability and governance/policy implications of the demonstrations

WT3:
Work package description

Project Number [1]	619039	Project Acronym [2]	DESSIN

One form per Work Package

Work package number [53]	WP32	Type of activity [54]	DEM
Work package title	Hoffselva Demonstration: Improving water quality in the peri-urban Hoffselva area		
Start month	9		
End month	42		
Lead beneficiary number [55]	19		

Objectives

The main objective is to demonstrate the feasibility and effect on the ecosystem services of different innovative local solutions for CSOs developed to improve water quality in Hoffselva.
• Enable enhanced particle removal in CSO tanks with innovative cross-flow lamella settlers.
• Enable local treatment of CSO overflow with an innovative high rate filter.
• Enable integration of local CSO treatment by innovative monitoring and data communication.

Description of work and role of partners

Task 32.1 Demonstration of cross flow lamella settling for local treatment of CSO overflow - Case Hoffselva (M21-M42, UFT, SINTEF, VAV, EG)
The development in T21.1 will provide necessary information for the design of settling modules that can be implemented in a CSO at Hoffselva operated by VAV. The demonstration of this solution at Hoffselva consists of the following:
• Preparation for the full-scale demonstration in WP32. Definition of criteria for suitable demonstration sites and selection of a suitable CSO structure as a demonstration site. At this site, an experimental cross-flow lamella settler unit located in a movable container will be installed temporarily. (The same unit has previously been used in WP 31 in a German CSO tank at the Emscher demo site). The mode of operation (feeding by pumps only during rain inflow) is to be fixed with respect to the data of the site, (VAV, UFT, SINTEF).
• Installation of the cross-flow lamella settler container at the selected CSO structure (UFT, VAV).
• Monitor CSO operation and treatment efficiency during the demonstration period (VAV, SINTEF).
• Evaluate results and comparison with results from the Emscher demo site (UFT, SINTEF, EG)

T32.2 Demonstration of High Rate Filtration for local treatment of CSO overflow - Case Hoffselva (M9-M42, INRIGO, SINTEF, VAV)
The development in T21.2 will provide necessary information for the design of a high rate filter that can be implemented in a CSO at Hoffselva operated by VAV. The demonstration of this solution at Hoffselva consists of the following:
• Preparation for the full-scale demonstration in WP32. Definition of criteria for suitable demonstration sites and selection of a suitable CSO structure as a demonstration site. At this site, a high rate filter unit will be connected to the overflow outlet of the CSO. The mode of operation (focus treatment on first flush, or treat all overflow from the design rain event) will be determined based on the data from the site, (VAV, INRIGO, SINTEF).
• Installation of the high rate filter unit on the outlet of the selected CSO structure (INRIGO, VAV).
• Monitor operation of CSO and high rate filter unit during the demonstration period and evaluate results (VAV, SINTEF).

T32.3 Demonstration of monitoring and data communication for local CSO treatment units - Case Hoffselva (M9-M42, LKI, SINTEF, UFT, INRIGO, VAV)
Prior to demonstration a system that suits the local conditions at the test site must be designed in T21.3.
• Discuss with site owner and SMEs to acquire specific information needed to install the instrumentation and communication system like local infrastructure and existing systems (LKI, SINTEF, VAV).
• Install necessary instrumentation and communication technologies for the solutions developed in T21.1 and T21.2. Expected monitoring needs are water levels, flow and turbidity, with requirement specifications for the

monitoring and data communication as established in close collaboration with the technology owners and VAV (SINTEF, UFT, INRIGO, VAV).
• Monitoring the performance of the instrumentation and communication solutions. Analysis and evaluation of results vs. the stated requirement specifications for the SMEs and demo site owners (LKI, SINTEF, VAV).

T32.4 Monitoring water quality in Hoffselva and evaluation of solutions. (M12-M42, SINTEF, VAV, ECOL, DHI, ADELPHI)
• Evaluate effects on water quality if local treatment of CSO overflows is implemented on catchment scale using hydraulic and quality models for the sewer system, treatment efficiencies for the demonstrated solutions, a simple hydrological and water quality model for the system, (SINTEF, VAV). Monitor water quality at relevant sampling sites in Hoffselva during the demonstration period (VAV, SINTEF).
• Assess the sustainability, governance/policy implications and novel financing mechanisms of the chosen technical solutions demonstrated (T32.1-3) with respect to the actual implementation processes in the local context, using the Evaluation Framework and the Manual for Practitioners and Policymakers developed in WA1 (SINTEF).
• Perform an (economic) valuation of changes in ESS provision resulting from the measures implemented as part of the final designed solutions proposed in T21.1, T21.2 and T21.3 using the DSS Module developed in WP23 and the application of the valuation toolkit, included as part of the Evaluation Framework to measure changes in ESS provision developed in WA1 (SINTEF, ECOL, DHI, ADELPHI).

Person-Months per Participant

Participant number [10]	Participant short name [11]	Person-months per participant
3	ADELPHI	1.00
6	ECOLOGIC	0.50
7	INRIGO	4.00
8	LKI	1.00
11	UFT	0.50
12	EG	0.50
14	VAV	2.00
16	DHI	0.50
19	SINTEF	16.50
	Total	26.50

List of deliverables

Deliverable Number [61]	Deliverable Title	Lead beneficiary number	Estimated indicative person-months	Nature [62]	Dissemination level [63]	Delivery date [64]
D32.1	Design criteria and documentation of performance for local CSO overflow treatment	7	21.00	R	PU	42
D32.2	Conclusions from the demonstrations with projected effects on water quality, ESS and sustainability	19	5.50	O	PU	42
		Total	26.50			

Description of deliverables

WT3:
Work package description

D32.1) Design criteria and documentation of performance for local CSO overflow treatment: Design criteria and documentation of performance for local CSO overflow treatment and performance of monitoring and data communication for local CSO treatment units [month 42]

D32.2) Conclusions from the demonstrations with projected effects on water quality, ESS and sustainability: Conclusions from the demonstrations with projected effects on water quality, ESS, and sustainability of the demonstrated solutions and the overall governance/policy implications if local treatment of CSO overflows is implemented on catchment scale. Deliverable nature will be a seminar at VAV. [month 42]

Schedule of relevant Milestones

Milestone number [59]	Milestone name	Lead beneficiary number	Delivery date from Annex I [60]	Comments
MS19	Completed installation of high-rate filter unit with monitoring instrumentation and data communicati	7	13	Demonstration unit installed at demo site, tested and functioning
MS28	Completed installation of container with cross-flow lamella settling unit for demonstration in T32.1	11	25	Demonstration unit installed at demo site, tested and functioning
MS32	Completed water quality monitoring and data gathering	19	36	Water quality sampling completed, samples analysed and quality verified

WT3:
Work package description

Project Number [1]	619039	Project Acronym [2]	DESSIN

One form per Work Package

Work package number [53]	WP33	Type of activity [54]	DEM
Work package title	Westland demo site: Freshwater supply from brackish aquifers by combining ASR and desalination		
Start month	1		
End month	48		
Lead beneficiary number [55]	17		

Objectives

To demonstrate freshwater supply from brackish aquifers with a combined ASR/RO system. Specific objectives are:
• To quantify freshwater recovery by an ASR well design.
• To demonstrate the added value of an ASR/RO system on freshwater recovery.
• To demonstrate the effect of enhanced subsurface iron removal on membrane clogging.
• To demonstrate the impact of freshwater supply from brackish aquifers on regional groundwater quality and Water Framework Directive goals.
• To evaluate innovative solutions to enhance freshwater supply from brackish aquifers.

Description of work and role of partners

Task 33.1 Quantification of the freshwater recovery by an innovative well design (M1-M16; KWR)
• Operation of the full scale field demonstration site; different ASR cycles will be run to quantify maximum freshwater recovery.
• Collection of monitoring data using the existing full scale demonstration setup to demonstrate freshwater recovery increase by Multiple Partially Penetrating Wells (MPPW) and injection/recovery schemes.
• Evaluation of the monitoring results using a previously developed calibrated groundwater transport model.

T33.2 Demonstration of the added value of an advanced ASR/RO system (M16-36; BdB, KWR)
• Application of the Freshkeeper at the base of the freshwater bubble, including installation of RO membranes at the existing ASR field pilot.
• Real time monitoring of feedwater composition during Freshkeeper operation.
• Monitoring of the membrane performance to identify the need for modification of the feedwater composition using ex-situ or in-situ techniques.
• Optimisation of the advanced ASR/RO set-up, using a combination of monitoring data and groundwater model outcomes.

Task 33.3 Demonstration of the effect of enhanced subsurface iron removal on membrane clogging (M24-M42; KWR, BdB)
• Quantification under field conditions enhanced iron and manganese removal by stimulating iron oxide formation in the aquifer through addition of oxidants to the ASR injection water to reduce risk for membrane clogging, building on results of Task 22.2.2.
• Monitoring of the membrane performance after application of enhanced subsurface iron and manganese removal.

Task 33.4 Demonstration of the impact of the Westland ASR/RO pilot on the regional groundwater quality (M1-M42; KWR)
• Monitoring of the water quality development of the brackish water target aquifer.
• Evaluation of the effect of the innovative ASR/RO system on regional water quality.

Task 33.5 Evaluation of innovative solutions to increase freshwater supply from brackish aquifers (M1-48; KWR, ECOL, ADELPHI)

• Assess the sustainability, governance/policy implications and novel financing mechanisms of the chosen technical solutions demonstrated (T33.1-4) with respect to the actual implementation processes in the local context, using the Evaluation Framework and the Manual for Practitioners and Policymakers developed in WA1 (KWR).
• Perform an (Economic) valuation of changes in ESS provision resulting from the measures implemented as part of the final designed solutions proposed using the DSS Module developed in WP23 and the application of the valuation toolkit, included as part of the Evaluation Framework to measure changes in ESS provision developed in WA1 (KWR, ECOL, DHI).

Person-Months per Participant

Participant number [10]	Participant short name [11]	Person-months per participant
3	ADELPHI	1.00
4	BdB	32.00
6	ECOLOGIC	0.50
16	DHI	0.50
17	KWR	28.00
	Total	62.00

List of deliverables

Delive-rable Number [61]	Deliverable Title	Lead benefi-ciary number	Estimated indicative person-months	Nature [62]	Dissemi-nation level [63]	Delivery date [64]
D33.1	Valorisation and demonstration of an ASR/RO application	17	56.00	D	PU	48
D33.2	Evaluation of the improvement of Ecosystem Services as a result of ASR/RO application	17	6.00	R	PU	48
		Total	62.00			

Description of deliverables

D33.1) Valorisation and demonstration of an ASR/RO application: Valorisation and demonstration of an ASR/RO application in a first, well-monitored field application [month 48]

D33.2) Evaluation of the improvement of Ecosystem Services as a result of ASR/RO application: Evaluation of the improvement of Ecosystem Services as a result of ASR/RO application to increase freshwater supply from brackish aquifers [month 48]

Schedule of relevant Milestones

Milestone number [59]	Milestone name	Lead benefi-ciary number	Delivery date from Annex I [60]	Comments
MS20	Completed installation of RO membranes in the demonstration site	17	16	Installation completed and checked

WT3:
Work package description

Project Number [1]	619039	Project Acronym [2]	DESSIN

One form per Work Package

Work package number [53]	WP34	Type of activity [54]	DEM
Work package title	Athens Demonstration: Sewer Mining for Urban Re-use enabled by Advanced Monitoring Infrastructure		
Start month	6		
End month	48		
Lead beneficiary number [55]	18		

Objectives

To integrate and validate two promising new technologies: minimal footprint packaged treatment plants and advanced monitoring infrastructure as a new solution to distributed reuse within the city. Specific objectives are:
• To setup an AMI-enabled packaged plant and optimise its performance.
• Implement a hardware and a software platform to record data in real time, orchestrate, process and visualize the data and provide intelligent and timely info-support for key application decisions.
• Integrate both aspects of the solution (treatment and ICT) and monitor their performance.
• Propose a quantifiable plan for the upscale of the solution to the city level and Demonstrate its impact using the Ecosystem Service tool.

Description of work and role of partners

T34.1. Installation of small footprint packaged treatment plant (M6-M12: EYDAP, Chemitech)
A packaged plant consisting of an advanced Membrane Bioreactor coupled with nano-filtration and/or reverse osmosis membranes will be installed in an EYDAP location. The installation will simulate direct abstraction from main sewers and be able to accept multiple types of effluent (municipal and industrial), also linked to the Metamorfosi WWTP.

T34.2. Optimize the operation of the membrane wastewater treatment system (M8-M48: NTUA, EYDAP, Chemitech)
The plant will operate for a time period of 24 months during which operating parameters (e.g. sludge retention time, hydraulic retention time, organic loading and additives employed, incl. alum, ferric chloride, polyaluminium chloride) will be varied in order to record their impact on the system's performance: (i) final effluent quality, (ii) membrane fouling (iii) system energy demand, (iv) quantity of sludge produced and (v) GHG emissions, will be investigated and specific rules will be developed, for use by the supervisory system.

T34.3. Implement the monitoring and supervisory system (M12-M48: Telint, NTUA, EYDAP)
Data collection tools and necessary "sensing" elements will be integrated into a common platform. 'Sensing' here refers to inter alia field sensors (for both wastewater and treated effluent), heat/temperature and energy sensors with which the packaged plant (T34.1) will be equipped. These will be integrated to field sensor porting means (mobile wireless modem, solar power, battery etc.) and coupled with a targeted communications solution, which will provide a self-organizing and autonomous wireless network setup, that will act as a sensing space, linking local events to a (possibly remote) management centre.

T34.4. Demonstrate the impact of the solution at the city-as-a-catchment scale and identify opportunities/barriers (M12-M48: NTUA, Ecologic, DHI, Adelphi, EYDAP) This task will apply the Sustainability/ESS approach of the WA1 to the solution. Specifically, an existing urban water cycle model (UWOT) will be coupled to the ESS valuation engine/DSS module (WP23) to upscale the intelligent, distributed sewer mining approach demonstrated here at the city level and quantify benefits: An (economic) valuation of changes in ESS provision resulting from (an up-scaling of) the demonstrated solution will be undertaken. Importantly, this task will also assess the governance/policy implications and novel financing mechanisms of distributed sewer mining with respect to the actual implementation processes in the local context, using the Evaluation Framework and the Manual for Practitioners and Policymakers (WA1). It will investigate potential new business models for SMEs that can deploy this solution using the sewerage network as a resource to provide a local service and identify

smart billing opportunities and strategies. Results from this task will feed into WP4 (the water scarcity targeted report T42.3)

Person-Months per Participant

Participant number [10]	Participant short name [11]	Person-months per participant
3	ADELPHI	1.00
5	Chemitec	33.38
6	ECOLOGIC	0.50
10	TELINT	3.69
13	EYDAP	28.35
16	DHI	0.50
18	NTUA	26.74
	Total	94.16

List of deliverables

Delive-rable Number [61]	Deliverable Title	Lead benefi-ciary number	Estimated indicative person-months	Nature [62]	Dissemi-nation level [63]	Delivery date [64]
D34.1	An optimal configuration small packaged plant for urban sewer mining	5	61.00	D	PU	12
D34.2	A demonstrated intelligent software-hardware platform for monitoring and control of small packaged plants for urban sewer mining	10	21.00	O	PU	24
D34.3	Evaluation and guidelines and recommendation for transfer to other Water Scarcity sites	18	12.16	R	PU	48
		Total	94.16			

Description of deliverables

D34.1) An optimal configuration small packaged plant for urban sewer mining: [month 12]

D34.2) A demonstrated intelligent software-hardware platform for monitoring and control of small packaged plants for urban sewer mining: [month 24]

D34.3) Evaluation and guidelines and recommendation for transfer to other Water Scarcity sites: Evaluation of the results obtained in the demonstration and guidelines and recommendations for transfer to other Water Scarcity sites [month 48]

WT3:
Work package description

Schedule of relevant Milestones

Milestone number [59]	Milestone name	Lead benefi-ciary number	Delivery date from Annex I [60]	Comments
MS24	Completed installation of AMI-SM technologies	13	18	Installation completed and checked

WT3:
Work package description

Project Number [1]	619039	Project Acronym [2]	DESSIN

One form per Work Package

Work package number [53]	WP35	Type of activity [54]	DEM
Work package title	Llobregat Demonstration: Flexible ASR system to recharge different water qualities		
Start month	10		
End month	48		
Lead beneficiary number [55]	15		

Objectives

To demonstrate increase of fresh water availability in the Mediterranean coastal region by deep injection systems (ASR) with variable water qualities.

Specific objectives are:
• Validate the pre-treatment and selected pre-potable water suitability at full-scale using the existing facilities of the drinking water operator (AB) in the Llobregat basin.
• Assess the beneficial effect of this Managed Aquifer Recharge (MAR) technique in terms of ESS enhancement and economic approach to include these services in a regulated payment system.
• Adapt the methodology of flexible ASR systems to be applicable to other European sites to provide ASR facilities with a most versatile operation to cope with global change in water scarcity regions.

Description of work and role of partners

The technical development to make possible the deep injection with variable water types in DWTPs will consist of the evaluation of the expected hydrogeochemical impacts by injecting different water qualities from the drinking water treatment steps (pre-potable water). This WP is closely linked to WP22.

In parallel, the development of the Work package work is established in 6 tasks:

T3.5.1 Selection and design of additional pre-treatments to comply with WFD and specific European operators' requests (M10-20, CETaqua)

T35.2 Conditioning of existing network of observation wells and implementation of additional piping and selected pre-treatment (M18 – M26, CETaqua).
This will be carried out based on the results in subtasks T22.3.1 and T22.3.5.

T35.3 Evaluation of the impact of the injection with pre-potable water by groundwater and recharge water monitoring (M26-M40, CETaqua)
Monitoring will focus on using bulk chemistry analysis and specific and advanced key parameters (pesticides, chlorinated solvents).

T35.4 Advanced hydrogeochemical modelling: application to the case study and calibration with real data (M20-M44, CETaqua)
This will be done by using reactive hydrogeochemical modelling tools developed in previous EC projects. The local flow model developed in subtask T22.3.2 will be calibrated using data from the injection period to validate predicted interactions and expected groundwater response.

T35.5 Valuation of the changes in ESS resulting from a full-scale injection of pre-potable water in the Sant Joan Despí and Cornellà area using the DSS Module developed in WP23. (M36-M48, CETaqua, A21).

T35.6 Development of a methodological approach for economic analysis and payment regulation of the identified ecosystem services in the Barcelona demo site (M36-M48, A21).

WT3:
Work package description

Person-Months per Participant

Participant number [10]	Participant short name [11]	Person-months per participant
2	A21	34.00
3	ADELPHI	1.00
6	ECOLOGIC	0.50
15	CETaqua	38.00
16	DHI	0.50
	Total	74.00

List of deliverables

Deliverable Number [61]	Deliverable Title	Lead beneficiary number	Estimated indicative person-months	Nature [62]	Dissemination level [63]	Delivery date [64]
D35.1	Evaluation of the results and impacts on ESS of a flexible ASR system, and recommendations for transfer	15	42.00	R	PU	48
D35.2	Economic analysis and proposed payment regulation of the identified ecosystem services	2	32.00	R	PU	48
		Total	74.00			

Description of deliverables

D35.1) Evaluation of the results and impacts on ESS of a flexible ASR system, and recommendations for transfer: Evaluation of the results and impacts on ESS of a flexible ASR system in Barcelona (ES) demo site. Guidelines and recommendations for transfer of this innovative solution. [month 48]

D35.2) Economic analysis and proposed payment regulation of the identified ecosystem services: Economic analysis and proposed payment regulation of the identified ecosystem services in the Barcelona demo site [month 48]

Schedule of relevant Milestones

Milestone number [59]	Milestone name	Lead beneficiary number	Delivery date from Annex I [60]	Comments
MS29	Completed installation of ASR pipelines and potential pre-treatment pilot plant	15	30	Installation completed
MS30	Identification of beneficial impacts and its role as ecosystem services in the Llobregat case study	15	30	Beneficial impacts identified

WT3:
Work package description

Project Number [1]	619039	Project Acronym [2]	DESSIN

One form per Work Package

Work package number [53]	WP41	Type of activity [54]	OTHER
Work package title	Dissemination of DESSIN and development of its demo sites as showcases		
Start month	1		
End month	48		
Lead beneficiary number [55]	15		

Objectives

The objectives of the dissemination and exploitation of the project results towards the scientific and commercial sector are:
• Ensuring a successful run-time and final dissemination of project results to all relevant stakeholders.
• Facilitating the market deployment and exploitation of the technologies through the organization of different events at the participating utilities and tailored workshops.

To achieve these goals, the methodology followed within WP41 consists of:
• Project Branding: A strong and recognizable brand is essential for a European research project. Recognition value and a consistent appearance remarkably help to transport the important results and outcomes of the project.
• Setting up and maintaining the website and its contents: These days the internet is one of the most powerful communication vehicles and one of the main sources for information. The project will have its own project-specific website domain.
• Public project correspondence and dissemination material: In order to ensure a widespread uptake of project results by relevant end-user groups and in order to reach the different target audiences, there is a need to translate scientific understanding and knowledge into convincing messages that are specifically tailored for the respective target audience. The preparation of dissemination materials will be coordinated on the basis of a concise communication strategy for DESSIN outcomes, consisting of a thorough target audience analysis and an exploitation strategy. This consists of editorial and publishing activities such as the release of an annual DESSIN Magazine, articles, general and specialized press releases, a suite of promotional material, etc.
• Establishing demo-sites as showcases: This will help to establish DESSIN demo-sites as reference sites for lighthouse-solutions that can be presented to various audiences such as interested water managers from other regions with similar challenges.

Description of work and role of partners

Task 41.1 – Project Branding (M1-M3 CETaqua)
The DESSIN brand will consist of a project logo, colour schemes, templates and an according website. The logo will be easily recognizable and associated to the project. Its applications will include different Word and Power Point formats, to be used in deliverables, posters, letters, presentations, etc., so all the material produced is designed, finalised and published in a similar fashion. The brand will be used by all project partners, a homogeneous line of products and a strong and recognizable brand will be created to achieve consistent and coherent communication and dissemination.

Task 41.2 – Setting up and maintaining the website and its contents (Setting up M1-M3; maintaining M3-48 IWW)
The DESSIN website is going to serve as a main interface for the principal outlet of informational products. All project deliverables, but also other information products such as the DESSIN magazine, press releases, articles etc. are going to be published on the website. The website will provide constantly updated information about the demonstration sites, the progress and impact of the implementation of solutions developed. Additionally, the website is going to be used for announcements of meetings, conferences, workshops etc. which, all in all, will turn the project website into a comprehensive source of information and motivation. There also will be continuous updates on the project activities over a blog and social networks.

Task 41.3 – Public project correspondence and dissemination material (M1-48 CETaqua, IWW)
Development of public project correspondence and any dissemination material will be guided by a target audience analysis and exploitation strategy that are going to be developed as a first step (first version by Month 6) Electronic newsletters, created periodically, will be available via the project website. In addition, copies will be sent to key organisations identified by WP leaders, local clusters and stakeholder group. The project will contribute regular features on key issues and findings. Besides, stakeholders and users will be encouraged to contribute material to the newsletters, such as opinion pieces. An annual Magazine will be also published, including material from the various DESSIN activities. A factsheet about the project will be developed with a first version when the website is up, and updated at each reporting period. Re-usable illustrations (300 dpi) as well as a promotional video of the project will be produced to illustrate the ESS approach in the water sector to the general public.

Task 41.4 – Establishing demo-sites as showcases (M1-48 KWR)
To promote the market uptake of the innovative solutions from DESSIN, the five demo sites are established as showcases. These showcases will enable potentially interested SMEs, public authorities, stakeholders and the general public to experience the ecosystem service concepts in practice and thus act as reference sites in Europe. The showcases will furthermore potentially contribute to promote RIS3 (Research and Innovation Strategies for Smart Specialisation) in the selected demonstration regions. Within DESSIN in each of the demo sites a number of activities for targeted groups (SME's, regional stakeholders) as well as an official opening will be organised in close cooperation with site owners and responsible consortium partners. The showcases will build on the experiences from DESSIN but are expected to exist beyond the lifetime of the project, thus securing the potential market uptake of DESSIN outcomes.

Person-Months per Participant

Participant number [10]	Participant short name [11]	Person-months per participant
1	IWW	6.00
15	CETaqua	16.00
17	KWR	8.00
	Total	30.00

List of deliverables

Delive-rable Number [61]	Deliverable Title	Lead benefi-ciary number	Estimated indicative person-months	Nature [62]	Dissemi-nation level [63]	Delivery date [64]
D41.1	Project branding (logo and templates)	15	1.00	O	PU	3
D41.2	Official website launch	1	2.00	O	PU	3
D41.3	Content for dissemination and promotional material, including a policy brief, a video and re-usable illustrations	15	19.00	O	PU	48
D41.4	Established showcases at five demo sites	17	8.00	D	PU	36
		Total	30.00			

Description of deliverables

D41.1) Project branding (logo and templates): Nature: logo, templates for presentations and documents; instructions how to use this material in order to ensure a corporate identity of the project. [month 3]

D41.2) Official website launch: [month 3]

D41.3) Content for dissemination and promotional material, including a policy brief, a video and re-usable illustrations: [month 48]

D41.4) Established showcases at five demo sites: [month 36]

Schedule of relevant Milestones

Milestone number [59]	Milestone name	Lead beneficiary number	Delivery date from Annex I [60]	Comments
MS2	Logo and applications are designed	15	3	A book of style is shared to all the partners and the logo and templates are available and used in all materials produced
MS6	Blog and social networks are set up and first content is provided	1	4	The blog is online and the channels in different social networks are available and with first content
MS8	Target audience analysis and exploitation strategy	1	6	First version available online
MS10	First newsletter published	15	6	All registered contacts receive the electronic newsletter by E-mail and it is published at the website

WT3:
Work package description

Project Number [1]	619039	Project Acronym [2]	DESSIN

One form per Work Package

Work package number [53]	WP42	Type of activity [54]	OTHER
Work package title	Route to Market		
Start month	3		
End month	48		
Lead beneficiary number [55]	3		

Objectives

The overall objective of this WP is to maximise the market reach and impact of the water technologies, methodologies and innovative solutions developed in WA1 and WA2 and demonstrated in WA3. WP41 will work in order to achieve market readiness of products/services developed with regard to water quality (WFD), water scarcity and ESS assessment.

Due to resource constraints and for lack of capacity, SMEs are particularly challenged by this step. Assistance in the area has long been proven to be necessary and effective (e.g., German technology support fund), by promoting an approach of prototyping, testing and verifying solutions in the water technology field, SMEs' capacities to develop marketable products and services can be built. DESSIN further seeks to identify entry points to the market and pave the road to market (by addressing and overcoming typical market barriers and proactively promoting the uptake of these solutions among potential clients).

On the other hand, decision-making support will be made available to the demand side which demonstrates the long-term superiority of ESS based approaches. To this end, the ESS valuation methodology itself needs to be promoted, establishing a new standard in water management decisions. This step will also create positive innovation dynamics by the supply side, demanding further solutions in the field. This in turn further incentivises SMEs to innovate.

In detail, objectives of WP42 are:
• To support supply side push for water technologies by developing sample development approaches.
• To assure international (European and beyond Europe) market uptake of water technologies, by addressing and overcoming market barriers and promoting solutions.
• To create demand side dynamics to further stimulate water technology innovation.

The identified key innovations actors in DESSIN are classified in 3 groups (Figure 4 in B 1.3). Description of WP42 tasks will cover the needs for drive them to market using appropriate actions in each case:
• Technology developers and marketers for innovative solutions.
• Suppliers for innovative solutions using a combination of existing technologies or applying them for an innovative use.
• Providers of innovative services linked to water ESS assessment.

The conceptual scheme in Figure 4 (chapter B 1.3) shows the actions that will be developed within WA4 framework to route them to market. The methodology will act as a driver for the technology / service push into the market, not acting directly in specific SME's or private developers.

Description of work and role of partners

Task 42.1 – Development of sample approach market analysis report for ESS solution packages demonstrated in DESSIN (inside-out) (M4 –12, ADELPHI)
This task seeks to develop a sample approach that can be taken up by SME and other technology developers and be adapted to their specific product and market situation. The approach will include a detailed description of the following paragraphs: Identification of Users, Needs Assessment through Focus Groups, Business Modeling including Costing and Pricing Models, Operating Characteristics of the Innovative Technology Business Models, Industry Landscape, Industry and Company Characteristics, Regions and Sectors, Capital Requirements,

Intellectual Property, Distribution and Supply Networks. To illustrate the approach, the technologies from the five ESS solution packages demonstrated in WP31 – WP35 are exemplarily included in the report. The approach also outlines how to assess the attractiveness and demand for ESS valuation software solutions and gives recommendations on the characteristics of the products, price range, the distribution channels and ways to promote. To assure that data and facts are based in reality, close cooperation with water technology developers is sought during the writing process. Integral part of the reports is the use of a standardized assessment of technology by way of the ESS Valuation Methodology as developed under DESSIN once available. The sample approach will be tested and implemented with several SMEs (as part of T42.2).

Task 42.2 – Develop Sample Commercialization Process Maturity Models and capacity building on strategies for SMEs (M 6-48, ADELPHI)
Another challenge is the commercialization process; TP42.2 seeks to develop a sample approach in this regard, defining key steps for the Commercialization Process and Risk Profiling as well as the Intellectual Property Rights Process (including protection, valuation and exploitation); this is further complemented by the sample definition of potential Partner identification and Network building process for SMEs. This model is piloted on the sample sites with its partners and with additional suitable SMEs to validate and demonstrate its effectiveness. As part of this task, the inside-out approach from T42.1 and the outside-in approach from T42.3 are also practically implemented and tested with interested SMEs. To implement the sample market analysis report, outside-in report findings as well as the commercialization process maturity model, T42.3 offers capacity building measures through individual coaching and peer-learning. During the course of the programme which offers multiple entry points to SME, the focus first lies on the specific development of the market analysis and the commercialization process and then shifts to implementation of marketing strategy. All learning materials are in parallel published on the internet and remote support on specific questions is made available. Individual support is offered to companies through individual meetings and discussions. Peer learning and network building are integral parts of the programme, e.g. through "business-to-business" workshops.

Task 42.3 Financial and regulatory environment towards commercialisation (M 3-10, ADELPHI)
Two challenge-specific business environment (outside-in) reports on (a) Scarcity and (b) Quality / WFD document the specific barriers and challenges that water technology SMEs face both in the field of water scarcity and water quality. The reports further identify efficient modes of governance and finance that are innovative and innovation-friendly. Particular attention is paid to access to finance (Private Equity, Public Innovation Funds, Venture Capital), the government regulatory environment and European and international market characteristics. Recommendations are given in order to improve the innovativeness of European SMEs in the sector. Complementarity with other EU funding mechanisms is sought through a resource mobilization strategy. Funding opportunities are explored, including the new European Structural and Investment Funds (ESIF), in particular regarding the protection and promotion of environmental resource management, sustainable development and territorial structuring. European incentives for implementing RIS3 (Research and Innovation Strategies for Smart Specialisation) as an ex-ante conditionality for ESIF in the different regions for the period 2014-2020 are considered. Implementation and further detailing of the reports for individual SMEs will be carried out as part of task T42.2. This task is also linked to task T42.5 and includes that we commit to meet with the Regional Authorities in charge of the Structural Funds in the DESSIN demonstration areas early in the process for the 2014-2020 programmes, as regions and cities will be finalising preparations for the 2014-2020 cohesion policy and rural development programmes. Via members of the project advisory committee (PAC) these meetings have already started (for NRW in Germany). Furthermore, at least one of the annual events “OPEN DAYS - European Week of Regions and Cities” will be attended as these events offers EU institutions, managing authorities and final beneficiaries a chance to exchange and network on new approaches for the operational programmes (OPs).

Task 42.4 Support ESS lobbying for efficient modes of governance and finance (M 12-48, ADELPHI)
To put the recommendations formulated under T42.3 to use, T42.4 facilitates the association of water technology SMEs that can act as accelerator to create a business environment conducive to innovation in the water sector. Active participation at European platforms and European ESS roundtables will be carried out. This task will highlight the successes developed and demonstrated in DESSIN using existing channels for dialogue in the area of water management: EIP action groups, WssTp (http://www.wsstp.eu/site/online/home) and ERRIN (http://errinnetwork.eu/), taking advantage of its existing forums on ESS.

Task 42.5 – Create demand side dynamics by promoting standardised ESS-based assessment framework for new technology and management (M 8-48, ADELPHI)

The development of an assessment framework based on ESS valuation methodology is an integral part of the project, as this assessment demonstrates the superiority of ESS based approaches. Thus it is of high importance to promote its use among decision-makers to demonstrate the benefits of ESS based water technologies. While this is important at the European level, the global market place offers relevant opportunities and a pull-effect as well. This is also where European technologies, also developed under this project, need to complete and succeed. Thus, this task engages with potential clients to build their capacity on and to promote the conduct of quantitative assessments of the impact of potential technologies and solutions on ecosystem functions and services. By doing so, demand is created and strengthened from potential clients for those solutions that take ESS into account. This capacity building approach is implemented by action conferences and road shows, amongst others, to promote the ESS based technology among the target group of the innovative water management technologies. Key information will be made available through the DESSIN website. Links and synergies are established with related major water investment and implementation projects at local, regional or national level, to help leverage the demand side for the demonstrated water solutions, e.g. by attending one of the annual “OPEN DAYS” events described under Task 42.3 which allow regions and cities to present the results of their EU-funded programmes and projects, showcasing the impact these have on regional development, smart, sustainable and inclusive growth. Opportunities are considered in integrated territorial investment, joint action plans, governance issues and financial instruments.

Task 42.6 – Establish a monitoring & evaluation (M+E) system for innovation and continuous monitoring of framework conditions and outcomes (M 5-48, ADELPHI)
An indicator system is key to keep track both on progress and impediments for marketization of innovative products and services. T42.7 seeks to establish system that both documents framework conditions as well as outcomes and to this end develops both, an effective indicator set as well as a monitoring and evaluation (M+E) reporting system that can be used also after the project ends. For that, the M+E system will be made available through an online platform. Individual coaching on its use will be made available to the interested SMEs.

Person-Months per Participant

Participant number [10]	Participant short name [11]	Person-months per participant
3	ADELPHI	40.00
	Total	40.00

List of deliverables

Delive-rable Number [61]	Deliverable Title	Lead benefi-ciary number	Estimated indicative person-months	Nature [62]	Dissemi-nation level [63]	Delivery date [64]
D42.1	Market analysis (inside-out) for ESS software and solution packages	3	8.50	R	RE	12
D42.2	Sample Commercialization Process Maturity models and capacity building on strategies for SMEs	3	8.50	O	RE	48
D42.3	Two business environment (outside-in) reports a) Scarcity b) Quality / WFD	3	8.50	R	RE	10
D42.4	Recommendations from the open ESS channels: European platforms, roundtables, conferences and web platform	3	8.50	R	PU	48

WT3:
Work package description

List of deliverables

Delive-rable Number [61]	Deliverable Title	Lead benefi-ciary number	Estimated indicative person-months	Nature [62]	Dissemi-nation level [63]	Delivery date [64]
D42.5	M+E system for innovation and continuous monitoring of framework conditions and outcomes	3	6.00	D	PU	48
		Total	40.00			

Description of deliverables

D42.1) Market analysis (inside-out) for ESS software and solution packages: [month 12]

D42.2) Sample Commercialization Process Maturity models and capacity building on strategies for SMEs: [month 48]

D42.3) Two business environment (outside-in) reports a) Scarcity b) Quality / WFD: [month 10]

D42.4) Recommendations from the open ESS channels: European platforms, roundtables, conferences and web platform: Intermediate version available at month 30, final version at month 48 [month 48]

D42.5) M+E system for innovation and continuous monitoring of framework conditions and outcomes: [month 48]

Schedule of relevant Milestones

Milestone number [59]	Milestone name	Lead benefi-ciary number	Delivery date from Annex I [60]	Comments
MS9	Individual meeting with each SME and technology developer of DESSIN	3	6	To identify potential internal networking and specific market needs. Internal minutes of meetings.
MS17	Formal presentation of DESSIN to the ESS European Roundtables and Platforms	3	12	and establishment of action plans for fruitful interaction.
MS18	Indicator system developed	3	12	first version in month 12, reviewed by month 25, finalised by month 48
MS27	Implementation of web platform for M+E	3	24	Platform is online and has content

WT3:
Work package description

Project Number [1]	619039	Project Acronym [2]	DESSIN

One form per Work Package

Work package number [53]	WP51	Type of activity [54]	RTD
Work package title	Scientific Coordination		
Start month	1		
End month	48		
Lead beneficiary number [55]	1		

Objectives

The objective of this Work Package is to co-ordinate the progress of the project, in order to ensure that the objectives of the project will be met. This includes the coordination of activities among the Work Areas and Work Packages, facilitation of the internal communication, organisation of meetings, guidance of the decision-making processes, quality assurance from the overall project perspective and re-adjustment of the work and interrelation of Work Packages if necessary.
Case studies play a key role in DESSIN, and the proper implementation of the technology and management options and tools developed by DESSIN is decisive for the success of the project. In order to ensure the maximum added value from the outcomes of the activities, it is therefore another essential objective of this Work Package
• to enable a strong liaison between the research groups and the demonstration activities,
• to maintain a high level of commitment from both sides,
• to coordinate all activities related to the involvement of pilots apart from the scientific coordination of the demonstration which is done in WA 3.

Description of work and role of partners

Task 51.1 –Scientific Coordination (M1-M48 IWW, ECOL, SINTEF, KWR, CETaqua)
• Scientific coordination and monitoring of Work Areas and Work-Packages, with a focus on their interlinkage and interaction.
• Supervision of project progress, milestones and project global critical path.
• Scientific review of the work performed by the partners including scientific deliverables and the coordination of internal progress reports.
• Monitoring of progress with work packages, deliverables and milestones and the work plan, including the verification of the quality, consistency and respect of deadlines.
• Re-organisation of tasks and work if necessary.
• Project Risk Management.
• Preparation of the scientific part of the periodic reports to be submitted to the EU.
• Coordinate and facilitate good collaboration among the project partners.
• Act as link to the Project Advisory Committee, the Local Stakeholder Groups and to relevant Action Groups of the European Innovation Partnership (EIP).

Task 51.2 –Management of the demonstration sites (M1-48 KWR, IWW)
• Planning and coordination of the demonstration activities, ensuring the integration and maximum added value of outcomes from the various sites.
• Organising the interaction between demonstration cases and SMEs.
• Balancing the needs and interest of the different stakeholders within the project.
• Contributing to the periodic progress reports on these activities.

Task 51.3 – Coordination of DESSIN's Collaboration with the EIP and its Action Groups (M1-48 IWW, ECOL, SINTEF, KWR, CETaqua)
DESSIN commits to cooperate with the EIP on Water by either direct collaboration / merger with an already existing Action Group, or by applying to be approved as an action group of its own. As a first step and preferred option, DESSIN will try to join forces with the already approved Action Group ESE (Ecosystem Services

for Europe). DESSIN Work Area Leaders IWW, ECOL, SINTEF, KWR and CETaqua will try to join this Action Groups as representatives of DESSIN in order to ensure that there is a regular exchange of results, harmonisation of approaches for developing ES valuation methodologies, common exploitation of results and where appropriate also common results and events. After month six there will be a milestone where the details of the collaboration with ESE are defined and reported, and a decision is made whether the link-up to ESE is considered successful and sufficient, or whether DESSIN will return to its pending application as a separate Action Group under the EIP on Water. For either option, the DESSIN's collaboration with the EIP will be coordinated by the Work Area Management Team that will also guide EIP-related activities in WP 42 Route to Market (in particular Task T42.4).

Person-Months per Participant

Participant number [10]	Participant short name [11]	Person-months per participant
1	IWW	5.00
6	ECOLOGIC	0.50
15	CETaqua	0.50
17	KWR	0.50
19	SINTEF	0.50
	Total	7.00

List of deliverables

Delive-rable Number [61]	Deliverable Title	Lead benefi-ciary number	Estimated indicative person-months	Nature [62]	Dissemi-nation level [63]	Delivery date [64]
		Total	0.00			

Description of deliverables

Schedule of relevant Milestones

Milestone number [59]	Milestone name	Lead benefi-ciary number	Delivery date from Annex I [60]	Comments
MS1	Kick-off meeting	1	1	Meeting held, minutes available
MS11	Mode of collaboration with EIP Water clarified	1	6	either to link up with action group ESE or apply as an own action group
MS25	First periodic report	1	18	approved by project steering board
MS33	Second periodic report	1	36	approved by project steering board
MS34	Final report	1	48	approved by project steering board

WT3:
Work package description

Project Number [1]	619039	Project Acronym [2]	DESSIN

One form per Work Package

Work package number [53]	WP52	Type of activity [54]	MGT
Work package title	Project Management		
Start month	1		
End month	48		
Lead beneficiary number [55]	1		

Objectives

The objective of this Work Package is the management of the project, in order to ensure proper progress of DESSIN. This includes facilitation of the internal communication, organisation of meetings, guidance of the decision-making processes, reporting to the European Commission, taking care of the administrative issues of the project, and re-adjustment of contractual documents.

Description of work and role of partners

Task 52.1 –Project Management (M1-M48 IWW, ECOL, SINTEF, KWR, CETaqua)
• Act as link to the European Commission on all contractual and management matters.
• Prepare and maintain Consortium Agreement with approval and subscription of all partners.
• Establish and maintain an effective and efficient management and coordination structure.
• Administration of financial matters: manage the financial contribution from the EC and ensure a proper distribution to the partners.
• Launch and operate electronic project management tool for progress and resources monitoring and report preparation.
• Prepare periodic financial reports and the management part of periodic reports.
• Prepare, chair and report on management team meetings.
• Designing and maintaining partner specific templates for collecting input to the required EU documents.
• Implementing and maintaining of a project-specific database for reporting and controlling, including the adaptation of the structure after changes in the workplan and the consortium.
• Preparing and post-processing of EC reviews from the consortium-side including support in the implementation of recommendations from the EC and reviewers.
• Preparation, execution and post-processing of major project meetings such as Steering Committee meetings, General Assemblies and meetings with the advisory board (tasks: agendas, invitations, location of meeting places, organization of rooms and equipment, preparation distribution and archiving of materials, minutes and action lists).
• Implementing and maintaining the project infrastructure, e.g., the internal platform for information exchange and email lists;
• Handling of legal issues, IPR issues and maintenance of the consortium agreement.
• Handling of the project correspondence and the day-to-day requests from partners and external bodies.

Person-Months per Participant

Participant number [10]	Participant short name [11]	Person-months per participant
1	IWW	15.00
6	ECOLOGIC	0.50
15	CETaqua	0.50
17	KWR	0.50
19	SINTEF	0.50

WT3:
Work package description

Person-Months per Participant

Participant number [10]	Participant short name [11]	Person-months per participant
	Total	17.00

List of deliverables

Delive-rable Number [61]	Deliverable Title	Lead benefi-ciary number	Estimated indicative person-months	Nature [62]	Dissemi-nation level [63]	Delivery date [64]
		Total	0.00			

Description of deliverables

Schedule of relevant Milestones

Milestone number [59]	Milestone name	Lead benefi-ciary number	Delivery date from Annex I [60]	Comments
MS1	Kick-off meeting	1	1	Meeting held, minutes available
MS25	First periodic report	1	18	approved by project steering board
MS33	Second periodic report	1	36	approved by project steering board
MS34	Final report	1	48	approved by project steering board

WT4:
List of Milestones

Project Number [1]	619039	Project Acronym [2]	DESSIN

List and Schedule of Milestones

Milestone number [59]	Milestone name	WP number [53]	Lead beneficiary number	Delivery date from Annex I [60]	Comments
MS1	Kick-off meeting	WP51, WP52	1	1	Meeting held, minutes available
MS2	Logo and applications are designed	WP41	15	3	A book of style is shared to all the partners and the logo and templates are available and used in all materials produced
MS3	Analytical framework for governance regime assessments	WP12	6	4	Internal draft report outlining key elements of the review
MS4	Concept for the development and construction of the model setup of cross-current lamella settlers	WP21	11	4	Internal project memo by UFT with description of the construction task
MS5	Design of HRF solution for pilot testing in laboratory	WP21	7	4	Internal project memo by Inrigo with description of the design and plan for laboratory testing
MS6	Blog and social networks are set up and first content is provided	WP41	1	4	The blog is online and the channels in different social networks are available and with first content
MS7	Concept for optimized encapsulated ADESBA modules	WP21	9	6	Internal project memo by SEGNO with description of the design for the ADESBA modules
MS8	Target audience analysis and exploitation strategy	WP41	1	6	First version available online
MS9	Individual meeting with each SME and technology developer of DESSIN	WP42	3	6	To identify potential internal networking and specific market needs. Internal minutes of meetings.
MS10	First newsletter published	WP41	15	6	All registered contacts receive the electronic newsletter by E-mail and it is published at the website
MS11	Mode of collaboration with EIP Water clarified	WP51	1	6	either to link up with action group ESE or apply as an own action group
MS12	First version of evaluation	WP11	6	12	Mature case study leaders receive a copy of the

WT4:
List of Milestones

Milestone number [59]	Milestone name	WP number [53]	Lead beneficiary number	Delivery date from Annex I [60]	Comments
	methodology available for testing at mature sites				evaluation framework report
MS13	Completed integrated system architecture design	WP22	18	12	System architecture design completed and described
MS14	Instrumentation and monitoring equipment installed	WP21	8	12	Instrumentation installed in demonstration unigs, tested and functioning flawlessly by LKI
MS15	Completed evaluation of freshkeeper benefits	WP22	17	12	Evaluation completed and benefits quantified
MS16	Selection of the most suitable pre-potable water and expected impacts	WP22	15	12	Selection completed and described
MS17	Formal presentation of DESSIN to the ESS European Roundtables and Platforms	WP42	3	12	and establishment of action plans for fruitful interaction.
MS18	Indicator system developed	WP42	3	12	first version in month 12, reviewed by month 25, finalised by month 48
MS19	Completed installation of high-rate filter unit with monitoring instrumentation and data communicati	WP32	7	13	Demonstration unit installed at demo site, tested and functioning
MS20	Completed installation of RO membranes in the demonstration site	WP33	17	16	Installation completed and checked
MS21	Internal recommendations on the application of the ESS method	WP13	12	18	Internal project report outlining main recommendations / suggestions from case study leaders
MS22	Completed installation of full-scale cross-current lamella settlers	WP31	11	18	at demonstration site
MS23	Completed installation of full-scale RTC system	WP31	9	30	in the sewer network

WT4:
List of Milestones

Milestone number [59]	Milestone name	WP number [53]	Lead beneficiary number	Delivery date from Annex I [60]	Comments
MS24	Completed installation of AMI-SM technologies	WP34	13	18	Installation completed and checked
MS25	First periodic report	WP51, WP52	1	18	approved by project steering board
MS26	Applicability of evaluation methodology is tested and approved	WP11, WP13	19	21	Internal project report including main recommendations / suggestions from case study leaders
MS27	Implementation of web platform for M+E	WP42	3	24	Platform is online and has content
MS28	Completed installation of container with cross-flow lamella settling unit for demonstration in T32.1	WP32	11	25	Demonstration unit installed at demo site, tested and functioning
MS29	Completed installation of ASR pipelines and potential pre-treatment pilot plant	WP35	15	30	Installation completed
MS30	Identification of beneficial impacts and its role as ecosystem services in the Llobregat case study	WP35	15	30	Beneficial impacts identified
MS31	Completed water quality monitoring and data gathering	WP31	12	36	for assessment of sustainability and governance/policy implications of the demonstrations
MS32	Completed water quality monitoring and data gathering	WP32	19	36	Water quality sampling completed, samples analysed and quality verified
MS33	Second periodic report	WP51, WP52	1	36	approved by project steering board
MS34	Final report	WP51, WP52	1	48	approved by project steering board

WT5:
Tentative schedule of Project Reviews

Project Number [1]	619039	Project Acronym [2]	DESSIN

Tentative schedule of Project Reviews

Review number [65]	Tentative timing	Planned venue of review	Comments, if any
RV 1	18	Brussels	Review of first project period
RV 2	36	Brussels	Review of second project period
RV 3	48	Brussels	Review of third project period

WT6:
Project Effort by Beneficiary and Work Package

Project Number [1]	619039	Project Acronym [2]	DESSIN

Indicative efforts (man-months) per Beneficiary per Work Package

Beneficiary number and short-name	WP 11	WP 12	WP 13	WP 21	WP 22	WP 23	WP 31	WP 32	WP 33	WP 34	WP 35	WP 41	WP 42	WP 51	WP 52	Total per Beneficiary
-7 - INRIGO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1 - IWW	11.00	2.00	2.00	0.00	0.00	0.50	1.00	0.00	0.00	0.00	0.00	6.00	0.00	5.00	15.00	42.50
2 - A21	0.00	0.00	0.00	0.00	28.00	0.00	0.00	0.00	0.00	0.00	34.00	0.00	0.00	0.00	0.00	62.00
3 - ADELPHI	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	40.00	0.00	0.00	45.00
4 - BdB	0.00	0.00	0.00	0.00	18.00	0.00	0.00	0.00	32.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00
5 - Chemitec	0.00	0.00	0.00	0.00	15.50	0.00	0.00	0.00	0.00	33.38	0.00	0.00	0.00	0.00	0.00	48.88
6 - ECOLOGIC	15.00	18.00	2.00	0.00	0.00	2.00	0.50	0.50	0.50	0.50	0.50	0.00	0.00	0.50	0.50	40.50
7 - INRIGO	0.00	0.00	0.00	4.50	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.50
8 - LKI	0.00	0.00	0.00	1.20	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.20
9 - SEGNO	0.00	0.00	0.00	43.00	0.00	0.00	27.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.00
10 - TELINT	0.00	0.00	0.00	0.00	9.50	0.00	0.00	0.00	0.00	3.69	0.00	0.00	0.00	0.00	0.00	13.19
11 - UFT	0.00	0.00	0.00	2.75	0.00	0.00	3.50	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.75
12 - EG	4.00	2.00	15.00	3.00	0.00	0.50	28.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	53.00
13 - EYDAP	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	28.35	0.00	0.00	0.00	0.00	0.00	30.35
14 - VAV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00
15 - CETaqua	2.00	6.50	3.50	0.00	20.50	0.50	0.00	0.00	0.00	0.00	38.00	16.00	0.00	0.50	0.50	88.00
16 - DHI	3.00	2.00	5.00	0.00	0.00	8.00	0.50	0.50	0.50	0.50	0.50	0.00	0.00	0.00	0.00	20.50
17 - KWR	2.00	6.00	0.00	0.00	4.00	0.50	0.00	0.00	28.00	0.00	0.00	8.00	0.00	0.50	0.50	49.50
18 - NTUA	0.00	0.00	0.00	0.00	23.50	0.50	0.00	0.00	0.00	26.74	0.00	0.00	0.00	0.00	0.00	50.74
19 - SINTEF	6.00	3.00	3.00	12.00	0.00	2.00	0.00	16.50	0.00	0.00	0.00	0.00	0.00	0.50	0.50	43.50
20 - UDE	4.00	0.00	3.00	8.00	0.00	0.00	26.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	41.00

WT6:
Project Effort by Beneficiary and Work Package

Beneficiary number and short-name	WP 11	WP 12	WP 13	WP 21	WP 22	WP 23	WP 31	WP 32	WP 33	WP 34	WP 35	WP 41	WP 42	WP 51	WP 52	Total per Beneficiary
Total	47.00	39.50	33.50	74.45	121.00	14.50	87.50	26.50	62.00	94.16	74.00	30.00	40.00	7.00	17.00	768.11

WT7:
Project Effort by Activity type per Beneficiary

Project Number [1]	619039	Project Acronym [2]	DESSIN

Indicative efforts per Activity Type per Beneficiary

Activity type	Part. -7 INRIGO	Part. 1 IWW	Part. 2 A21	Part. 3 ADELPHI	Part. 4 BdB	Part. 5 Chemite	Part. 6 ECOLOGI	Part. 7 INRIGO	Part. 8 LKI	Part. 9 SEGNO	Part. 10 TELINT	Part. 11 UFT	Part. 12 EG	Part. 13 EYDAP
1. RTD/Innovation activities														
WP 11	0.00	11.00	0.00	0.00	0.00	0.00	15.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00
WP 12	0.00	2.00	0.00	0.00	0.00	0.00	18.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00
WP 13	0.00	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	15.00	0.00
WP 21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.50	1.20	43.00	0.00	2.75	3.00	0.00
WP 22	0.00	0.00	28.00	0.00	18.00	15.50	0.00	0.00	0.00	0.00	9.50	0.00	0.00	2.00
WP 23	0.00	0.50	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00
WP 51	0.00	5.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Research	0.00	20.50	28.00	0.00	18.00	15.50	37.50	4.50	1.20	43.00	9.50	2.75	24.50	2.00
2. Demonstration activities														
WP 31	0.00	1.00	0.00	1.00	0.00	0.00	0.50	0.00	0.00	27.00	0.00	3.50	28.00	0.00
WP 32	0.00	0.00	0.00	1.00	0.00	0.00	0.50	4.00	1.00	0.00	0.00	0.50	0.50	0.00
WP 33	0.00	0.00	0.00	1.00	32.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WP 34	0.00	0.00	0.00	1.00	0.00	33.38	0.50	0.00	0.00	0.00	3.69	0.00	0.00	28.35
WP 35	0.00	0.00	34.00	1.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Demo	0.00	1.00	34.00	5.00	32.00	33.38	2.50	4.00	1.00	27.00	3.69	4.00	28.50	28.35
3. Consortium Management activities														
WP 52	0.00	15.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Management	0.00	15.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00

WT7:
Project Effort by Activity type per Beneficiary

4. Other activities														
WP 41	0.00	6.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WP 42	0.00	0.00	0.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total other	0.00	6.00	0.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Total	0.00	42.50	62.00	45.00	50.00	48.88	40.50	8.50	2.20	70.00	13.19	6.75	53.00	30.35

WT7:
Project Effort by Activity type per Beneficiary

Activity type	Part. 14 VAV	Part. 15 CETaqua	Part. 16 DHI	Part. 17 KWR	Part. 18 NTUA	Part. 19 SINTEF	Part. 20 UDE	Total
1. RTD/Innovation activities								
WP 11	0.00	2.00	3.00	2.00	0.00	6.00	4.00	47.00
WP 12	0.00	6.50	2.00	6.00	0.00	3.00	0.00	39.50
WP 13	0.00	3.50	5.00	0.00	0.00	3.00	3.00	33.50
WP 21	0.00	0.00	0.00	0.00	0.00	12.00	8.00	74.45
WP 22	0.00	20.50	0.00	4.00	23.50	0.00	0.00	121.00
WP 23	0.00	0.50	8.00	0.50	0.50	2.00	0.00	14.50
WP 51	0.00	0.50	0.00	0.50	0.00	0.50	0.00	7.00
Total Research	0.00	33.50	18.00	13.00	24.00	26.50	15.00	336.95
2. Demonstration activities								
WP 31	0.00	0.00	0.50	0.00	0.00	0.00	26.00	87.50
WP 32	2.00	0.00	0.50	0.00	0.00	16.50	0.00	26.50
WP 33	0.00	0.00	0.50	28.00	0.00	0.00	0.00	62.00
WP 34	0.00	0.00	0.50	0.00	26.74	0.00	0.00	94.16
WP 35	0.00	38.00	0.50	0.00	0.00	0.00	0.00	74.00
Total Demo	2.00	38.00	2.50	28.00	26.74	16.50	26.00	344.16
3. Consortium Management activities								
WP 52	0.00	0.50	0.00	0.50	0.00	0.50	0.00	17.00
Total Management	0.00	0.50	0.00	0.50	0.00	0.50	0.00	17.00
4. Other activities								
WP 41	0.00	16.00	0.00	8.00	0.00	0.00	0.00	30.00
WP 42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	40.00

WT7:
Project Effort by Activity type per Beneficiary

4. Other activities								
Total other	0.00	16.00	0.00	8.00	0.00	0.00	0.00	70.00
Total	2.00	88.00	20.50	49.50	50.74	43.50	41.00	768.11

WT8:
Project Effort and costs

Project Number [1]	619039	Project Acronym [2]	DESSIN

Project efforts and costs

Beneficiary number	Beneficiary short name	Estimated eligible costs (whole duration of the project)						Requested EU contribution (€)
		Effort (PM)	Personnel costs (€)	Subcontracting (€)	Other Direct costs (€)	Indirect costs OR lump sum, flat-rate or scale-of-unit (€)	Total costs	
-7 (UTRO)	INRIGO	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	IWW	42.50	340,000.00	51,000.00	33,625.00	224,175.00	648,800.00	574,000.00
2	A21	62.00	204,600.00	0.00	5,000.00	41,920.00	251,520.00	154,980.00
3	ADELPHI	45.00	225,000.00	1,200.00	60,000.00	171,000.00	457,200.00	437,200.00
4	BdB	50.00	177,450.00	0.00	39,000.00	129,870.00	346,320.00	199,412.00
5	Chemitec	48.88	146,640.00	0.00	103,500.00	150,084.00	400,224.00	220,312.00
6	ECOLOGIC	40.50	239,760.00	0.00	20,000.00	202,612.80	462,372.80	341,510.80
7	INRIGO	8.50	76,500.00	0.00	100,000.00	105,900.00	282,400.00	180,000.00
8	LKI	2.20	23,100.00	0.00	15,000.00	22,860.00	60,960.00	41,520.00
9	SEGNO	70.00	378,000.00	2,375.00	98,324.84	95,264.97	573,964.81	364,142.00
10	TELINT	13.19	105,520.00	0.00	18,000.00	74,112.00	197,632.00	131,216.00
11	UFT	6.75	67,500.00	0.00	61,000.00	77,100.00	205,600.00	115,000.00
12	EG	53.00	408,100.00	64,700.00	26,100.00	260,520.00	759,420.00	459,520.00
13	EYDAP	30.35	166,925.00	22,000.00	59,000.00	45,185.00	293,110.00	146,555.00
14	VAV	2.00	24,000.00	7,000.00	3,000.00	16,200.00	50,200.00	25,100.00
15	CETaqua	88.00	456,016.00	50,528.00	154,356.33	122,074.47	782,974.80	527,905.10
16	DHI	20.50	149,261.00	835.00	12,765.00	132,842.30	295,703.30	213,176.55
17	KWR	49.50	396,000.00	53,500.00	69,750.00	427,680.00	946,930.00	562,435.00
18	NTUA	50.74	233,404.00	0.00	16,015.21	149,651.53	399,070.74	247,695.36
19	SINTEF	43.50	565,500.00	8,600.00	41,368.42	546,181.58	1,161,650.00	765,262.50

WT8:
Project Effort and costs

Beneficiary number	Beneficiary short name	Estimated eligible costs (whole duration of the project)						Requested EU contribution (€)
		Effort (PM)	Personnel costs (€)	Subcontracting (€)	Other Direct costs (€)	Indirect costs OR lump sum, flat-rate or scale-of-unit (€)	Total costs	
20	UDE	41.00	246,000.00	0.00	49,000.00	177,000.00	472,000.00	274,000.00
Total		768.11	4,629,276.00	261,738.00	984,804.80	3,172,233.65	9,048,052.45	5,980,942.31

1. Project number

The project number has been assigned by the Commission as the unique identifier for your project. It cannot be changed. The project number **should appear on each page of the grant agreement preparation documents (part A and part B)** to prevent errors during its handling.

2. Project acronym

Use the project acronym as given in the submitted proposal. It cannot be changed unless agreed so during the negotiations. The same acronym **should appear on each page of the grant agreement preparation documents (part A and part B)** to prevent errors during its handling.

53. Work Package number

Work package number: WP1, WP2, WP3, ..., WPn

54. Type of activity

For all FP7 projects each work package must relate to one (and only one) of the following possible types of activity (only if applicable for the chosen funding scheme – must correspond to the GPF Form Ax.v):

• **RTD/INNO =** Research and technological development including scientific coordination - applicable for Collaborative Projects and Networks of Excellence

• **DEM =** Demonstration - applicable for collaborative projects and Research for the Benefit of Specific Groups

• **MGT =** Management of the consortium - applicable for all funding schemes

• **OTHER =** Other specific activities, applicable for all funding schemes

• **COORD =** Coordination activities – applicable only for CAs

• **SUPP =** Support activities – applicable only for SAs

55. Lead beneficiary number

Number of the beneficiary leading the work in this work package.

56. Person-months per work package

The total number of person-months allocated to each work package.

57. Start month

Relative start date for the work in the specific work packages, month 1 marking the start date of the project, and all other start dates being relative to this start date.

58. End month

Relative end date, month 1 marking the start date of the project, and all end dates being relative to this start date.

59. Milestone number

Milestone number:MS1, MS2, …, MSn

60. Delivery date for Milestone

Month in which the milestone will be achieved. Month 1 marking the start date of the project, and all delivery dates being relative to this start date.

61. Deliverable number

Deliverable numbers in order of delivery dates: D1 – Dn

62. Nature

Please indicate the nature of the deliverable using one of the following codes

R = Report, **P** = Prototype, **D** = Demonstrator, **O** = Other

63. Dissemination level

Please indicate the dissemination level using one of the following codes:

• **PU =** Public

• **PP =** Restricted to other programme participants (including the Commission Services)

• **RE =** Restricted to a group specified by the consortium (including the Commission Services)

• **CO =** Confidential, only for members of the consortium (including the Commission Services)

• **Restreint UE =** Classified with the classification level "Restreint UE" according to Commission Decision 2001/844 and amendments

• **Confidentiel UE =** Classified with the mention of the classification level "Confidentiel UE" according to Commission Decision 2001/844 and amendments

• **Secret UE =** Classified with the mention of the classification level "Secret UE" according to Commission Decision 2001/844 and amendments

64. Delivery date for Deliverable

Month in which the deliverables will be available. Month 1 marking the start date of the project, and all delivery dates being relative to this start date

65. Review number

Review number: RV1, RV2, ..., RVn

66. Tentative timing of reviews

Month after which the review will take place. Month 1 marking the start date of the project, and all delivery dates being relative to this start date.

67. Person-months per Deliverable

The total number of person-month allocated to each deliverable.

Table of Contents

List of Abbreviations and Acronyms

Abbreviation	Definition
AMI	Advanced Monitoring Infrastructure
ASR	Aquifer Storage and Recovery
CICES	Common International Classification of Ecosystem Services
CSO	Combined Sewer Overflow
DSS	Decision Support System
EEN	Enterprise Europe Network
EIP	European Innovation Partnership
ESA	Ecosystem Services Approach
ESS	Ecosystem Services
FP7	7th Framework Programme (2007-2013) of the European Commission
ICT	Information and Communication Technology
MAR	Managed Aquifer Recharge
PAC	Project Advisory Committee
PoM	Programme of Measures
SME	Small or Medium-Sized Enterprise
WA	Work Area (consists of several Work Packages)
WAMT	Work Area Management Team (consists of all WA leaders)
WFD	Water Framework Directive
WP	Work Package
WssTP	Water Supply and Sanitation Technology Platform

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1. Scientific and/or technical quality, relevant to the topics addressed by the call

1.1. Concept and objectives

The main objectives of DESSIN are

- to demonstrate and promote innovative solutions to water-related challenges with a focus on: (i) water quality issues related to the implementation of the Water Framework Directive (WFD) and (ii) water scarcity;
- to demonstrate a methodology for the valuation of ecosystem services (ESS) as catalyser for innovation in water management;

How are we going to achieve this?
DESSIN will launch demonstration projects of innovative solutions to challenges related to (i) the effective implementation of the Water Framework Directive (WFD) and (ii) water scarcity with a special focus on urban areas. The solutions will integrate technological, monitoring, modeling and management approaches for a more resource-efficient and competitive water sector in Europe. As a second key feature, an Evaluation Framework to assess the sustainability aspects of the mentioned solutions and to valuate changes in ecosystem services (ESS) of water bodies that result from the implementation of these solutions will be developed and applied. By adopting this twofold approach, we will be able to demonstrate how innovative solutions integrated in the water cycle can increase the value of the services provided by freshwater ecosystems while assuring sustainability, thus generating additional incentives and arguments for their market uptake and practical implementation. This will support innovation and competitiveness in water management by enabling a more informed selection of the most promising solutions, as regards their impact on the water body and their economic implications.

Where and what are we going to demonstrate?
The whole project is centered around the following suite of carefully selected sites across Europe, representative of global major water challenges, where we bring together public and private water management organisations and end-users, technology providers (SMEs), supporting RTD experts and relevant public authorities to demonstrate this approach:

At the **Emscher River** (NW Germany), DESSIN will work on innovations in treatment of sewer overflows and real-time control of large-scale systems to support a river conversion process and therefore the WFD implementation for this heavily modified water body. This will contribute to the increased value of ESS such as water purification, air quality regulation, aesthetic value and recreational services for the whole region, which are key services of water bodies in densely populated areas.

At **Hoffselva River** (Oslo Area, Norway), DESSIN will demonstrate local treatment solutions for overflow from Combined Sewer Overflows (CSOs), combining technologies acting at local and system level and enabling cost-efficient implementation of the WFD. As an important natural element in the urbanized environment of the lower catchment part, Hoffselva provides recreational services which are affected by the water quality.

At the **Westland region** (horticultural sector, The Netherlands), DESSIN will demonstrate the potential to further improve the efficiency of freshwater supply from brackish aquifers by combining aquifer storage and recovery (ASR) and desalinization with an innovative well design. This will have a strong impact in particular on provisioning ESS of the region.

In **Athens** (Greece), demonstration will look into sewer mining, as a novel concept for distributed, reuse exploiting state-of-art ICT solutions for distributed monitoring and management of these multiple sites combined with small packaged plants. The demo will be also used as a testbed for testing reused water characteristics on the soil, through onsite experiments, irrigating onsite peri-

urban green. Finally, the demo will examine in detail a major component of the changes in ESS provided by such technologies, of particular importance to arid climates: The mitigation of heat island effects due to irrigation of urban green areas.

At the **Llobregat River Delta** (Spain), DESSIN will maximize the use of the existing deep injection system (ASR) in the Drinking Water Treatment Plant, by validating and demonstrating the flexibility of the system where the aquifer receives different water qualities, while WFD compliance is ensured. DESSIN will build on and complement research done in a current national project SCARCE and some European funded projects regarding MAR in the Llobregat River Delta (ENSAT, DEMEAU). The technical innovation will be linked to the assessment of the ESS, to highlight the value of the enhanced management system.

How does it work?

Figure 1 outlines this conceptual framework of the DESSIN approach, and shows how the ESS Valuation Toolkit can act as a catalyser for innovation in the water sector. As a first step, the ESS valuation framework will analyse the State of a Water Body. Here, the condition of the considered features of aquatic ecosystems (e.g., morphology, water quality, biodiversity, flow regime, ecological status) will define their potential for the full deployment of their functions and consequently the provision of Ecosystem Services across a certain area.

As second step, a qualitative assessment of the full array of ESS will be conducted based on the ESS typology, to facilitate the identification and short listing of the most salient services provided by the ecosystem in question.

In the third stage of the process, the selected ESS will be described in monetary terms by the application of an ESS Valuation Toolkit developed within DESSIN.

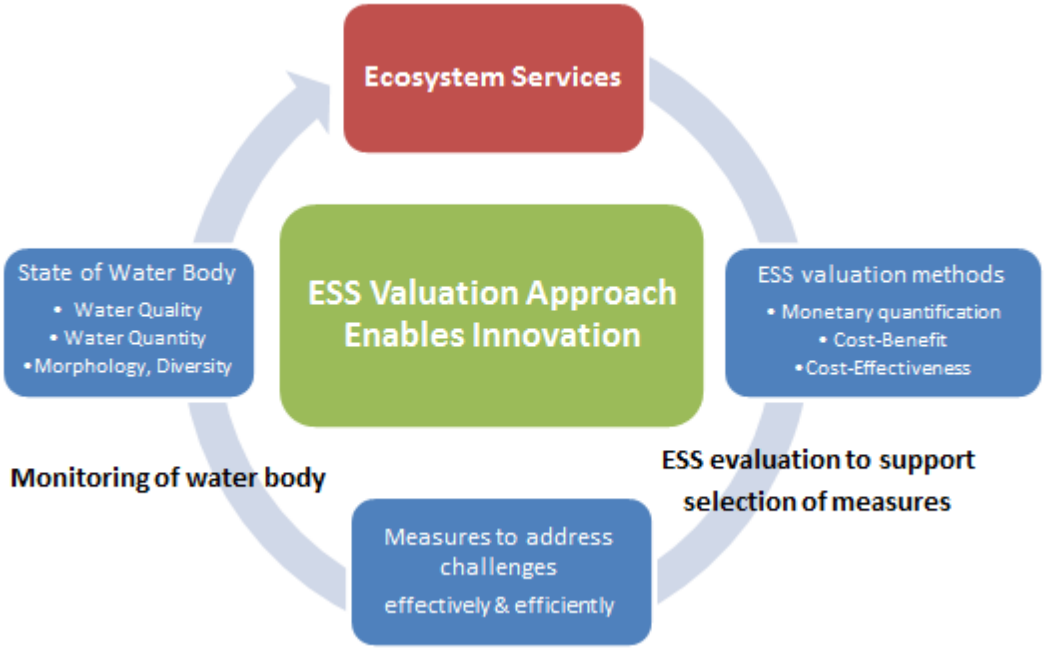


Figure 1 Ecosystem Services Valuation is Enabling Innovation in the Water Sector.

This toolkit will expand on the current state of the art by providing an integrated structure of the existing tools and methodologies available for the attachment of monetary values to ESS. It will also be the main facilitator for the assessment of the measures to address challenges (e.g. management approaches, products and technical solutions) proposed and demonstrated by SMEs. Innovative solutions in the water sector such as new technology or management approaches will have an impact

on the status of the water body, and consequently on the corresponding ESS. The implemented measures will have an impact on the values of ecosystems and their services and can therefore also be expressed in economic terms[1]. This can be used as complementary information in the decision making process (e.g. by integration of an ESS module into an existing Decision Support System based on classical quality criteria) to select the optimal choice of measures for a given water body. Furthermore, this enhanced capability to distinguish the most effective and efficient solutions will not only lead to more informed decision making but it will promote innovation and competitiveness in the water sector because it provides economic arguments for the implementation of innovative solutions.

Why are we doing this?

As part of the Horizon 2020 strategy, the European Union has set up the flagship initiative on "Innovation Union". In this context, innovation means changes that "create more jobs, improve people's lives and build greener and better societies"[2]. Therefore, new technology or management approaches are more likely to turn into real innovations that are actually implemented and taken up by the market if there is evidence of their benefits or added value in economic, environmental and societal terms.

The ecosystem services approach (ESA) is a method that enables a standardised evaluation of impacts and benefits from technology and governance innovations in multiple sectors taking into account the standing points of a wide range of related actors[3,4] In its application for the development of water management approaches, one of its main advantage lies in its capacity to integrate the economic, environmental and societal dimensions[5]. Monetary valuation of ESS translates the impact of measures into a value system that enables direct comparison of measures and sites, and is complementary to the one based on intrinsic quality criteria of water bodies. Hence, an assessment of water technologies and management options in terms of valuated ESS can give an additional incentive for innovative solutions beyond the need to comply with policy requirements such as the criteria of the WFD.

How does it contribute to EU Strategies and Policies?

The WFD does not consider ESS explicitly, but it implies that aquatic ecosystems in a good status will also provide benefits to humans. The Blueprint to Safeguard Europe's Water Resources has a much stronger focus on ESS. With the revision of the WFD, it is most likely that ESS will gain a much stronger role. At a European scale, current research aims to integrate ESS into broader environmental planning and policy arenas[4]. Recently funded EU FP7 projects under the Environment Theme (OpenNESS and OPERAS) will deliver practical testing of ecosystem service assessment and valuation for different ecosystems. DESSIN will adapt these methodologies to evaluate changes in ESS provision of aquatic ecosystems, in order to support a more rapid adoption of innovative water solutions and facilitate their market uptake.

The ability to adopt cross-cutting perspectives is key in the recent development of European environmental policy. The emergence of strategies like the "Blueprint to Safeguard Europe's Water

[1] de Groot, R. (2009) Integrating the ecological and economic dimensions in biodiversity and ecosystem service valuation. Chapter 1. (TEEB D0). URL: http://www.falw.vu.nl/en/Images/TEEB-D0_Chapter-1_2009-09_tcm24-150955.pdf

[2] http://europa.eu/rapid/press-release_MEMO-10-473_en.htm

[3] Maes, J. et al. (2012). Synergies and trade-offs between ecosystem service supply, biodiversity and habitat conservation status in Europe. Biological Conservation 155 (1-12).

[4] TEEB Foundations (2010). In Kumar, P (Ed.), TEEB – The Economics of Ecosystems and Biodiversity (TEEB): Ecological and Economic Foundations. Earthscan, London.

[5] UNEP (2009) Water security and ecosystem services: The critical connection. A contribution to the United Nations World Water Assessment Programme.

URL: http://www.unep.org/themes/freshwater/pdf/the_critical_connection.pdf

Resources"[6] and the "EU Biodiversity Strategy to 2020"[7] points to a redefined logic that sets coordination and compatibility as drivers of efficiency in the pursuit of the region's objectives. Aquatic ecosystems are perceived by some as a fundamental pillar of the common platform from which the continuity of natural and human systems can be assured[8,9]. Proof of this is the recognition by the EU Commission of a need to improve water resource management, promote adaptation and sustainability, and better account for the costs and benefits of policy and implementations to achieve this. From this standpoint, the central role played by the WFD as the fundamental element of European water policy can be clearly understood. In this same context, the ESA becomes a practical tool to:

- highlight the potential points of convergence between the WFD and other policies (e.g., Floods Directive, Urban Wastewater Directive, Habitats Directive, Birds Directive) and aid in establishing the necessary links for their coordination;
- clarify the natural flow between the ecological status of water bodies, their functions, and their capacity to provide the ESS on which other natural, as well as human systems depend.

In addition, the adoption of the ESA can enhance the accounting of benefits from the implementation of the Programmes of Measures (PoMs) and expand policy dissemination by portraying the objectives of the WFD in a broader social and economic context.

This change in paradigm from addressing the objectives of the WFD from an ESS perspective is opening the table for coordination in the policy arena (e.g. coordination between the Second River Basin Management Plans and the First Flood Risk Management Plans), and will also result in a window of opportunity for a flow of innovative solutions. This will aid in the development of a more sustainable and resource-efficient water sector in the EU while creating incentives to enhance innovation and thus competitiveness in the industry.

What will DESSIN achieve?

The main concrete and auditable achievements of DESSIN will be:

- An analytical framework to evaluate and account impacts from changes in ESS suitable to the water sector, finally resulting in an evaluation framework for development of an ESS module (WP11)
    - tested, validated and refined at three sites across Europe (WP13 by M24).
    - transformed into a software framework and module for ESS valuation (WP23 by M30)
- Concrete guidance for practitioners and policy makers linking good practice and lessons-learned for innovation-friendly governance regimes and financing options, within an ESS framework (WP12, by M18)
- Innovative solutions for Water Quality / WFD implementation, implemented in two areas in Europe and evaluated by use of the ESS approach:
    - Enhanced efficiency of decentralised treatment of combined sewer overflow by a new cross-flow lamella settlers and innovative high-rate filters, demonstrated in Germany (WP21&31) and Norway (WP21 & 32) by M42.
    - Fully automated real-time control system to minimize combined sewer overflow (WP21&31 by M42)

[6] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52012DC0673:EN:NOT

[7] http://ec.europa.eu/environment/nature/biodiversity/comm2006/2020.htm

[8] Maltby E., Acreman M.C. (2011) Ecosystem services of wetlands: pathfinder for a new paradigm. Hydrolog. Sci. J. 56: 1341–1359.

[9] Blancher P., Vignon C., Catalon E., Maresca B., Dujin A., Mordet X., Borowski I., Neubauer L., Rotter S., Interwies E., Cunha M.C., Marques J.C., Pinto R., Palma C. (2012). Ecosystem services approach for water framework directive implementation. In: "Management Of Natural Resources, Sustainable Development And Ecological Hazards". Brebbia C.A., Zubir S.S. (eds). III Book Series: WIT Trans. Ecol. Environ. 148: 75–85.

- Three innovative solutions for Water Scarcity, each implemented in a European area and evaluated by use of the ESS approach:
    - A new combination of sewer mining technology with distributed ICT intelligence to enable decentralised sewer treatment for irrigation e.g. of urban green (WP22 & 34, installed by M18, evaluated by M48)
    - An innovative solution for sustainable freshwater supply from brackish/saline aquifers by combining Aquifer Storage and Recovery (ASR) and desalination with an innovative well design (WP22 & 33, installed by M16, evaluated by M48).
    - A flexible ASR system to increase freshwater availability in the Mediterranean coastal region by deep injection systems able to deal with variable water qualities (WP22 & 35, developed by M20, installed by M30, evaluated by M48)
- A maximised market reach and impact of the solutions developed within DESSIN by
    - Market analyses for groups of technologies developed within DESSIN (WP42 by M12)
    - A sample commercialisation process for involved SMEs (WP42 by M48)
    - Business environment reports for technologies to tackle water quality and water scarcity (WP42 by M10)
    - A monitoring & evaluation system for innovation and continuous monitoring of framework conditions and outcomes (WP42 by M12).

Table 1 How DESSIN will contribute to the objectives of the Call

Call text FP7-ENV-2013-WATER-INNO-DEMO	**Contributing DESSIN elements**
mobilise industry, member states and stakeholders	Through the demonstrations in WA3 all relevant private and public stakeholders are connected, both as partner and as stakeholder group.
promote innovative solutions for water-related challenges and effective implementation of European directives	Through the ESS framework, innovative solutions for water scarcity and water quality issues related to the Water Framework Directive are promoted and implemented.
creating market opportunities for European industry and SMEs	WA3 will demonstrate innovative solutions offered by European industry. The showcases will be exploited and brought to the market in WA4.
launch of demonstration projects in areas of urban water management	DESSIN is based on 5 demonstration projects in urban areas.
improved […] waste water treatment processes	Although not the core of DESSIN, the project will deliver innovative decentralised waste water treatment solutions in WA2.
promotion of re-use of water and closed water cycles	Re-use of water is one of the main themes of the demonstration site in Athens (WP34). This case study will promote re-use for urban water applications.
agricultural and natural ecosystem water use	Agricultural water use is a theme of the horticulture demonstration site in The Netherlands (WP33).
reduction of flood risk	Although not a main topic of the project the case study related to the Emscher river will have flood reduction as a side effect (WP31).
enhancement of the quality of water services	Not addressed by DESSIN
minimisation of energy and water use	Not addressed by DESSIN
reduction of environmental impact of effluents	This is a main impact of the demonstration sites in the Emscher river and Oslo area (WP31 and WP32).

Call text FP7-ENV-2013-WATER-INNO-DEMO	Contributing DESSIN elements
develop, test & disseminate innovative solutions	DESSIN will optimise, demonstrate and disseminate innovative solution for water scarcity and for water quality issues related to the Water Framework Directive (in particular WP21, WP31, WP32).
integration of technological, organisational, financial, ICT and management approaches	All demonstrations in WA3 are based on integrated solutions, applying technological, organisational, and ICT approaches.
strengthen standardisation in the water sector	DESSIN will contribute to a standard framework for evaluation and application of ecosystem services.
appropriate scale to enable the bringing together of various sites across Europe	The project brings together demonstration sites in several European regions.
links and synergies with related major water investment/implementation projects	All demonstration sites heavily rely on ongoing regional investment programs.
help leverage the demand side across the whole value chain from research to markets	We expect that the ecosystem services approach developed and demonstrated in DESSIN will boost the request for innovative solutions related to water scarcity and water quality.
strengthen complementarity with various EU funding mechanisms	Via the Project Advisory Committee, DESSIN is linked to the Enterprise Europe Network
Dissemination and exploitation activities, improving communication and transfer of knowledge both to policy making, business and to the general public	Dissemination and exploitation activities to all relevant stakeholders will take place in WA4.
activities aiming to increase the likelihood of market uptake of the project results	DESSIN will support the market uptake of the ESS approach and demonstrated innovative solutions through a dedicated WP42.

1.2. Progress beyond the state of the art

DESSIN is progressing beyond the state of the art by the following innovations:

Innovation: Application of an Ecosystem Service Valuation Method for better decision-making

Much research has been conducted on Ecosystem Service (ESS) and the multiple aspects concerning its potential as support for policy and decision-making e.g. (MA, 2005) [10], (TEEB, 2010) [11], (Maes et al., 2013) [12]. This has led to a demand for knowledge and experience from practical application of harmonised methods for an Ecosystem Services Approach (ESA).

DESSIN will produce a toolkit for practical ESS assessments including monetary values with existing techniques for assessment and valuation of ESS. Validation during DESSIN will result in a consistent, user friendly, fully functional guidance for decision-making that will widen the scope of the ESS concept and activate involvement of the private sector. DESSIN will focus on practical use in the water sector and aim to measure the impacts of implemented solutions on the value of ESS provided by water bodies. This concentrated approach will allow for highly desired advances in the level of precision when valuating changes in ESS. Clarifying the links between changes in ESS and the implementation of innovative solutions in the water cycle will create new incentives for prototyping, testing and developing marketable products and services. DESSIN's ESS Valuation Toolkit will be highly compatible with the Working Group on Mapping and Assessment of Ecosystems and their Services (WG MAES), (Maes, J. et al., 2013) [3].
DESSIN will go beyond the state of the art in the application of the Ecosystem Services Approach (ESA) by developing a practical and user –friendly methodology to assess changes in the value of ESS provision in monetary and non-monetary terms in the context of innovations in the water sector. So far, ESA is at a concept stage and the application of the DESSIN framework to case studies will provide concrete results to evaluate its usability at different levels, for example: user and policy advice levels. The framework is expected to support in the evaluation of the planning, design and development of new technologies and solutions prior to their application in "real" water management frameworks. Several milestones of the project can be used to assess the performance of the DESSIN ESS toolkit in practice:

M11.1 – A first version of the evaluation methodology is available for testing at mature sites (ECOL, M12).

M13.1 – Internal recommendations on the application of the ESS method after testing at mature sites (EG, 18).

M11.2 – Applicability of evaluation methodology is tested and approved (SINTEF, M21).

M35.2 – Identification of beneficial impacts and its role as ecosystem services in the Llobregat case study (CETaqua, M30).

10MA (Millennium Ecosystem Assessment) (2005). Ecosystems and Human Well-being: Synthesis. Washington, DC, Island Press.

11TEEB (2010). The economics of ecosystems and biodiversity: mainstreaming the economics of Nature. A synthesis of the approach, conclusions and recommendations of TEEB. UK, Eur. Communities.

12Maes J, Teller A, Erhard M, et al. (2013) Mapping and Assessment of Ecosystems and their Services. An analytical framework for ecosystem assessments under action 5 of the EU biodiversity strategy to 2020. European Union, Luxembourg.

Innovation: Freshwater supply in brackish aquifers by combining aquifer storage and recovery (ASR) and desalination

The horticulture industry depends on freshwater of good quality, but faces an increasing mismatch between freshwater availability and demand due to climate change and intensified crop production. Confined aquifers are considered a perfect storage medium, as they are not vulnerable for atmospheric deposition and temperature changes, while providing pH-buffering, denitrification and filtration. However, in coastal areas, recovery efficiencies of ASR systems can be limited by density differences between the injected freshwater and ambient brackish or saline groundwater.
An innovative ASR solution, combined with the Freshkeeper, is proposed which maximizes the recovery of infiltrated freshwater surpluses. Multiple Partially Penetrating Wells (MPPW) allow for injection and extraction at different depths, and higher recovery efficiencies. The potential is large in coastal areas, faced with water shortage and/or saline water, especially when combined with desalinization, both for drinking water, agricultural and industrial applications. By simultaneously abstracting upper fresh and lower brackish groundwater, salinization of the fresh water well is prevented. The abstracted brackish water is used as additional water source after desalinization. The hybrid ASR/desalination (RO) system thus combines the best of two techniques and it contributes to optimal durable use of 'free' natural sources as rainwater and soil (building with nature), and saves expensive aboveground space.
DESSIN will go beyond the state of the art by developing and testing an innovative ASR solution to store freshwater in brackish aquifers. An important milestone for this innovation is M22.2 – completed evaluation of freshkeeper benefits (KWR, M12).

Innovation: Improved water quality in urbanized areas by implementing novel and cost efficient treatment, monitoring and control solutions for existing CSO facilities
State of the art CSO technology for large scale sewers consists of sedimentation in the CSO tank, which is not sufficient to ensure retention of pollutants in the overflow discharged to the water bodies. Some pilot projects with counter-flow lamella settlers have shown an increased settling efficiency. However, settled sludge may be re-entrained into the inflow. This leads to an intermittent pollution and deficit in the status of the water bodies according to WFD. In smaller scale sewer systems CSOs are commonly constructed without a tank. Here no, or very limited, particle removal is achieved due to lack of a settling volume. The first priority in CSO management is to reduce the overflow volumes. RTC can enable optimized retention of wastewater and stormwater in a sewer network including CSO tanks. However, current RTC technology requires simulation of various strategies for optimization, which requires a great effort repeated for every sub-catchment. In smaller scale sewer systems, where use of RTC will require construction of sufficient holding volumes and control elements i.e. gates and valves, the cost and scale of the infrastructure construction is a barrier for implementation. Often, especially in smaller CSO there is no or very simple monitoring, of limited use for assessing the performance.

DESSIN goes beyond the state of the art by developing solutions to the common challenge of poor water quality caused by CSO overflows that are tailored to the different characteristics of the two demo sites: *i*) A modular cross-flow lamella settling unit for the local treatment of combined sewer overflows from tanks; *ii*) High rates filter solution that can be installed on the CSO outlet pipe for smaller structures without a holding tank; *iii*) An integrated instrumentation and data communication package for monitoring performance and operation of local treatment units; and *iv*) A standardized RTC system for efficient implementation.
These innovative solutions will be demonstrated at the strongly urbanized Emscher site and in the peri-urban Hoffselva catchment, as answers to considerable improve the water quality of the water bodies and hence to support implementing WFD.

Innovation: Advanced distributed sewer mining for reuse in large urban areas

Wastewater reuse in the urban environment still confronts a series of obstacles (CRC, 2006)[13]. Centralized infrastructure, with end of pipe treatment distant from the points of reuse, make reuse costly and meets with resistance by local communities. Recent advances in treatment and ICT present a solution: Coupling Membrane Bioreactors with nano-filtration and/or reverse osmosis membranes provides superior effluent quality which can meet the most stringent reuse criteria - packaged in a treatment unit of minimal footprint (Fane and Fane, 2005)[14]. DESSIN will propose and test specific, fully automated, optimally run, packaged treatment trains that are suitable for arid and semi-arid regions and allow direct mining of sewage from the network. This, however, presents a new challenge for remote control and operation (under high health and water quality standards). DESSIN addresses this through integrating the treatment solution with novel ICT applications in data fusion, data communication, interoperability and mobile solutions. DESSIN will provide end-to-end security and privacy for heterogeneous wireless networks integrated into a unified framework, ensuring system interoperability and seamless integration into existing proprietary software. This concept is part of a co-operative, autonomous, mesh architecture and has not been realised to date. The integration of mobile, small footprint treatment units, controlled remotely through a distributed, interoperable ICT infrastructure is a unique solution which goes significantly beyond the current state of art for the water industry and opens new opportunities for sewer mining, benefiting end users through enhanced ESS resulting from irrigated urban green spaces in arid/semi-arid regions as well as SMEs through new business models and markets.

Innovation: Increased flexibility of Aquifer Storage and Recovery systems to cope with different water qualities

Managed Aquifer Recharge (MAR) is part of the groundwater manager tools, useful for repressurising aquifers subject to falling water levels, declining yields, saline intrusion or land subsidence. MAR has a significant potential in securing and improving quality and quantity of water supplies in developing and developed countries while protecting or restoring the environment (Dillon, 2005)[15]. While European and national water policies can encourage greater utilisation and investment in MAR, existing regulations tend to impede uptake of recharge projects with non-potable quality of water (e.g. Spanish regulation for reclaimed water RD1620/2007).
DESSIN will work specifically with ASR systems, which are the most vulnerable regarding aquifer potential impacts, as injected water is directly stored in the saturated zone, below the water table. DESSIN will innovate working towards the adaptation of existing ASR systems to receive pre-potable water qualities, evaluating the potential impacts and adapting them with suitable pre-treatments to maximise injected volume. The selected demo site is the Llobregat area, where there is a full-scale ASR facility with a total capacity of 75.000 m^3/d, which is currently underutilised due to lack of surplus of freshwater in the drinking water treatment plant of Sant Joan Despí (Barcelona).

[13]CRC Construction Innovation (2006) Barriers and drivers of new public-private infrastructure: sewer mining. CRC for Construction Innovation, Brisbane
[14]Fane AG & Fane SA (2005), The role of membrane technology in sustainable decentralised wastewater systems, Wat Sci Tech, Vol. 51:10, pp. 317-325
[15] Dillon, P. 2005. Future management of aquifer recharge. Hydrogeol J (2005) 13:313–316.

Figure 2 Map of Europe with distribution of demonstration sites for DESSIN solutions (WA3) and mature sites to refine the ESS methodology (WP13)

1.3. S/T methodology

1.3.1. Overall strategy and general description

Figure 3 illustrates the work flow and work area structure of DESSIN. Demonstration sites, where innovative technology, management and modelling solutions are implemented, are at the core of DESSIN.

However, the first step is the development of the evaluation framework within Work Area 1 (WA1). This comprises of the valuation methodology for Ecosystem Services (ESS) as well as an analysis of innovative and innovation-friendly modes of governance, financing and payment.

After completion of WA 1, the valuation methodology for Ecosystem Services directly feeds into the Development Work Area (WA 2) where it is transformed into a software module for integration into existing Decision Support Systems for water management. WA 2 is also that part of DESSIN where technical development of promising technologies, modelling and management approaches is taking place in order to enable their full-scale implementation in the demonstration sites. DESSIN will focus on potential solutions that are advanced beyond the research stage but not yet at the marketable stage, and the research and technical development activities in WA 2 will directly prepare and support the demonstration in five case studies. Solutions will not be limited to single technology units applicable only at the microscale (such as a single type of new sensor), but focus on integrated solutions that are applicable and effective at the meso- or macroscale of waterbodies (e.g. system control and regulation based on a network of improved sensors combined with new data evaluation and process control).

The actual implementation and demonstration of the innovations will be organised in Work Area 3 (WA3). Some solutions are going to be tested at more than one site, in order to demonstrate their transferability potential.

The effectiveness of the solutions for urban water management will be rated by applying the evaluation framework developed in WA 1 as well as by new tools that were developed on the basis of this framework (e.g. the ESS module).

The main outcomes of DESSIN will be validated solutions and evaluation tools for their impact on the value of Ecosystem Services. The dissemination and exploitation of these results towards the scientific and commercial sector are the main tasks within Work Area 4 (WA 4 – Market).

The dissemination activities planned in this project will aim at the information and education of stakeholders, and at the diffusion the project results within the relevant communities. Important vehicles for dissemination will be the creation of a project toolbox and on the development of the demo sites as showcases.

Exploitation activities will aim at the identification of exploitable results, and how the solutions applied in the demonstration sites could be practically implemented elsewhere to face similar water-related challenges. The evaluation framework developed within WA 1 will serve as an additional booster for exploitation, because the ESS methodology enables a monetary valuation of the impact of water management measures based on the new solutions, therefore providing direct economic arguments for their implementation and market uptake.

Business opportunities for the SME members of the project in particular, but also for other parties will be identified in project exploitation strategy. Those opportunities and individual exploitation plans will be further refined during the course of the project.

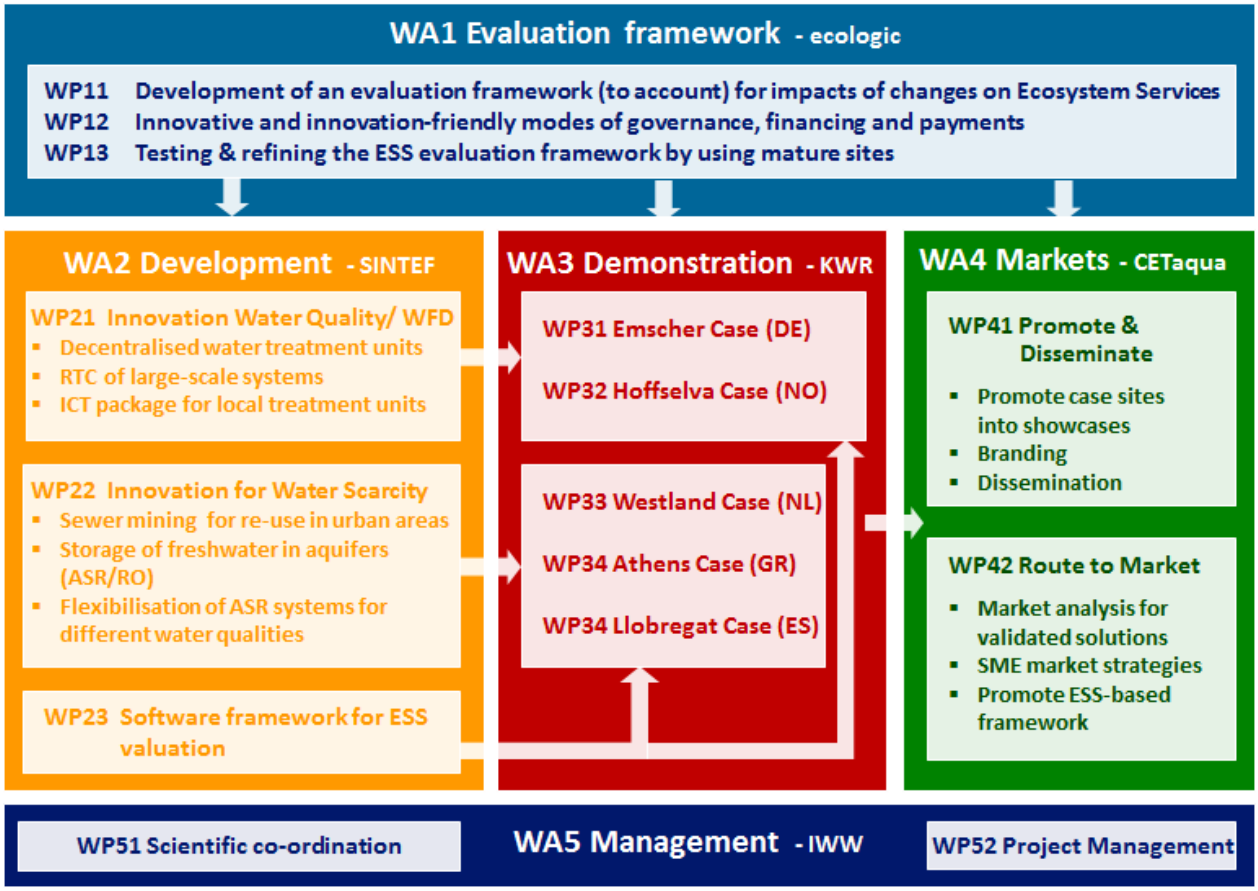


Figure 3 Work Flow and Work Area Structure of Project.

Significant risks and associated contingency plans

A significant risk arises when one of our partner organisations leaves the project for whatever reason. Such events will immediately be followed up by the Project Coordinator. The situation will be assessed and the Project Steering Board (PSB) and Commission' Services will be informed and consulted. Through the Project Coordinator, the PSB will make a proposal to the EC on how to proceed. Options are looking for another partner or reallocating the work among the partners of the consortium. If the preferred option is to include a new partner to the consortium, there is a strong link to stakeholder organisations and networks with a large number of potential new partners covering the whole range of expertise needed within DESSIN.

Examples for such organisations and networks with strong links to the consortium are: (i) the WssTP platform, (ii) the Aqua Research Collaboration ARC, (iii) the EIP on Water where DESSIN is also going to either collaborate with the approved Action Group ESE – Ecosystem Services for Europe or to return to its pending application as a separate Action Group on Ecosystem Services and (iv) the European Benchmarking Committee. By exploiting these links and contacts, it will be possible to compensate quickly for a loss due to a partner leaving the consortium for whatever reason. In any case, if necessity arises to include a new partner to the consortium, a tender procedure will have to be agreed with EC.

An external factor that might affect the success of DESSIN is the financial and economical global crisis regarding the involvement of the pilot and SME partners in DESSIN. If a partner is coming under economic pressure, they might try to reduce additional expenses on the short run also by stepping out of the DESSIN consortium. For two reasons we are very confident that we will be able to handle the situation without major drawbacks for the project:

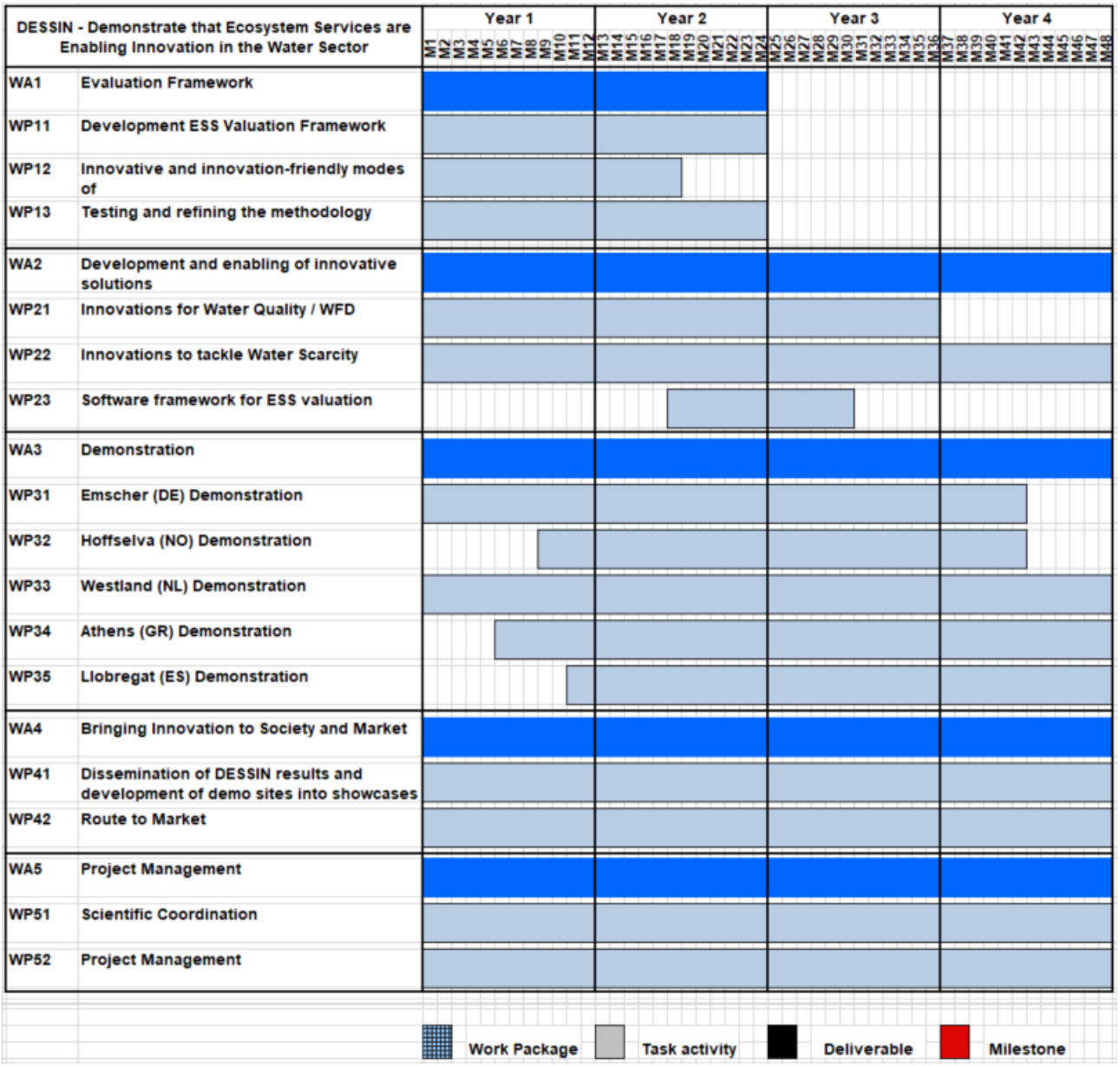
- First, the situation for the partners in DESSIN has remained manageable throughout 2012/2013 and is projected to at least stabilise in the following years, because the market and need for water services is only partly linked to economic turnover of the whole economy.
- Second, more case studies and SMEs than we have been able to take on board have shown interest in committing to DESSIN. Therefore, we will definitely be able to identify and include a substitute on short term if needed.

Technological risks such as e.g. clogging when installing lamella settlers or rapid filters in CSOs will be considered during the design of the demonstration units. Such risks will be handled by building in safe guards in the units, e.g. including an overflow outlet in the filter unit that will come into operation at a pre-defined head loss and safeguard against the effects of a clogged filter. Safe guarding measures can also be included in the operation/control of the treatment units using the RTC system. Typically operation/control safeguard measures and built in safe guards would work in tandem to provide redundancy. Although the example used above is for CSO treatment – one of the innovations to demonstrate solutions to improve water quality/WFD, the same principles for handling technological risks will apply for the innovations to demonstrate solutions to water scarcity.

1.3.2. Timing of work packages and their components

The Work Packages of DESSIN are clustered into Work Areas to facilitate cooperation and management. Each of the Work Areas is shortly introduced. Detailed graphic representation of the timing of Work Packages and their components has been included as Gantt charts. In the following, an aggregated overview of the timing of the work areas and their Work Packages is given.

Overall Gantt Chart of DESSIN



1.3.2.1. Work Area 1 – Evaluation Framework (Month 1-24)

Work Area Leader: Manuel Lago, ECOLOGIC, Germany

Objectives

The main objective of WA1 of DESSIN is to develop a tested evaluation framework to estimate the potential impact of innovative technologies according to the Ecosystem Services Approach (ESA). The proposed Ecosystem Services (ESS) Evaluation Framework will consist of an ESS Valuation Toolkit that will be complemented with a sustainability assessment module. A secondary objective of WA1 of DESSIN is the identification of modes of governance and financing mechanisms that act as incentives for the development and uptake of new technologies and solutions for the water sector.

Methodology

First, a literature review will identify the ESS evaluation methodologies available to date and, will use them (standardised and complemented with elements to assess the sustainability of measures) to build the DESSIN ESS Evaluation framework.

The first version of this ESS Evaluation Framework including the ESS Valuation Toolkit and the sustainability assessment module (WP11) will be tested by applying it on three so-called mature sites (WP13). These are sites from previous projects (e.g. PREPARED) where innovative solutions to tackle water quality or scarcity challenges have already been implemented, and where sufficient data of the situation before and after their implementation is available to enable an evaluation of the impact on Ecosystem Services.

This will serve as an exercise to refine and validate the framework, which will then become the basis for the development of an ESS module in WP23, which can be coupled with existing Decision Support Systems (DSS). Using this ESS module, the Evaluation Framework will be applied on the actual DESSIN demo sites and thus verified (WA3) before finally becoming a fully functional evaluation framework to provide quantitative figures of the expected impacts of innovative solutions in terms of changes in ESS. The findings from these first practical applications of the framework will in turn play a role in the exploitation strategy of the technologies under evaluation (WA4).

In a parallel process, different modes of governance and financing mechanisms will be assessed in the mature case study areas (WP12), providing recommendations that can be applied in the demo sites (WA3).

For the secondary objective, the governance regimes and funding mechanisms present in the mature sites during the development of innovative solutions will be analysed in WP12 and a manual with concrete guidance for practitioners and policymakers will be elaborated.

Work Area 1 consists of three Work Packages:

- WP11 Development of an evaluation framework (to account) for impacts of changes on Ecosystem Services
- WP12 Innovative and innovation-friendly modes of governance, financing and payments
- WP13 Testing & refining the ESS evaluation framework by using mature sites

WP11 – Development of an evaluation framework (to account) for impacts of changes on Ecosystem Services

WP11 is focused on the implementation of existing or proposed new methodologies to evaluate changes in the value of ESS provision in monetary and non-monetary terms in the context of innovations in the water sector. This includes accounting for impacts from changes in ESS and the integration of economic/social values and benefits of ecosystem services and their changes into the evaluation framework (this relationship between changes in ecosystem and human well-being will be investigated as proposed by the Millennium Ecosystem Assessment, for example).

Key research and development questions in WP11 are the following:

- How can specific ESS of water bodies be identified, described and characterised for a certain region?
- How can changes in the provision of ESS be valued in terms of their (monetary) benefit for the region, in quantitative measures and in monetary terms for tangible and intangible ESS?

WP 12 – Innovative and innovation-friendly modes of governance, financing and payment

As noted in the EIP Water Strategic Implementation Plan, governance structures can play a significant role in promoting (or inhibiting) innovation in the water sector. In turn, new developments in technology and management schemes cast their influence by pushing the boundaries of the current governance structures, triggering their revision and adjustment.[16] A thorough understanding of these relations and their links to environmental, economic and societal change can be of key importance for regions and countries to gain and/or maintain competitive advantage over others. In order to reach the EU objective of increased competitiveness, adequate modes of governance, financing and payment must be put in place to incentivise and foster innovation in the water sector.

In particular SMEs face limited access to the funds and financing modes that would allow them to bear the risk of developing the novel technologies and solutions for new markets. In that sense the research questions for WP12 are as follows:

- Which are the governance and policy modes that best promote innovation in the water sector by facilitating the uptake of novel approaches?
- Which financing modes have proven to be successful in enabling the pursuit of new market opportunities through the design of novel solutions for the water sector?
- How effective are these governance, policy and financing modes in enabling and fostering innovation in the water sector?

In addition to the analysis of the dimensions listed above, DESSIN will assess the innovative and innovation-friendly elements of governance settings in the demo- sites by developing a framework for evaluation based on lessons-learned from past and running FP7-projects under the environment theme on governance (e.g., EUWARENESS, TRUST, SWITCH, PREPARED). It is from this pool of case studies and demonstration sites that we will analyse and identify modes of governance which are fostering and enabling innovation.

WP13 –Testing & refining the ESS evaluation framework by using mature sites

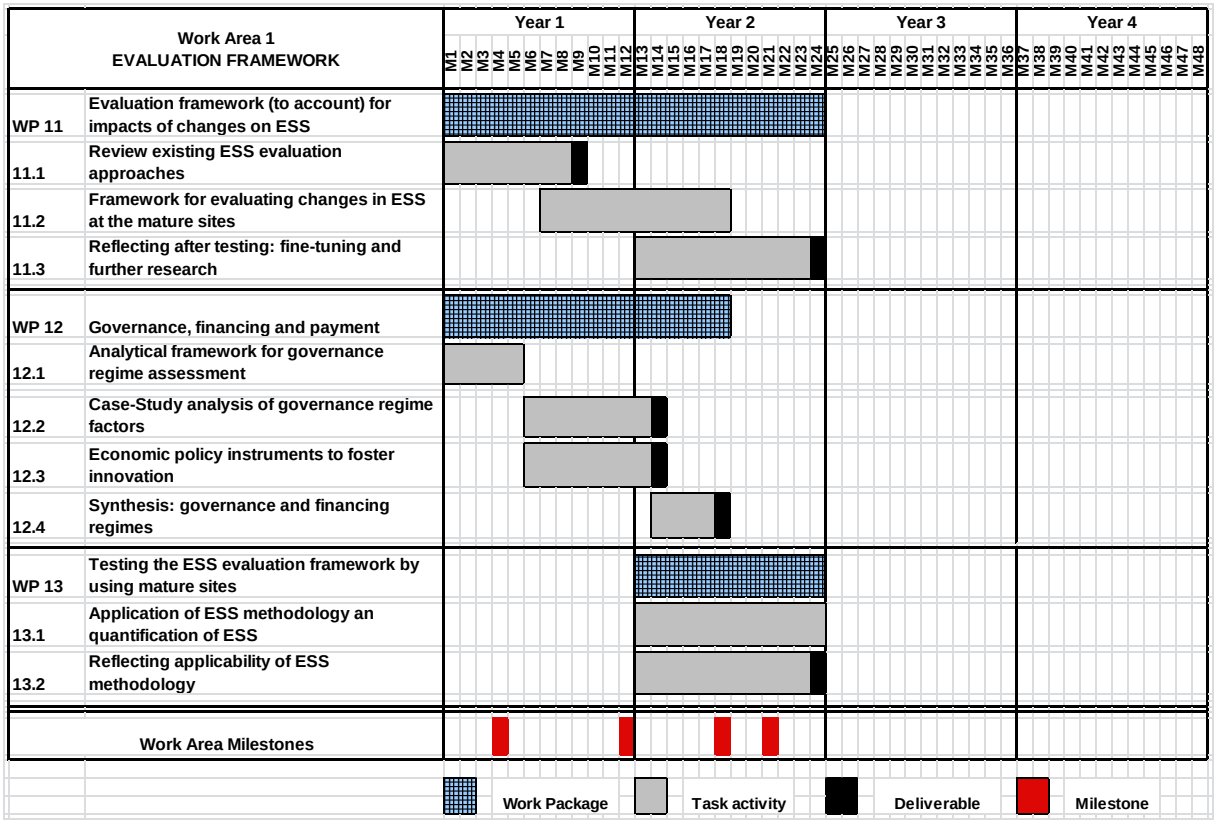
WP13 will calculate the impact of changes in ESS provided by the mature sites network before and after restoration (and will quantify and valuate these changes). This could of course be linked to the investigation of future scenarios, of which the application of new technologies could be a part of. Mature sites in WP13 cover a wide range of restoration programmes in an attempt to widely test and refine the proposed ESS benefits methodology. This is the main difference to the demo sites in WA3 where the ESS methodology will be applied with a focus on the added value of selected technologies. The objectives of WP13 are: i) testing and refining the method for ESS evaluation developed in WP11 by using mature sites; ii) quantification and valuation of changes in ESS for the historic sites (changes from baseline to present status) and iii) quantification and valuation of ESS for the entire case study areas for different future scenarios. The selected matures case studies have been selected according to the availability of data through other initiatives and the wide range of ecosystem services which are currently being targeted through restoration practices (see Table 2).

[16] European Innovation Partnership Water (2012) Strategic Implementation Plan. Brussels, 18 December 2012, p.15.

Table 2 Relevant ESS identified in the mature sites to refine the valuation methodology

Service Type		WP13 Case Studies		
		Aarhus (DK)	Emscher (DE)	Ebro (ES)
Provisioning	Food			
	Genetic resources		X	
	Ornamental resources			
	Raw materials			
	Transport and navigation			
	Human habitat	X	X	
	Fresh water	X	X	X
	Medicinal resources			
	Water	X	X	X
Regulation	Air quality regulation		X	
	Soil formation and conservation			X
	Moderation of extreme events	X	X	X
	Erosion control			X
	Bioindicator	?	X	
	Climate regulation	X	X	X
	Pest regulation			X
	Water purification and waste treatment, pollution control	X	X	X
	Biocontrol			
	Pollination			
	Regulation of waterflows/hydrological regimes	X	X	X
Cultural	Aesthetic value	X	X	
	Spiritual & religious value			
	Cultural heritage and identity	X	X	
	Information for cognitive development		X	
	Recreation & tourism/ Ecotourism, Wilderness	X	X	X
	Cultural heritage, sense of place, inspiration value	X		X
	Educational values	X	X	
Habitat	Biodiversity and nursery	X	X	X
	Gene pool and endangered species protection		X	
	Nutrient cycling	X	X	X

Gantt chart of WA1



1.3.2.2. Work Area 2 – Development and Enabling of Innovative Solutions (Month 1-48)

Work Area Leader: Rita Ugarelli, SINTEF, Norway

Objective

WA2 aims at developing and enabling innovative solutions to improve water quality in receiving waters and to handle water scarcity across the demonstration sites in DESSIN.

The effect of these solutions on the ESS at the different demonstration sites will be evaluated in WA3 with the standard methodology developed in WA1. Development of the tool required for implementation of the methodology in an efficient and user-friendly decision support system environment will be done in WA2.

Methodology

The objective will be reached by developing site specific solutions of the main technologies in DESSIN, and allowing evaluation of these by development of an interoperable standard ESS module for DSS.

The WA is structured based on the challenges addressed, innovation for water quality / WFD implementation and for water scarcity tackling plus the work package devoted to the development of a standard ESS module for DSS:
WP 21 Innovations for Water Quality / WFD implementation
WP 22 Innovations to tackle water scarcity
WP 23 Software framework for ESS valuation

Work Package 21

There are a number of objectives in respect of which the quality of water is protected. The key ones at European level are general protection of the aquatic ecology, specific protection of unique and valuable habitats, protection of drinking water resources, and protection of bathing water. All these objectives must be integrated for each river basin. WP21 contributes to these objectives, by developing technological solutions combined with ICT to be implemented by the demo site owners to improve quality standards in receiving water bodies. The impact of the proposed solutions to the demo sites will be evaluated in WA3 not only in terms of technical efficiency, but also in terms of level of sustainability and increase of the ESS value by applying the ESS module developed in WP23.

Combined sewer systems are widely used in Europe. During storms, the combined sewage flow may exceed the design flow of the waste water treatment plant by far. This flow will fill the CSO holding tanks and be stored there temporarily. In addition, overflowing water is mechanically pre-treated by sedimentation in some types of CSO holding tanks. Some standard design rules exist, e.g. in Germany DWA-A 128 (1992), DWA-A 166 (2013). However, data on the efficiency of such sedimentation structures are scarce. Also, in sewer systems with lower capacity, the CSO structures are not always designed with a holding tank for temporarily storage of water. In such systems, overflow will occur at a given design load and there will be no treatment effect of sedimentation in a CSO holding tank and therefore no reduction of the pollutant load on the receiving water body.

Measures to reduce the overflow volumes or improve the water quality in discharges from CSOs are two complementary approaches the utilities can implement, and paramount for solving the water quality challenges in receiving waters and increasing the value of the ecosystem services. The innovative solution proposed in DESSIN combines technologies acting at local and system level.

The solutions for local treatment of CSO overflows are a new system with modular cross-flow lamella settling units for application in CSO holding tanks, and a high rate filtration system, which does not require a holding tank, for implementation on the overflow pipe from a CSO. Cross-current lamella settlers allow the flow to pass the inclined lamella plates horizontally while the sludge may slide down in a perpendicular direction, to

avoid any re-mixing of sludge into the inflow. The high rate filtration system has a specially designed filter media that has an optimal shape to capture debris, organic material and particles.

Real time control of large-scale systems can be used to reduce overflowing of CSOs by controlling the hydraulic load in different parts of the system. This requires a hydraulic model of the system and optimised performance of the available control hardware in the system, *e.g.* actuator as valves, gates and volumes. The development can be based on existing manuals and mathematical models. However, there is a lack of algorithms and programming systems. The solution in DESSIN is to fill this gap with the ADESBA-control box, which is an innovative fully automated real time control system to minimize combined sewer overflow.

Work Package 22

The water scarcity challenge can be tackled with innovative solutions both on the clean water and waste water side of the water cycle. Present water treatment systems are very robust, but, as a result, do not have the flexibility to deal with changes in climate, demography, water demand etc. Therefore, wastewater reuse is highly dependent on the development and implementation of new distributed concepts based on *e.g.* modular systems that provide the flexibility to quickly react to quality requirements on the demand side. The solutions here proposed include distributed reuse technologies (both modular and mobile) with focus on sewer mining technologies (T22.1) and Aquifer Storage and Recovery (ASR) systems to be demonstrated, with further adaptation to different water-quality injection sources, as potential sources for drinking water (T22.3), agricultural or industrial water (T22.2).

T22.1 (demonstrated in Athens, within WP34) will bring together two emerging technologies: Membrane-based, small footprint, sewer mining technologies and distributed low energy sensor networks coupled with distributed ICT intelligence (e.g. Advanced Metering and Monitoring Infrastructure, AMIs). These technologies are (relatively) mature individually (although both still face significant challenges – see Section 1.2) but have never been combined before. Within this task, we propose and test specific, fully automated packaged treatment trains suitable for arid and semi-arid regions combining advanced membrane types and technologies as well as processes and additives to optimize performance at minimum cost (indicative criteria: capital and operating cost, energy consumption, ease of remote/distributed operation, treated wastewater quality and waste byproducts minimization). The deployment of these distributed treatment solutions allows the direct mining of sewage from the network, close to the point-of-use with minimum infrastructure required and low transportation costs for the treated effluent. This distributed treatment potential however presents a new challenge for remotely controlling and operating such distributed infrastructure (against stringent performance criteria, incl. health and water quality standards). DESSIN addresses this through integrating the treatment solution with advanced ICT applications, that are themselves innovative in terms of (a) data fusion (b) data communication (c) interoperability and (d) mobile solutions.

Low quality surface water, treated waste water and industrial effluents are also considered potential sources for drinking water (T22.3), agricultural or industrial water (T22.2). The subsurface is considered a perfect storage medium for water to tackle problems with seasonal scarcity. One of the most worldwide extended techniques of Managed Aquifer Recharge (MAR) is Aquifer Storage and Recovery (ASR) due to the minimum land surface needed. Conventional ASR systems work in a very restricted way, injecting pure water to the aquifer that can also be salinised during the recovery process. T22.2 aims at increasing the potential for freshwater storage, in particular in near coastal areas where saline groundwater prevents application of available technologies for temporary storage, by developing an innovative well design and operation in combination with desalinisation. T22.3 aims at increasing the flexibility of storage in strategic groundwater reservoirs by using different types of water qualities from the drinking water treatment chain, without compromising WFD compliance.

These technologies will provide solutions to the water scarcity challenge and will improve the ecosystem services related in the water basins, by improving the quality of ecosystems related (T22.1, T22.2) and by

reducing energy consumption and reagents needs (T22.3). Moreover, all of the technologies will allow the increase of water resources in water scarcity areas, allowing a more balanced equilibrium in ecosystem needs.

Work Package 23

The outcome of WA1 (task 113) will be a standardised, broadly applicable ESS methodology that can be applied to valuate ecosystem services (ESS) of water bodies. The aim of WP23 is to make this methodology available in a software system that can be configured and applied to different sites and eco-systems to assist the user in valuating different ESS strategies.

The software module for ESS evaluation will be applied in all the different demo sites of WA3.

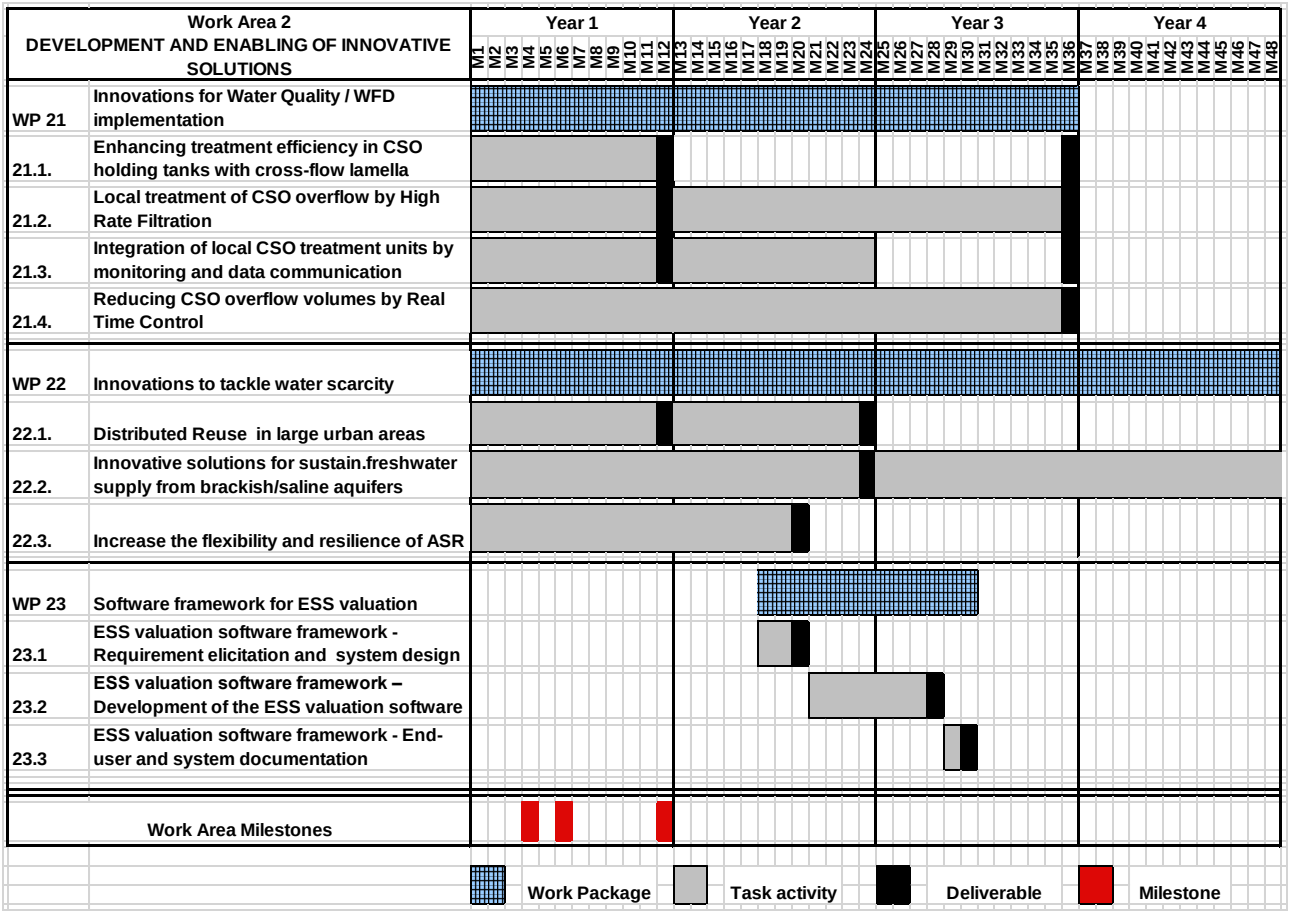
Realising that different sites and ecosystems can have very different characteristics, the system needs to be highly flexible such that it can be configured in different contexts. This implies that the developed software system cannot be a closed system with a limited number of options available, but rather an open-ended framework that can be customised and extended with new algorithms and options when the need arises. Hence, it shall be more a framework for working with ESS valuation, and less like a traditional decision support system which typically addresses specific systems with well-defined properties.

DHI´s MIKE CUSTOMISED Platform (MC) will be used as the foundation for the system. MC in itself does not target a specific type of application, but consists of a number of standard functional components ("building blocks") that can be combined, configured and exposed to the end-user in a way that is relevant for a given project. This means that new software systems can be constructed by combining existing, well-proven components.

MC already contains a number of components that are relevant for ESS valuation. This includes functionality for time series handling, GIS, model execution and scenario handling, calculation of environmental indicators, scripting and multi-criteria and cost-benefit analysis. In WP23 these components will be extended as needed, and new components relevant to ESS valuation will be developed. The new software framework will be developed by combining these components in a user interface that specifically targets ESS valuation.

MC is based upon open and well documented standards allowing external (non-DHI) user to enrich the system by adding their own plug-ins. The "ESS module" for MIKE-Customised platform will remain at pre-commercial stage during the project lifetime. It can be used by the WA3 partners for free during the project.

Gantt chart of WA 2



1.3.2.3. Work Area 3 – Demonstration (Month 1-48)

Work Area Leader: KWR, The Netherlands

Objective

The objective of Work Area 3 is to demonstrate at five representative sites across Europe the potential of a range of innovative solutions

- to tackle two major water challenges (water quality and water scarcity) and
- to increase the value of ecosystem services of the water bodies

This demonstration activity is the very heart of the DESSIN project and will integrate the technology solutions developed in WP21 and WP22 as well as the Ecosystem valuation approach from WA1.The five full scale demonstrations including their main objectives are listed in the table below.

Table 3 The five demonstration sites of DESSIN and the objectives of the demonstrations

Demonstration	Objective
WP31 Emscher (DE)	Improved water quality in strongly urbanised areas by implementing novel and cost efficient treatment solutions for existing CSO facilities that increased value of the ESS and serve as example in the reconversion process of the whole Emscher system.
WP32 Hoffselva (NO)	Improved water quality in peri-urban areas using innovative decentralised CSO treatment solutions that enable cost efficient, sustainable mitigation of an overloaded sewer system and increased value of the ESS.
WP33 Westland (NL)	Enhanced fresh water availability in brackish coastal zone through novel ASR systems.
WP34 Athens (GR)	Enhanced urban water availability through decentralised sewer mining solutions
WP35 Llobregat (ES)	Increased fresh water availability in Mediterranean coastal region using flexible ASR systems.

The DESSIN demonstrations contribute to ecosystem services related to water quality/WFD (the Emscher and Hoffselve demonstrations) and water scarcity (Westland, Athens and Llobregat demonstrations). Below, a short introduction to the demonstration sites is given.

WP31 Emscher demo site

Over a century ago, the sparsely populated Emscher region with a landscape of water meadows was transformed into an industrial conurbation, and the untamed Emscher turned into a man-made system of open waste waterways. With the decline in the mining industry, a further structural change began, with traditional heavy industry giving way to the services and high-tech industries. These developments are also reflected in a changing Emscher. In future, wastewater will be completely channelled through closed conduits and the river and its tributaries will be re-converted into natural waterways. For this purpose a total length of about 400 km of sewers and 290 CSO structures with a total volume of 485.000 m³ are to be built until 2017. Currently, 136 CSO structures have been built and a total length of about 100 km out of 350 km of water courses of the Emscher and its tributaries in an area of 865 km² have been ecologically revitalised. The remaining 250 km will be revitalised until 2020 to complete the Emscher reconversion project. Most of the rivers in the Emscher system are heavily modified water bodies according to WFD. Within the demonstration at the Emscher demo site, the problem of CSO treatment in highly urbanized areas with limited available space will be addressed. Focusing on the overall water quality, two innovative approaches will be implemented and tested. One approach will address the improvement of treatment efficiencies of existing CSO tanks. The other one will

optimize the use of existing storage volume with the focus on receiving water quality. Both technologies will be evaluated using the developed ESS approaches.

WP32 Hoffselva demo site

The demonstrations at the Hoffselva demo site are innovative solutions enabling local treatment of CSO overflows with the aim to improve the water quality and ecosystem services in this peri-urban catchment with 25 000 population covering an area of 1427 ha in the western part of Oslo. The sewer network consists of a separate system in the upper part and a mainly combined system in the middle and lower parts. The water quality in Hoffselva is poor due to pollution from 22 CSOs discharging into the river during rain events. The utility owning and operating the sewer system, VAV, has measured high numbers of bacteria, and elevated concentrations of nitrogen and phosphorus in the middle and lower part of the river flowing through the area with a combined system. An analysis of the sewer system has shown that many of the pipes in the area have capacity problems during rain and also that the CSOs discharge far too often.

WP33 Westland demo site

A challenge for the horticulture sector in the coastal Westland region in the Netherlands is a shortage of fresh water in dry seasons. Storing abundant fresh water in the underground during wet periods could provide a solution. However, the aquifer in the subsurface is brackish and recovery efficiencies are generally low. Recent innovations in well design and operation and in monitoring and real time control have tackled this problem. This was demonstrated in a pilot installation which was recently completed.

Freshwater supply from brackish aquifers is nationally recognized as a potentially important water management tool to fulfill the demand of freshwater. DESSIN will demonstrate the potential to further improve the efficiency of freshwater supply from brackish aquifers by combining aquifer storage and recovery (ASR) and desalinization with an innovative well design. Currently, the demonstration site already enables the flexibility to scavenge deeper upcoming brackish water (using the Freshkeeper) and to feed a reverse osmosis (RO) treatment system.

Supply of freshwater from brackish aquifers is a promising ecosystem service that may be upscaled and applied in other agricultural (horticulture) areas or for assuring drinking water production in coastal aquifers. Important aspect of the application of the hybrid ASR/RO systems in coastal aquifers is the impact on the regional groundwater quality and WFD goals.

WP34 Athens demo site

The city of Athens has suffered rapid (uncontrolled) urbanization resulting in few urban green spaces which coupled with a series of peri-urban forest fires in the last decade have resulted in a severe degradation of its environment and the quality of life of its inhabitants. The public good approach to quality of life, offered by urban and peri-urban green spaces is all the more important due to a more general quality of life degradation which is the result of an ongoing financial crisis. What is seen as priority is the deployment of innovative management options and technologies for reuse needed to irrigate (primarily) green urban areas, embedded within an ongoing 37M euro project for wastewater reuse. The demonstration will look into sewer mining for distributed reuse within the urban environment, exploiting state-of-art ICT solutions for distributed monitoring and management (developed and integrated in T22.1). The demo will also examine a major component of ESS provided of particular importance to arid climates: the mitigation of heat island effects due to irrigation of urban green. The demo presents a unique opportunity for (a) drastically increasing reuse within the highly constrained urban environment (b) improving urban quality of life through improved ecosystem services and (c) creating a new market for SMEs that can provide this service to, for example, local municipalities, while using the existing centralised sewerage network of the water company as a source for their resource (raw sewage). This is expected to create a win-win scenario for water companies since they will be able to sell untreated sewage, while also minimising the load to their centralised treatment facilities.

WP35 Llobregat demo site

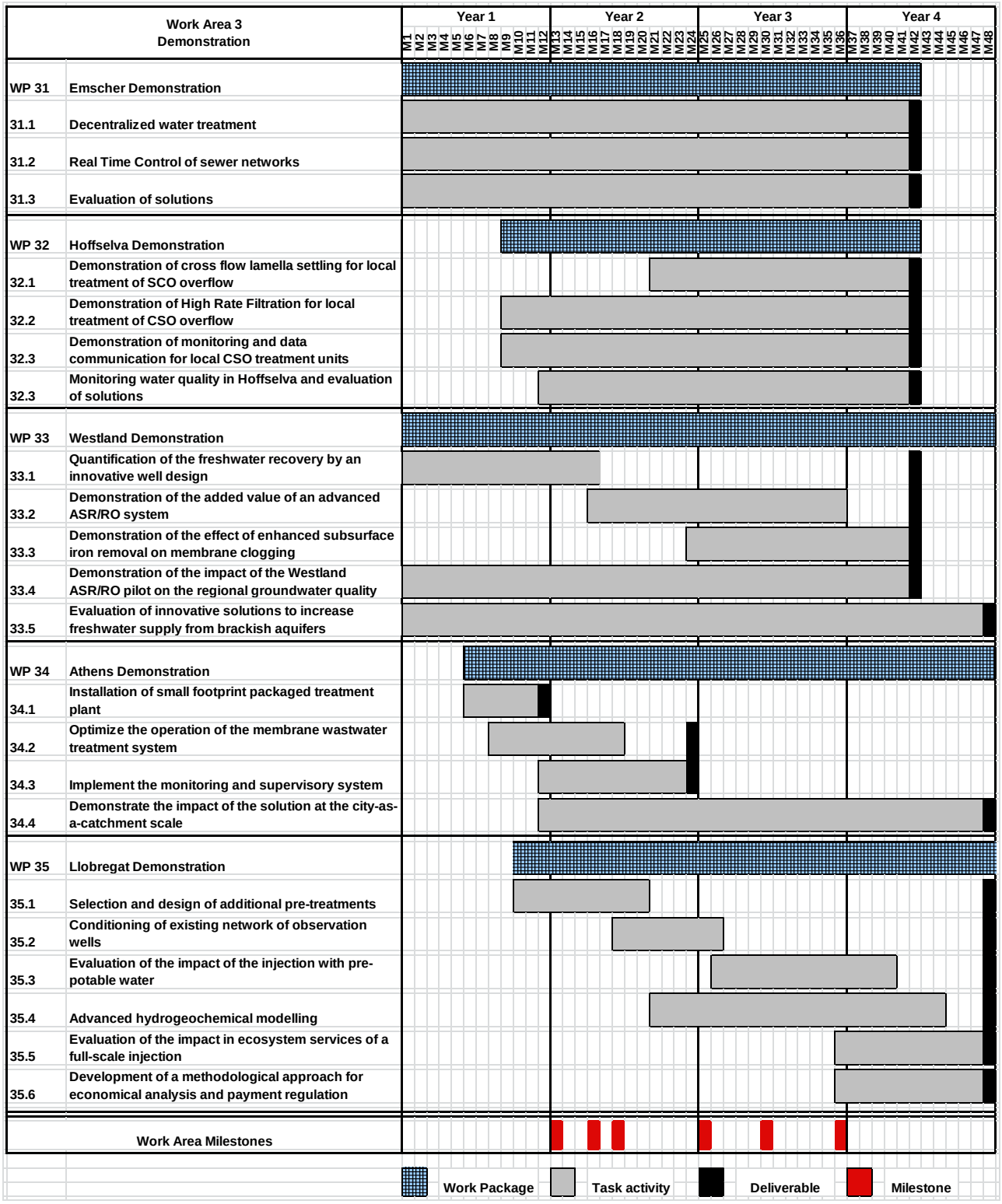
Barcelona Metropolitan Area (BMA) as other Mediterranean regions is facing recurrently and increasingly severe water scarcity periods. On 2008 Barcelona BMA suffered from the last chapter of drought, which was used as an example to illustrate the problem with water scarcity and drought in the EU by the European Environmental Agency (EEA). To face with this, operators, politicians and scientific community joined efforts to push Managed Aquifer Recharge (MAR) complementary solutions in the Llobregat Aquifer, as the hydraulic barrier against sea water intrusion, the continuous operation of infiltration ponds in Sant Vicenç dels Horts and a best regulation of groundwater abstraction (Hernandez et al., 2011).

Aigües de Barcelona, Empresa Metropolitana de Gestió del Cicle Integral de l'Aigua, S.A (AB) is the main water operator in the BMA, supplying more than 3 million inhabitants, with an average density of 5.093 hab/km². They pushed for the Aquifer Storage and Recovery (ASR) in the middles 60s, to guarantee groundwater availably (currently, 10% of water supply comes from the Llobregat Aquifer in the BMA). ASR facilities are located nearly the Drinking Water Treatment Plant (DWTP) of Sant Joan Despí. 12 reversible wells (equipped with injection and recovery systems) are able to inject 75,000 m^3 of freshwater per day, coming from the surplus of the DWTP potable water.

After almost 40 years under operation, currently ASR facilities are operated below their capacity because of the adjustment of DWTP operation to satisfy supply needs (less surplus of potable water).

The solution proposed to be tested in the Llobregat demo site is to make flexible ASR systems to deal with different quality injection waters with the aim of improving aquifer water quantity and quality. In will consist in the change of traditional way of operation based in a conservative and restrictive view of injecting produced drinking water (high-costly and energy and chemical reagents demanding). Moreover, the injection of alternative water coming from different steps of the treatment train, will allow operators inject major quantities of water by improving both economic and environmental costs of the process.

Gantt Chart of WA 3



1.3.2.4. Work Area 4 – Bringing Innovation to Society and Market (M1-48)

Work Area Leader: Marta Hernandez, CETaqua, Spain

Objective

A high profile, a catalysing impact and an enduring legacy are the hallmarks of a successful Framework project. We intend that the knowledge, technologies and innovative solutions generated through DESSIN shall be available to a wide range of professionals, and are going to be applied in the water sector. DESSIN will work according to the Strategic Implementation Plan of the European Innovation Partnership on water (EIP, 2012)[17] in the sense that DESSIN is tackling the global water challenges while seizing the market opportunities that innovative solutions can offer.

DESSIN will contribute to maintain the leadership of Europe in the global water sector, by facilitating market uptake of the innovative solutions taking into account the three major themes where DESSIN delivers demonstrated and validated solutions: ESS Assessment, solutions for Water Scarcity and ensuring and preparing water bodies to comply with water quality requirements of the WFD. To this aim, DESSIN will work in the design and provision of the most appropriate vehicles for the dissemination and exploitation of project results.

Related to ESS, the evaluation framework developed within WA1 will serve as an additional booster for exploitation, because the ESS methodology enables a monetary valuation of the impact of water management measures based on the new solutions, therefore providing direct economic arguments for their implementation and market uptake.

In order to ensure a widespread uptake of project results and a route to market of the validated solutions, there is a need to translate scientific understanding and knowledge into convincing messages adequate for the target groups, and to effectively disseminate experiences from successful test applications, showcases or reference implementations to candidate users. This is a crucial step towards any successful technology transfer and creation of market opportunities for innovative tools and solutions developed within DESSIN. To meet this challenge two main objectives are pursued:

- *To widely communicate, disseminate and exploit DESSIN* achievements, results and innovative solutions towards the scientific, commercial sector and society. A significant element of the DESSIN dissemination approach is the ambition to help different stakeholders become aware of the technical and economic potential of the DESSIN products.
- *To prepare the Route to Market for DESSIN innovative solutions* to ensure its future usability. This objective is specially focused in SMEs and technology developers participating in the project to improve the competitiveness and the European leadership in the water sector. To this end, specific methodologies will be applied to three types of DESSIN innovation: (i) development of innovative technology; (ii) innovative solutions using a combination of existing technologies or applying them for an innovative use and (iii) providing innovative services linked to water ESS assessment.

[17] European Innovation Partnership on Water. Strategic Implementation Plan. Brussels 18 December 2012.

Methodology

DESSIN will actively collaborate with existing actions and initiatives at European, national and regional level. At European level, ESS and flood and drought risk management have been identified as priority areas of work by the EIP Steering group (EIP, 2012). It is expected to have an active collaboration between DESSIN and the EIP Action Groups, in particular with Action Group ESE – Ecosystem Services for Europe (cf. Task T51.3). Depending on the modes of link-up between DESSIN and ESE, DESSIN may also return to its pending application as a separate, complementary EIP Action Group on Ecosystem Services. Either way DESSIN will ensure a maximum level of interaction also with the EIP groups working on the two other DESSIN core topics of Water Scarcity and Water Quality. At national and regional level, demo sites will play an important role, being transformed as showcases along the project to impact in water managers, operators and regulators.

The innovation supplied by the SMEs and partners participating will be adequately linked to demand side actions and financial instruments through outside – in methodologies to prepare European SMEs to take full advantage of market opportunities. To this purpose, the Advisory Board of DESSIN has integrated an entity such as ZENIT, heading the Environment Group of the Enterprise Europe Network[18], who specifically will collaborate in the evaluation and selection of the most appropriate methods to stimulate demand–side, screen and support further funding opportunities and facilitate the DESSIN results market uptake (confirmed by Letter of Support).

WA4 is oriented to guide the most effective ways to publish and disseminate results beyond the classical publication in the scientific literature, taking into account the deliverable objectives, target audiences and integration with other DESSIN activities. However, this does not imply that publication and dissemination activities are concentrated on WA4 – one important task of the editorial role will be to encourage and request contributions from all DESSIN partners. Besides, all partners will be involved to increase the potential impact and industrial exploitation of the results achieved. The Communication Strategy followed in WA4 is divided into:

- *Target Audience Analysis* – The target audiences and their specific information needs and requirements will be identified in order to develop the best dissemination channels to reach each target audiences in an appropriate way
- *Exploitation strategy* – An Exploitation Strategy is then going to be developed to ensure that DESSIN outcomes will impact the relevant target audience. It also identifies business opportunities for the SME members of the project and other parties. The exploitation strategy will be adapted and refined throughout the course of the project.

The route to market will aim at the identification of exploitable results and technological solutions, and how (after being validated in the demo sites) they could be practically implemented elsewhere to tackle similar water-related challenges. This will be done closely to the SME's and technology developers, taking advantage from DESSIN networking. Business opportunities for the SME members of the project in particular, but also for other parties will be identified in the project exploitation strategy.

WA4 has been structured into two different subsections: WP41, which is focused on dissemination and communication, and WP42, which aims to maximise the market reach and the impact of the water technologies, methodologies and services previously defined.

[18] http://een.ec.europa.eu/

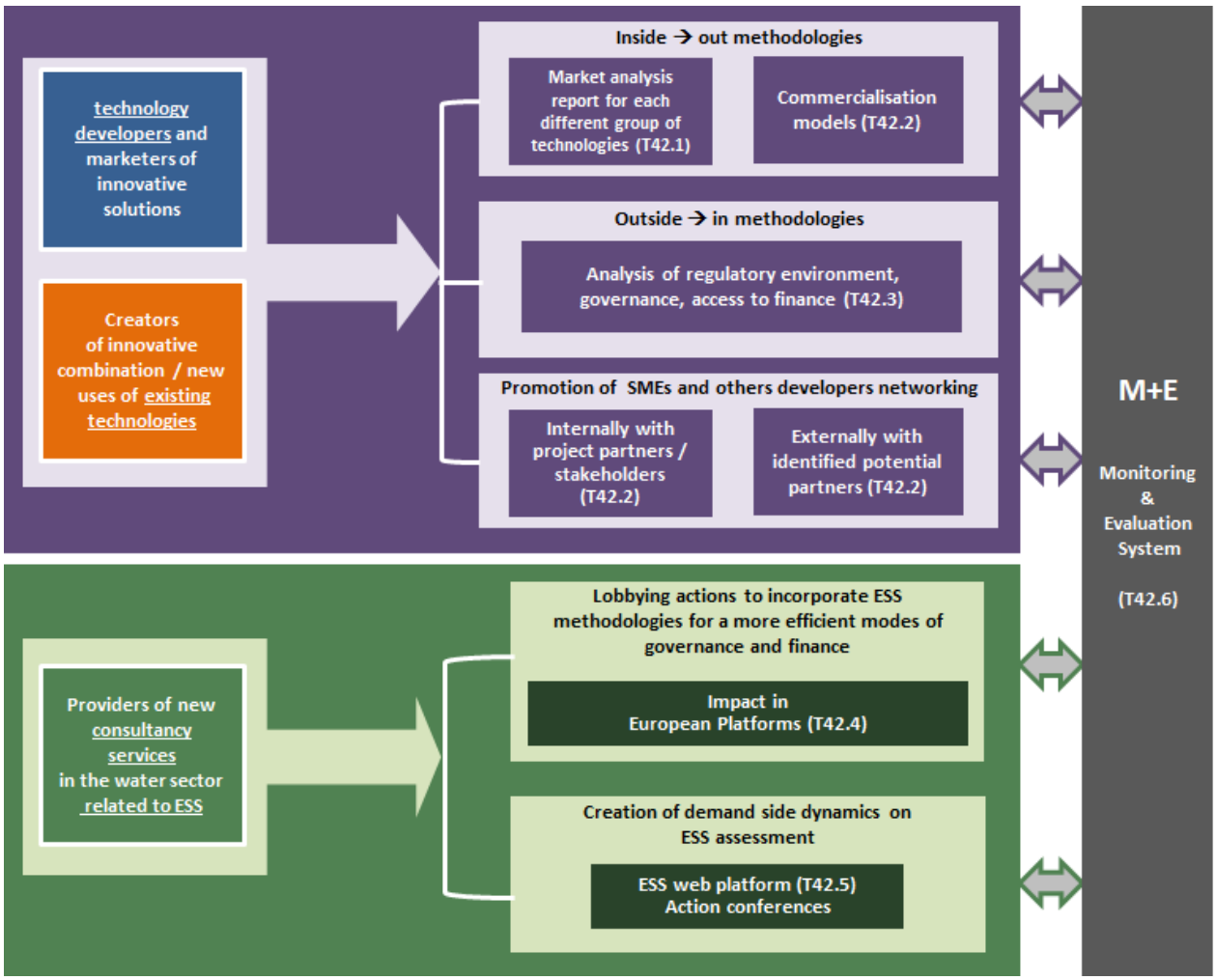
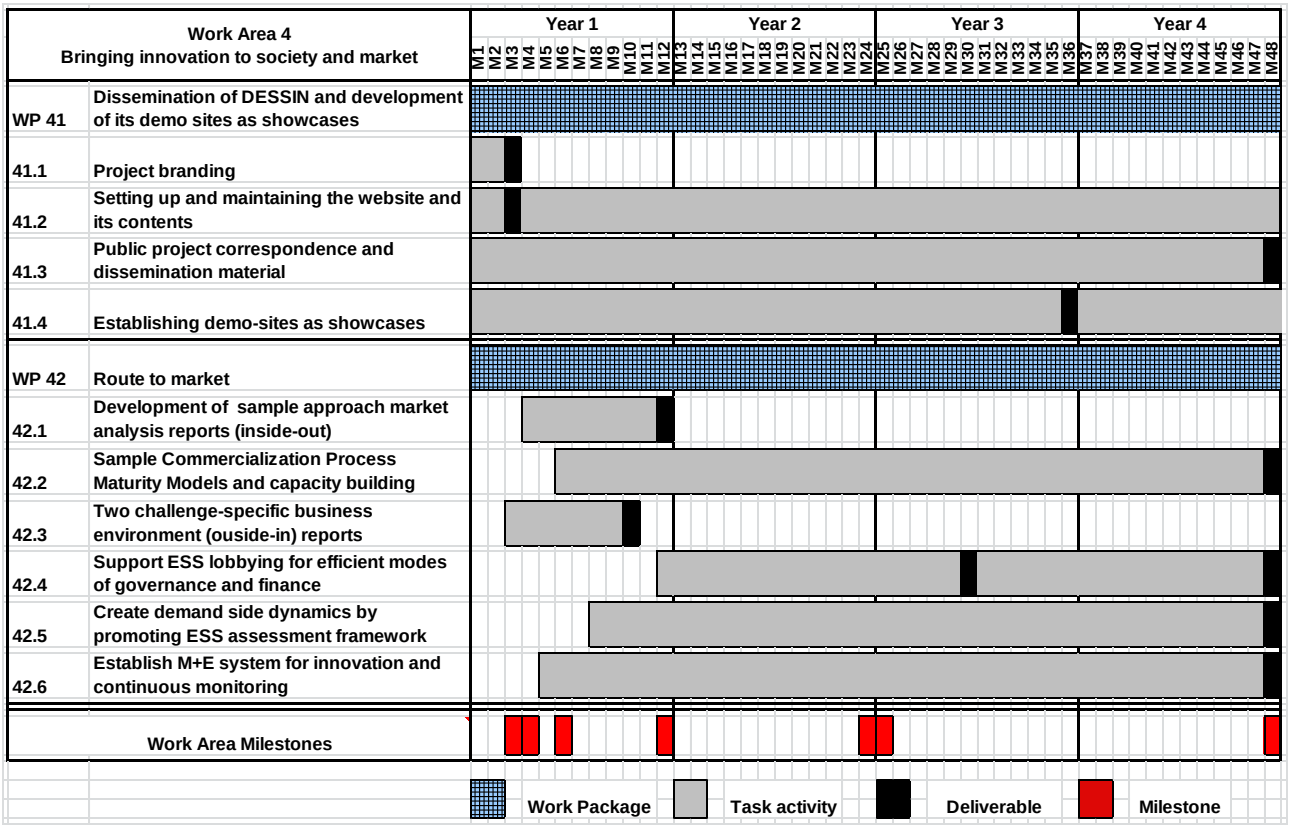


Figure 4 Key actions to drive DESSIN innovation to the market

Gantt Chart of WA 4



1.3.2.5. Work Area 5 – Project Management Month 1-48

Work Area Leader: David Schwesig, IWW, Germany

Objective

The objective of this Work Area is to co-ordinate and to manage the progress of the project, in order to ensure that the objectives will be met. This includes the coordination of activities among the Work Areas and Work Packages, facilitation of the internal communication, organisation of meetings, guidance of the decision-making processes, reporting to the European Commission, monitoring of progress, quality control of the project deliverables, and re-adjustment of the work if necessary.

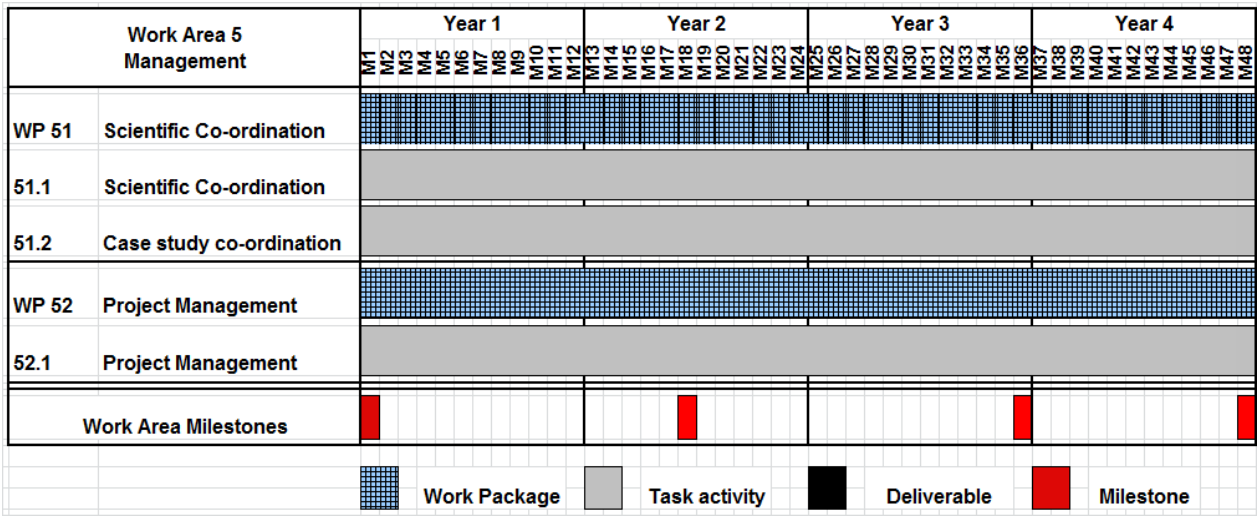
Methodology

The objective will be achieved by building a flexible and participatory management structure of the project. The organisation and decision-making structure of the project is designed accordingly and includes the Project Co-ordinator, the Project Management Team, the Project Steering Board, the Work Area and Work Package leaders and the Advisory Board. A detailed description of the management structure, the tasks, responsibilities and roles of the different bodies and their interlinkage is given in chapter 2.1.

In order to be fully compliant with the definitions of "scientific coordination" and "management activities" as laid down in the "Guide to financial issues relating to FP7 indirect actions", WA 5 is organised in two different Work Packages:

- Work Package 51 (RTD activity) covers the tasks related to "Scientific Coordination".
- Work Package 52 (MGT activity) covers the actual "Management Activities".

Gantt chart



2. Implementation

2.1. Management structure and procedures

DESSIN has a simple and efficient management structure with clearly defined roles and responsibilities, a transparent decision making process, clear reporting lines and strong progress monitoring. DESSIN has the following internal management structures:

- Project Steering Board with representatives of all project partners.
- Project management with the Project Coordinator and the Project Management Team.
- Work Area Management with 5 Work Areas.
- Work Package Management with 9 Work Package leaders for 14 Work Packages (some partners lead more than one Work Package).

The tasks, responsibilities and roles of these bodies as well as their interlinkage with external structures such as the European Commission, the Project Advisory Committee and the Local Stakeholder Groups are illustrated in

Figure 5 and are also outlined in more detail in the following sub-chapters.

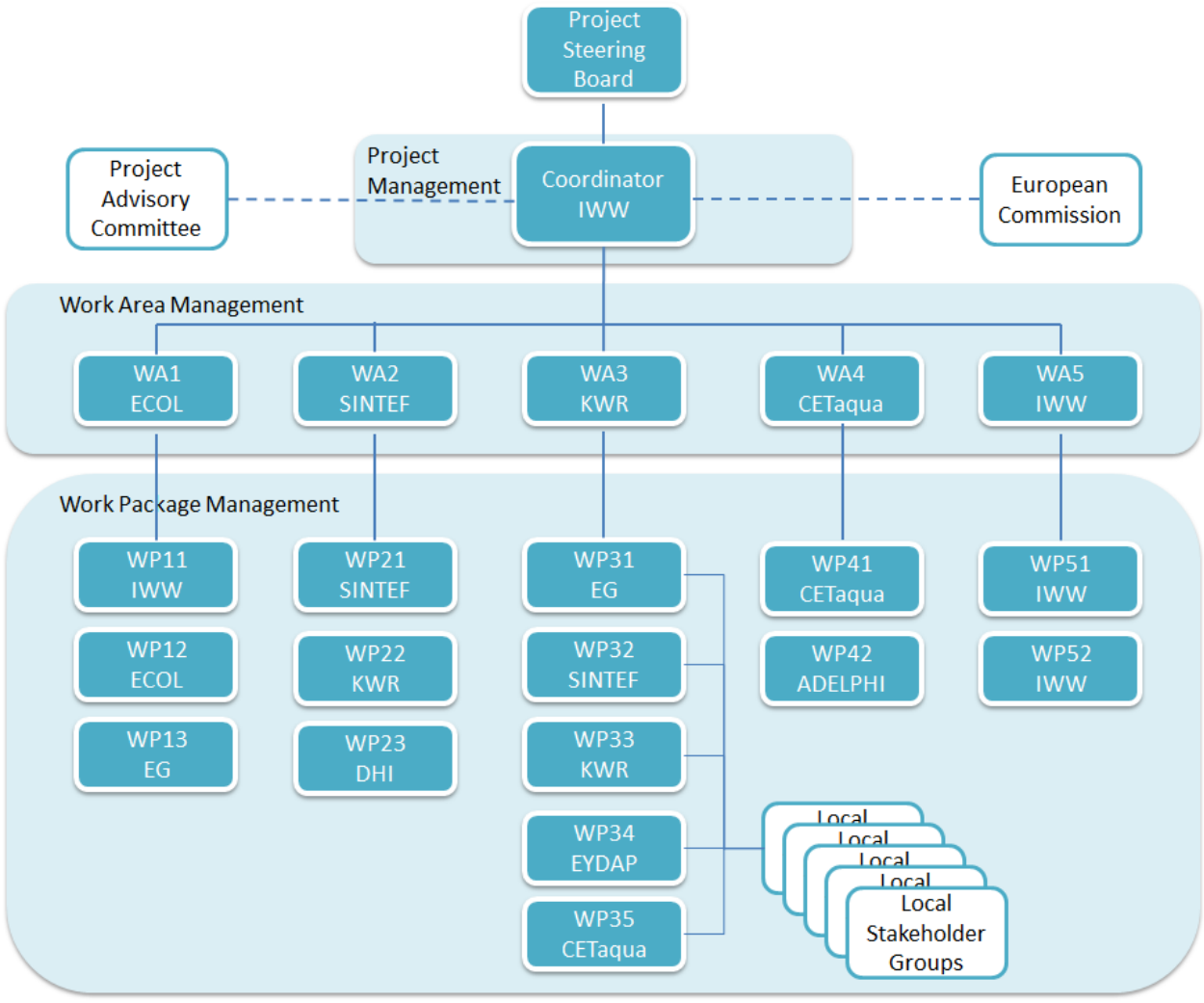


Figure 5 Project Management Structure of DESSIN

Table 4 Management bodies of DESSIN

Management body	Short name	Participants	Responsibility	Reports to
Project steering board	PSB	One representative from each partner	Major decisions regarding the work plan and contract issues	PMT
Project management team	PMT	Coordinator, Scientific Deputy, Financial Controller	Management of the whole project. Technical coordination + administrative and financial management	EC, PSB, WAMT
Work Area Management Team	WAMT	One person for each WA	Scientific and Technical coordination within and across WAs	PMT
Work Package Management Team	WPM	One person for each WP	Scientific and Technical coordination within the WPs	WAMT

2.1.1. Project Steering Board

The Project Steering Board (PSB, chaired by the coordinator) is a representative body of all partner organisations in DESSIN, and is the ultimate decision-making and arbitration body. Each beneficiary will have one official representative with voting rights in the PSB. It discusses and makes decisions on issues related to the general progress of the project, e.g.:

- Project implementation and the evaluation of the project milestones and deliverables.
- Overall course of the project and any strategic changes if required (contingency plan).
- Review, if necessary, of the initial work plan and reallocation of resources and tasks.
- Publications, exploitation and dissemination of results.
- Administrative, legal, contractual and financial status and development of the project.
- Matters of Intellectual Property Right (IPR) that go beyond regulations laid down in the consortium agreement.
- Approval of the periodic and final reports before submission to the EC services.

The PSB meets once per reporting period, but any voting member of the PSB might to call for an additional PSB meeting in urgent cases such as:

- Significant deviation from the project planning as laid down and agreed in the DoW.
- Significant changes in the course of the project.
- Crisis management due to malfunctioning, inactivity or bankruptcy of a partner.
- Need for task or budget reallocation.
- Need to replace a project partner in case a partner decides to leave the consortium.
- Violation of the intellectual property right of a partner.

In case of malfunctioning of the Project Coordinator, the other PSB members can call for an additional PSB meeting, and inform the responsible project officer at the EC of these intentions. A draft agenda for PSB meetings will be distributed at least three weeks before the meeting for approval and additions from project partners. Final invitation and agenda will be distributed at least two weeks before the meeting. Minutes of PSB meetings will be distributed within two weeks after the meeting. These deadlines may be shortened in case of an extraordinary PSB meeting.

2.1.2. Project Coordinator and Project Management Team

Coordination and management of the project will be ensured by the Project Coordinator, in collaboration with the Work Area Management Team and the Project Steering Board. The Project

Coordinator will be responsible for the day-to-day coordination of the project and will be the main interface between the Consortium and the European Commission. He will ensure that work progress is in accordance with the timetable, and will carry out the following tasks:

- Coordination of all project activities.
- Monitoring of progress and collection / compilation of scientific and financial reports.
- Communication with the EU Commission.
- Information management and facilitation of internal communication.
- External communication.
- Organisation (and chairing) of PSB meetings and WAMT meetings.

The Project Coordinator will be supported by a Project Management Team composed by other members of the Project Coordinator's organisation, for support in administrative, financial, contractual and organisational matters. The Project Coordinator will have regular meetings with the Commission Services. Where necessary, he will be accompanied by member(s) of the Work Area Management Team.

The Project coordinator David Schwesig at IWW has been co-ordinating the entire proposal process of DESSIN, is experienced as coordinator of the large-scale FP7 project under the environment theme TRUST – "Transitions to the Urban Water Services of Tomorrow" (www.trust-i.net), and has significant previous experience in FP6 and FP7 work package and work area coordination (e.g. EAQC-WISE, NORMAN). He is Secretary of the European Aqua Research Collaboration ARC (www.arc-online.eu), and active in the WssTP.

2.1.3. Work Area Leaders - Work Area Management Team (WAMT)

The Work Area (WA) leaders are also leaders of at least one Work Package (WP) in their WA. They have an overview of the WP activities and maintain close communication with the WP leaders. In particular, the WA leaders will carry out the following tasks:

- Synchronisation between the WP leaders in the same WA.
- Supporting the Coordinator in co-ordination of all horizontal activities among the WAs.
- Providing input to the Coordinator for the contractual reports to the EC.

Together, the WA leaders form the Work Area Management Team (WAMT). They will have monthly meetings (usually as phone conferences) to discuss progress within the WAs and the need for any corrective measures. Two meetings per year will be face-to-face meetings, preferably back-to-back with other DESSIN events. The WAMT will discuss progress, budget and arising issues in more detail than can be done by the PSB, e.g. down to the WP and task level. They will discuss and propose solutions in case of:

- Foreseeable difficulties in a WA / WP to achieve the planned deliverables.
- Need for harmonisation of activities between and across WAs.
- Obstacles and barriers causing delays in progress, in particular if this is likely to affect other WPs / WAs that need the output of another WP / WA as a starting point.
- Need for reallocation of tasks within or among the WPs / WAs if needed.
- Weak performance or malfunctioning of a partner.

WA and WP leaders are the first source of intervention when there is a lack of progress in a WA or WP. Together with the Project Coordinator, the WAMT will decide whether an issue can be tackled internally or will have to be communicated to and decided by the PSB.

In matters where a decision by the PSB is required such as a reallocation of budget and tasks or the request for an amendment of the Description of Work (DoW), the WA leaders support the Project Coordinator in developing a proposal that can be made to the PSB for decision.

2.1.4. Work Package leaders

A WP leader has been defined for each WP, with responsibility for role definition within the working group, attainment of objectives, quality of the deliverables, and technical reporting to the appropriate WA leader.

2.1.5. Project Advisory Committee

The Project Advisory Committee (PAC) consists of independent experts representing different categories of stakeholders. The responsibilities and duties of the PAC members are as follows:

- Reviewing project outcomes and identifying strong / weak points.
- Linking the consortium to other international initiatives and research efforts.
- Benchmarking the activities against other commensurate activities internationally.
- Promoting DESSIN and its innovations within their own professional networks.
- Supporting the route to market for solutions developed within DESSIN.

To achieve this task the PAC undertakes the following activities:

- Attending the Project Steering Board meetings to give feedback on the results achieved, the plans for the coming year, and other issues where feedback is needed.
- Providing feedback about and linking DESSIN to international research, reports, initiatives, conferences, etc.
- Ad-hoc feedback when requested by the project coordinator on specific issues.

PAC members represent a range of stakeholder views relevant to DESSIN:

- Water Supply and Sanitation Technology Platform (WssTP), Director Durk Krol
- Enterprise Europe Network, Head of Environment Unit (Peter Wolfmeyer, Zenit)
- Academia: Prof. Dolf de Groot, University of Wageningen, Chair of the Executive Committee of the Ecosystem-Services Partnership (www.es-partnership.org).
- EIP Action Group "ESE – Ecosystem Services for Europe" leader Prof. Francisco Javier Uche, University of Zaragoza, Spain.

These PAC members have already confirmed their availability for the DESSIN PAC.

2.1.6. Local Stakeholder Groups

DESSIN links to five local stakeholder groups (one for each demo site). Stakeholder groups consist of representatives from governmental and non-governmental organisations, water utilities and boards, environmental interest groups, business facilitators, water users (e.g., agriculture, power generation, logistics) and others. In most cases, local stakeholder groups are already in place, such as the "Stakeholder group of subsurface water supply Horticulture Westland", the "Hoffselva group of private and public stakeholders" or the "Stakeholder group on the restoration of the Emscher valley". Local stakeholders will be multipliers of DESSIN results at local level, with direct impact in the society. The local stakeholder groups are managed primarily directly by the respective WP leader within WA3.

2.1.7. Further structures, features and events

2.1.7.1. Project meetings

The above mentioned decision making bodies and structures of the project will meet according to the frequencies outlined in Table 5.

Table 5 Type and Frequency of meetings of Project Management Structures / Elements

Type of meeting / event	Participants	Frequency
Meeting with Commission Services	Coordinator, supported by WAMT members if necessary	Kick-off, further meetings as agreed with EC Project Officer
Project Steering Board (PSB)	Coordinator (chair), nominated representatives of partner organisations with voting mandate.	Once per reporting period
Work Area Leaders (WAMT)	Coordinator (chair), WA leaders	Monthly (phone conference), 2 face-to-face meetings per year
Kick-off meeting	All PSB members, invited by the Coordinator; Soon after the start of the project, WA-/WP-specific internal kick-off meetings are optional (to be decided by each WA/WP leader)	

The kick-off meeting and one project steering board meeting will be held in Brussels. The date for the kick-off meeting will be agreed between the coordinator and the responsible EC project officer, and they will explore the possibilities to use the Commission's meeting facilities as venue for these two meetings.

2.1.7.2. Project Secretariat

DESSIN will have a project secretariat located at the office of the Project Coordinator at IWW, with the main task of supporting the Project Coordinator and the Project Management Team, and managing day-to-day communication with the project partners.

2.1.7.3. Project Website and File Exchange Platform

In addition to the use for presentation and dissemination of the project and its deliverables the website will also have a "members-only" area that will be used as a file exchange platform to facilitate internal communication and exchange of data, results, reports and software tools.

2.1.7.4. Project Management Methods

DESSIN has a focus on the implementation and demonstration in a number of case studies / site demonstrations. This requires comprehensive planning and investments by the affected participants. A proper planning and progress monitoring of the project activities is therefore essential for the success of DESSIN. This will be delivered through appropriate project management methods and software tools. Project management software will assist in developing plans, assigning resources to tasks, tracking progress, managing budgets and analysing workloads; critical pathways can be identified, and the progress of the critical tasks will be carefully controlled to ensure respecting of deadlines.

2.1.7.5. Quality Assurance

Scientific quality checks are a primary function of WP leaders, and each deliverable (reports, etc.) is to be checked by two partners from the same WA ("Review group"), but the two reviewers should be from independent beneficiaries within this WA. The Project Coordinator at IWW is the ultimate Quality Manager, i.e. he oversees the application of QA standards to deliverables and, if needed, calls in other internal or external experts (e.g. from other related FP7 projects). With regard to process quality, the institute of the Project Coordinator (IWW) has been certified according to ISO 9001 quality standards for some years now, covering organisational, operational and communication processes.

2.2. Individual participants

IWW **Partner No 1**

Rheinisch-Westfälisches Institut für Wasser Beratungs- und Entwicklungsgesellschaft mbH, Germany („IWW Consult“) **SME**

And 3rd party under special clause 10:
IWW Rheinisch-Westfälisches Institut für Wasserforschung gemeinnützige GmbH (“IWW Research”)

General description

“IWW Consult” is offering consulting and development services for the water sector. Through its non-profit mother company “IWW Research” it is closely linked to research activities for the water sector as well. Six departments carry out basic and applied research and consulting covering the entire drinking water supply chain: active Water resources management, Water technology, Water networks, Water quality analysis, Applied Microbiology, and Management consulting.

Main tasks in the project

The main task of “IWW Consult” will be the overall co-ordination and the dissemination of project results (WP41) of the project. The linked 3rd party “IWW Research” will lead the development of the Ecosystem Services Evaluation Methodology (WP11) and contribute to tasks on Policy, Finance and Governance (WP12) and the Validation of the Evaluation Methodology (WP13).

Previous relevant experience

“IWW Research” is currently coordinator of the FP7 Collaborative Project TRUST (www.trust-i.net). Furthermore, it is part of the FP7 SecurEau project on security in water distribution networks and of the European PREPARED consortium on the adaptation of water supply and sanitation systems to cope with climate change. DEMEAU and CeraWater are examples of other FP7 projects with relevance to the call where “IWW Research” is actively involved as WP leader.

Key staff working for beneficiary IWW Consult

David Schwesig (for coordination / MGT activities within DESSIN), PhD, environmental scientist, research coordinator at IWW with long-term experience on issues of water quality. Currently coordinator of the FP7 project TRUST.

Lisa Zimmermann, M. A., is the communication and dissemination expert at IWW. She has a strong background as scientific journalist and is currently responsible for the dissemination tasks in TRUST, an FP7 funded large-scale Collaborative Project co-ordinated by IWW with 30 beneficiaries.

Key staff working for 3rd party IWW Research

Prof. Andreas Hoffjan, economist, scientific director at IWW, expert on management accounting and control, strong background in controlling and regulation of infrastructure services

Clemens Strehl, economist, expert in MCDA-approaches at IWW and experienced in quantitative risk assessment (EU-Prepared) within case studies and economic evaluations and costing for urban water cycles in national research projects.

Andreas Hein, economist, Head of Department Water Economics. Focus on financing and organisation of water utilities, expertise in economic assessment tools, benchmarking and roadmapping procedures and economic optimisation studies.

David Schwesig (for scientific coordination / RTD activities within DESSIN): PhD, environmental scientist, research coordinator at IWW with long-term experience on issues of water quality. Currently coordinator of the FP7 project TRUST.

Gender balance in the IWW team: 1 females, 4 males

A21 **Partner No 2**

Amphos 21 Consulting, S.L, Spain **SME**

General description

AMPHOS 21 Consulting S.L. is a SME that provides scientific and technical consultancy services addressing a range of environmental issues, mainly associated with the management and disposal of hazardous wastes, contaminated groundwater and soils, water management, environmental planning and specific software development as well as strategic communication and social studies. The main output is the expert advice in innovative solutions to sustainable resources management by means of intense research activities and establishing alliances with university departments and research centres at national and international level. As a result, Amphos 21 holds a chair in Sustainability and Waste Management at the University UPC and counts on a team of highly qualified professionals.

Main tasks in the project

The tasks of A21 will be related with the ecosystem services provided by MAR technology in the WP 2.2 and WP 3.5. In the WP 2.2 A21 will develop a numerical code interface to simulate groundwater-surface water relations and to identify the connections between ASR and aquatic ecosystems in strategic reservoirs. Furthermore, in WP 3.5 A21 will conduct the analysis of ecosystem services in lower Llobregat area and the related social study.

Previous relevant experience

A21 has coordinated European FP projects like OBRA, FUNMIG, and CROCK and has participated as WP leader in projects like SAPIERR and CIP, funded by DG Research EURATOM. Other FP6 and FP7 EC projects where Amphos 21 has been involved are: MUSTANG (coordinating the dissemination WP); PAMINA, RECOSY and COWAM. It is worth to mention the FP7 project WaterDISS and Life+ project WaterRtoM focussed to study the uptake and dissemination of water research outputs into the market, the FP7 project PACHELBEL where policy-making for sustainability in real-world settings is studied, and also the FP7 DEMEAU project where technology to tackle emerging pollutants in water and waste water is being evaluated (http://demeau-fp7.eu/).
Moreover, Amphos 21 has experience in other research projects and has developed the guide for the application of the payment for environmental services in Catalonia and has also participated in previous projects in the Llobregat demo-site.

Key staff

Jorge Molinero, PhD, Hydrogeologist. Former professor at different Spanish universities with more than 15 years of experience on hydrogeology and on numerical modelling. He has published more than 50 scientific papers.

Ester Vilanova, PhD, Hydrogeologist. 15 years of experience in groundwater studies, hydrochemistry, integrated water management and risk analysis and water impacts. She is leading MAR research projects in Amphos 21.

Beatriz Medina, MsC, Degree on Environmental Sciences. Expert in the conduction of analysis in environmental policy-making, public perception and design of methodologies in communication and general public involvement related to environmental resources.

Elena Abarca, PhD, and post-doc in the MIT. Expert in numerical modeling and analysis of water systems in coastal areas, She is the author of several scientific papers and book chapters and is reviewer of Water Res. Research, J. of Hydrology, and Geo. Res. Letters.

Albert Nardi, MsC PhD His field of expertise is the practical implementation of numerical methods to solve problems related with porous media. He has modelled linear and nonlinear problems in COMSOL multiphysics software and developed an interface to couple Phreeqc and COMSOL.

Gender balance in the A21 team: 3 females, 2 males

adelphi **Partner No 3**

adelphi research gemeinnützige GmbH, Germany **SME**

General description

Adelphi is a leading think tank for policy analysis and strategy consulting. We offer creative solutions and services on global environment and development challenges for policy, business and civil society communities. Our projects contribute to sustaining natural life systems and fostering sustainable enterprises. adelphi´s clients include international organisations, governments, public institutions, corporations and associations.

We bring together scientific and technical expertise with analytical and strategic competence, practical application and constructive problem solving. Our integrated approach combines research, consulting and dialogue on six main topic areas. International and interdisciplinary project teams contribute worldwide to a common future – working in different cultures and languages. In the last ten years adelphi realised more than 500 projects for 100 clients, including numerous for the EC, offering professional and strategic support to crucial environment and development policies and processes. Sustainability is the foundation and leitmotiv of our internal and external conduct. All our activities are climate-neutral and we apply a certified environmental management system.

Main tasks in the project

The main task of adelphi will be leading the development and support of a route to market for innovative water technologies (WP 42). Furthermore, adelphi will contribute to the task on Policy, Finance and Governance (WP12).

Previous relevant experience

adelphi is currently taking part in amongst others the FP7 project ECO-India, on EU-India cooperation in the field of research and innovation on water technologies. adelphi has further international experience with pilot projects demonstrating innovative water technologies and in bringing to market new technologies in the context of EuropeAid-funded programmes such as ENPI SWIM (Sustain Water MED project) and SWITCH Asia. adelphi has led dissemination and policy engagement work packages for the FP7 projects AWARE (citizen's participation in coastal zone governance), and Twin2Go (twinning partnerships for adaptive river basin governance).

Key staff

Mikael P. Henzler, Managing Director. Mr. Henzler has over 15 years of experience in managing water technology and innovation projects. He currently leads adelphi's in the FP7 Eco-India and the EuropeAid funded Sustain Water MED projects. He studied environmental engineering and management at Technical University Berlin.

Rainer Agster, Senior Project Manager. His focus is in the international technology transfer, sustainable management and environmental technology. Currently, he coordinates consulting and training for energy related projects, efficiency issues, international climate protection, sustainable management (municipal and industrial), Sustainable Entrepreneurship, Supply Chain Management and Cleaner Production.

Cosima Strasser, Senior Project Project Manager. Ms. Strasser manages projects concerning green and innovation finance, corporate sustainability management and business models at the Base of the Pyramid; water is among the key issues of her work. Ms. Strasser studied International Relations in Berlin, Geneva, and New York.

Mirko Zuerker, Project Manager at adelphi. Mr. Zuerker works in projects supporting the scale-up of market-based solutions at the interface of politics, business and civil society. He is responsible for projects on resource efficiency, climate change and water management. Mr. Zuerker studied political science, economics and Chinese studies in Munich, Shanghai and Madrid.

Heike Mewes, Junior Project Manager at adelphi. Ms. Mewes supports projects in the areas of climate change adaptation from a business perspective, strategic sustainability management and transition to a green economy. Heike Mewes studied political science at the Free University of Berlin and at the Università di Bologna, Italy.

Gender balance in the adelphi team: 2 females, 3 males

BdB	**Partner No 4**
Bruine de Bruin B.V. ®	**SME**

General description

BdB is a SME that has been active as a manufacturer of reversed osmoses (RO) and other water treatment installations for over 35 years. Our main focus is the horticultural industry but we also manufacture installations for other industries including chemical, car wash and food. BdB often works together with leading research institutes such as the Wageningen University and Research Centre (WUR) as a leading manufacturer of RO installations in the horticultural industry.

Main tasks in the project

The main task of BdB in this project will be the manufacturing, monitoring, maintenance and operation of the reversed osmoses installation known as the "Freshkeeper" at the "Westland" demonstration site. Furthermore, BdB will assist other partners with our knowledge in the field of water treatment (focused on the horticultural industry) (WP22) and (WP33).

Previous relevant experience

BdB has participated in several national research projects most recently in "Glastuinbouw waterproof" in which we used a RO installation to reduce the waste water flow of greenhouses.

Key staff

Kjell Haas, MSc (M), Environmental scientist/engineer, Membrane Technology consultant for BdB, experienced in the design and operation of water treatment installations.

Daniel Santos Cardoso BAS, Chemical Engineer, Membrane Technology consultant for BdB, experienced in the design and operation of water treatment installations and the chemical processes involved.

N. N., Service Technicians, From our pools of service technicians, one technician will be assigned to do the maintenance of this installation. All our service technicians are highly experienced in maintenance related to RO installations.

Gender balance in the BdB team: 3 males

CHEMiTEC **Partner No 5**

Water & Environmental Technologies, Greece **SME**

General description

CHEMiTEC is a company active in Greece, Cyprus and Balkan Countries, since 1996 in the following sectors: a) Industrial process water and waste water treatment, b) Municipal potable water and waste water treatment and c) Environmental technologies (air, water and solid waste). It supplies innovative technologies, enabling its clients to comply with international quality standards and achieve economical optimization. CHEMiTEC offers solutions, products and services for:

1) Membrane technologies for Reverse Osmosis, Ultrafiltration, Nanofiltration and Continious Microfiltration systems, 2) Filters, softeners, deminelarizers, 3) Activated Carbon, applications in water, waste water and air processing systems, for purification, odour control and recycling material purposes, 4) Specialty chemicals for RO, cooling and steam systems, 5) Membrane based wastewater treatment plants (MBR) and tertiary treatment (UF-RO) of WWTP's effluent, 6)Membrane based leachate of Landfill treatment plants (UF, MBR, RO etc.), 7) Ultra sonar applications in WWTP (USR), 8) MSW reclamation and compost production (Biotech) or Incinerator Technologies combined with Biodiesel production, etc. Its client base, includes Power Stations (Ultra Pure Water), Chemical and Refinery Industries, Steel Mills and metal processing plants, Food and beverage industry, Cosmetics, detergents and pharmaceuticals, Hotels and hospitals, Green houses, animal and agricultural farms, Technical – Constructing companies, Municipalities, local authorities, etc. Its annual research budget is about 150.000 Euro out of 800.000 Euro turnover.

Main tasks in the project

The main task of CHEMITEC will be to assist in the design of a membrane wastewater treatment system to be used in the sewer mining demonstration in Athens (WP22). CHEMiTEC will construct and operate the equipment for the duration of the Athens demonstration (WP34) and support NTUA in treatment optimisation and control.

Previous relevant experience

- FP7 - ENV 2012, Two stage, NTUA cooperation
- INTEGRASTE AGROENERGY
- LIFE 08 ENV/000457 INTERWASTE

Key staff

Christos Lioumis, Chemical Engineer NTUA. Since 1997 CEO of CHEMITEC Co. Christos is an expert in environmental technologies

Polynikis Tazes, Chemical Engineer, Head of Technical Department of CHEMITEC Co, responsible for all constructions of water and/or environmental applications.

Adriana Lazari , M.Sc. Chemical Engineer NTUA, specializing in MBR and MBBR technologies, solar drying of biosludge, class A sludges for agricultural uses , combinations in WWTP (R+D) with MBR technology and AD reactor of BOW substrates for biogas production with CHP end user

Naya Dimopoulou, Chemist. Naya is an expert in quality control applications and standards compliance.

Gender balance in the CHEMiTEC team: 2 males, 2 females

ECOLOGIC Institute **Partner No 6**

Ecologic Institute gemeinnützige GmbH **SME**

General description

Ecologic Institute (http://ecologic.eu) is a private not-for-profit think tank for applied environmental research, policy analysis and consultancy with offices in Berlin and Brussels in the EU, and Washington DC and San Mateo, CA in the US. Ecologic Institute was founded in 1995 as an independent research institute. Since its founding, Ecologic Institute has built a reputation for excellence in transdisciplinary and policy-relevant research. Through its participation in large-scale international collaborations, Ecologic Institute increases the relevance of its project results and improves communication among scientists, policymakers and the public. Ecologic Institute's web and events teams ensure emphasis is placed on stakeholder participation and wide-scale dissemination of research results.

Main tasks in the project

The main task of Ecologic will be the overall co-ordination of WA1 of DESSIN. Furthermore, Ecologic will lead the tasks on Policy, Finance and Governance (WP12) and contribute to the development of the Ecosystem Services Evaluation Methodology (WP11), Validation of the Evaluation Methodology (WP13) and the algorithm of the methodology for its integration in the DSS (WP23).

Previous relevant experience

Ecologic has been involved in numerous EU FP projects on water policy, economic analysis and in the development of dissemination and communication tools, for example: GEM-CON-BIO, SWIFT-WFD, INNOVA-MED, REMEDE, AquaMoney, EXIOPOL, EAQC-Wise, EPI-water, CLICO, BioFresh, REFORM, WaterDiss2.0, PHARMAS and KNAPPE. Ecologic has also contributed to the implementation of the WFD CIS process through support of the HMWB and WATECO working groups, the WFD & Hydromorphology Activity and a variety of other projects for DG ENV and EEA (ETC-water/ICM).

Key staff

Dr Manuel Lago is an environmental economist with a focus on economic valuation of environmental goods and services, and the use of such estimates for policy making. He is involved in several on-going EU projects that are assessing the costs and benefits of environmental policies, e.g. BioFresh, EPI-Water (where he is a WP leader) and REFORM. He is currently leading several tasks for the European Topic Centre in Inland, Coastal and Marine Waters (ETC-ICM) of the European Environment Agency (EEA) on socio-economic aspects of managing Europe's seas and surface waters.

Dr Eleftheria Kampa works on water and river basin management policy on a European and international level. She focuses on the implementation of European water directives, the interface of water policy and science as well as the integration of water protection issues into other sectors. She is currently involved in the RBMP assessments and the EU Water Blueprint process of DG ENV as an expert on hydromorphological measures. Eleftheria is WP leader in the PF7 projects REFORM and PHARMAS and contributes to the FP7 project BioFresh.

Max Grüenig is a senior fellow at Ecologic that works on environmental reporting methods and indicators and has extensive knowledge of the economic evaluation of costs and benefits associated with water resources and environmental goods, especially in implementing the European Union (EU) Water Framework Directive (WFD) and climate adaptation.

Gender balance in the ECOLOGIC team: 1 female, 2 males

INRIGO	**Partner No 7**
Inrigo Water AS, Norway	**SME**

General description

Inrigo Water AS (IW) is a Norwegian SME developing and commercializing technology for treatment of drinking water, treatment of municipal and industrial wastewater as well as developing new concepts for water recycling. IW was established as an industrial spin-out in November 2011 combined with expertise from The Norwegian University of Science and Technology. IW's goal is to be an attractive and profitable supplier of smart devices and new effective solutions that address the needs of the customers. Therefore, the company shall at all times be an innovative company with high professional competence and strong market knowledge. IW's core technology is based on advanced filtration techniques.

Main tasks in the project

The main task of Inrigo Water will be the development of a high rate filtration solution for local CSO treatment and its demonstration at the Hoffselva site.

Previous relevant experience

IW is currently performing R&D projects focusing the challenges of the climate change influence of Norwegian water and wastewater treatment. In addition, the company has an active position in the Norwegian Smart Water Cluster providing expertise and resources to development of technology and concepts for smart water treatment and reuse.

Key staff

Gaute Moldestad, PhD, materials and chemical engineering. Extensive experience in research and business development in the field of process technology. Currently Managing Director (CEO) of Inrigo Water AS.

Cheng Sun, PhD, environmental engineering. Background as research scientist at The Norwegian University of Science and Technology. Senior engineer in Inrigo Water AS.

Gender balance in the Inrigo Water team: 2 males

LKI **Partner No 8**

Leif Kølner Ingeniørfirma A/S, Norway **SME**

General description

LKI is a small import and wholesale company, supplying the different part of Norwegian on- and offshore industry with technical solutions and instrumentation for measuring and controlling different parameter which is necessary in order to perform according to Governmental Rules and Regulations and in order to keep a profitable production. LKI runs a QM system based upon the ISO-9001 standard, but is not certified. The annual budget of LKI is about 3.3 million Euro.

Main tasks in the project

The main task of LKI will be measurement of presence of water, the flow and the amount of effluent in case of overflow into the river.

Previous relevant experience

Development and delivery of field instrumentation packages for e.g. oil and gas industry. Including: An oil separator alarm control unit, developed to meet strict regulations and demands of various environmental agencies throughout Europe; Communication solutions with data transmitted to mobile phones or computer systems via integrated GSM modem; Data acquisition and storage with a Daqstation that displays and saves real-time measured data, and can be hooked up to network via Ethernet. This enables e-mail communication, web based monitoring, file transfer by FTP and communication by Modbus/RTU or Modbus/TCP.

Key staff

Per Kølner, CEO. Primary contact for this project inside LKI. Electronic engineer, worked with process control and analytical issues since 1968 (part time) and from 1974 (full time). CEO since 1980.

Petter Holmsen, Sales engineer, secondary contact inside LKI. Electronic engineer from the Norwegian Navy, practice also from refinery industry (Exxon). Been employed with LKI since April 1984. Chairman since 2010.

Svein-Rune Andresen, Service engineer. Electronic technician with background from Minolta cameras and microscopes. Will be the contact for programming and interafcing of data acquisition units if necessary.

Gender balance in the LKI team: 3 males

SEGNO **Partner No 9**

SEGNO Industrie Automation GmbH **SME**

General description

SEGNO is a profit-oriente R&D-performing SME active in consulting and development services. 25 employees carry out services in handling with process data. We apply systems for use in visualization, in databases, in journaling and we implement logical solutions in PLCs. We are operating in several industrial sectors, half of our tasks are settled in Water technology, Water networks and Management consulting. SEGNO runs an ISO-9001, ISO 14001 and BS18001 certified QM- and eco-system. The annual business volume of SEGNO is about 2.5 million Euro.

Main tasks in the project

The main task of SEGNO will be the development of a standardizing of the ADESBA-RTC (WP21) for a sewer network and the setting of a ADESBA demonstration site in the area of the EG (WP31) and in Hoffselva (WP32).

Previous relevant experience

SEGNO has established automation technology in a few hundred WWTP. The ADESBA-RTC, we have taken it in operation as a prototype in the German, city of Hildesheim.

Key staff

Detlef Peikert, ADESBA project and development manager. Experience for many years in project planning issues, project management, concept definition in environment water and wastewater engineering and sewer systems.

Vasco de Freitas, Electrical Engineer. Experience for many years in project planning issues, concept definition in environment water and wastewater engineering, sewer systems and telecontrol engineering.

Jens Schröder, Electrical Engineer. Experience for many years and technical focus in project planning issues, project management, software development (high level language as well as process control systems) in the sectors industry, water treatment, wastewater, sewer systems and telecontrol

Thorsten Arendt, Electrical Engineer. Experience for many years and technical focus in project planning issues, project management, software development (high level language as well as process control systems) in the sectors industry, water treatment and wastewater

Ralf Baxmann, Informatics Engineer. Experience for many years and technical focus in software development, databases and software design in all industrial sectors

Silja Lemmermann, Bachelor Technical Informatics. Technical focus in software development, databases, reporting and web-applications

Kevin Baker, IT application development specialist. Technical focus in software development, databases, reporting and web-applications

Gender balance in the SEGNO team: 1 female, 6 males

TELINT **Partner No 10**

TELNT RTD Consultancy Services, UK **SME**

General description

TELINT RTD Consultancy Services is a new SME company composed of dedicated and experienced persons who have been involved in EU Research Programmes as well as national programmes for several years. TELINT members decided to join their complementary skills in order to offer a large portfolio of services and support activities. They have worked in various domains such as Information and Communication Technologies, Security, Space, etc. (e.g., DARIUS, P^2-ROTECT, PERSEUS, ACRIMAS, TASS, DITSEF, EuropCop, COMNET, UnBoSS, STARRS, COMANCHE, LIAISON etc.). TELINT offers innovative Information Management systems which combine remote monitoring and management of mobile, distributed platforms, remote monitoring of sensors and acquisition of sensor data. It has also extensive experience in software development.

Main tasks in the project

TELINT will contribute to the collection of data from the various sensing elements (collection tools) and set up the communication and networking between the collection tools and the front end system. TELINT will participate in WP22 and WP34.

Previous relevant experience

TELINT is currently involved in the DARIUS project (FP7-Security) whereby the role of TELINT is to provide an information management system for collecting data from deployed unmanned platforms and providing this data, following expert reasoning, to a mobile command post.

Key staff

Ms. Effie Makri holds a degree in Informatics Engineering from the Technological Educational Institute of Athens (1994) and a M.Sc. degree in Electronic Engineering from the University of Dublin, Trinity College (1996). She is the Director of TELINT RTD and she has been actively involved in a number of EU funded projects (DARIUS, SAVASA, PERSEUS, ACRIMAS, TASS, DITSEF, STARRS, COMANCHE, LIAISON, etc). Her research interests include management in Wireless LANs, middleware technologies, Wireless Ad-hoc and Sensor Networks and development of semantically enhanced knowledge management systems using ontological models.

Manolis Nikiforakis has a BEng, an MSc and 12 years of work experience in analysis, R&D, deployment and testing of demanding large-scale EU-funded and national research, and commercial projects. During this time he gained skills in technical as well as managerial roles being a leader of remote and local development teams. Furthermore he has gained experience in a variety of Internet technologies, commercial or open-source frameworks, and in software development for mobile platforms.

Nikos Zotos, graduated from the department of applied informatics and multimedia at the Technological Educational Institution of Crete and holds an MSc in Data Communication Systems from Brunel University – UK. He has worked in numerous EU (over 10 projects in the FP7 ICT and Security domains) and national funded projects, having a key role in thses. His expertise includes design of large scale Heterogeneous Networks, QoS over Heterogeneous Networks, Next Generation Networks, Energy Efficiency Networking, Secure Communications over Virtualized Network Environments.

Gender balance in the TELINT team: 1 female, 2 males

UFT **Partner No 11**

Umwelt- und Fluid-Technik Dr. H. Brombach GmbH, Germany **SME**

General description

UFT is a SME located in Bad Mergentheim, Southern Germany, founded in 1977 by Prof. Hansjörg Brombach. Our main business activity is development, construction and installation of hydro-mechanical and electrical equipment for stormwater tanks and other treatment structures. The company has three departments. Besides the Hydro-Mechanics and Electrics department which care about products as well as custom-tailored solutions, our department of Scientific Services has the task of internal R&D of new and innovative products as well as special engineering tasks on hydrological and hydraulic topics, including model tests in our hydraulic laboratory. Recent research activities have been performed on stormwater treatment by improved sedimentation as well as by technical filtration. UFT has currently about 50 employees and an annual turnover of close to 5.8 Mio. €.

Main tasks in the project

UFT intends to develop and investigate an innovative cross-flow lamella clarifier. The first steps will be model tests, using model sediment and under well-defined hydraulic conditions, in the course of WP 21 in which essential questions of performance, parallel throughflow and the cleaning of the lamella structures should be investigated. During the subsequent WP 31 and 32, respectively, a prototype-size unit shall be demonstrated in cooperation with other project partners on-site in Germany and Norway, in order to gain experience and assess the performance with real combined sewage.

Previous relevant experience

UFT is currently a project partner in a research project funded by the German Federal State of North Rhine-Westphalia in which we investigate another type of lamella clarifier (counter-flow type); We have gained large experience on model tests and also in the construction of the prototype-size container, so that our budget can be kept reasonably small.

In former years, UFT had regular research projects on various topics of urban drainage, including investigations on the quality of sewer flow, on the performance of treatment structures and also model tests on special hydraulic features, e.g. a vortex drop shaft. There are more than hundred publications by UFT staff.

Key staff

Dr.-Ing. Gebhard Weiss, one of the two CEOs of UFT, is a civil engineer and active in the company since 1992. Head of Department of Scientific Services since 1994. Long-term experience on issues of hydraulics and urban hydrology. Also active in several DWA workgroups.

Dipl.-Ing. (TU) Doris Steinriede, civil engineer. She also has long-year experience (since 1994) on questions of urban drainage and quantity-quality simulation.

Prof. Dr.-Ing. habil. Hansjörg Brombach, founder and emeritus of our company and former professor at the University of Stuttgart. Even if he will not join the active project team, we may take benefit from his ample experience.

N.N. For construction and manufacturing of the hydraulic model and in particular for the prototype unit, UFT has skilled personnel for CAD construction and electrical features (switchboard installation, PLC programming) as well as for assembly and installation on-site. Stainless-steel manufacturing is performed by external manufacturers.

Gender balance in the UFT team: 1 female, 2 male.

EG **Partner No 12**

Emschergenossenschaft, Germany CASE

General description

EG was founded in 1899 as Germany's first water board, in order to solve the huge problems with local flooding and putrefying sewage by developing a comprehensive management concept for regulating sewage disposal and treatment as well as drainage and flood protection. EG is a self-governing non-profit public corporation, supported and funded collectively by its 181 members from municipalities, mining and other businesses in the Emscher catchment area of 865 km^2 with a population of approx. 2.4 million. The main tasks are waste water treatment, ecological restoration and maintenance of rivers, flood protection, ground and rainwater management. EG is currently responsible for a total river length of 340 km, 230 km waste water canals, 117 km dikes, 5 sewage plants with a capacity of 5 million population equivalent, 1 sewage sludge treatment plant, 107 pumping stations and 136 CSO tanks. The currently on-going Emscher restoration project with a total investment of 4.5 billion EUR is one of the biggest infrastructure projects in Europe. Recent projects of EG funded by the EC or national funding bodies are directed to the reduction of pharmaceuticals in waters, to the impact of climate change and risk management and to technologies to improve energy efficiency in waste water treatment. Ecosystem services is one key performance indicatosr in the balanced score card system for management purposes of EG.

Main tasks in the project

EG will lead the WP Demonstrating & Improving the Methodology by Using Mature Sites (WP13) and the WP Demonstration of the Effect of Innovative Solutions on the Ecosystem Services (WP31). Furthermore, EG will contribute to tasks on the Development of the ESS Evaluation Methodology (WP11) on Policy, Finance and Governance (WP12) and on the Development of the cross-flow lamella clarifier and the RTC system (WP21).

Previous relevant experience

EG is currently part of the Interreg IV-B project NoPILLS. Furthermore, EG was part of the FP 5 APUSS to assess infiltration and exfiltration on the performance of urban sewer systems and was involved in Interreg IV-B projects like Future Cities, ALFA and was coordinator of PILLS. EG was also part of different national projects on the WFD implementation, river restoration and on groundwater and rainwater management.

Key staff

Issa Nafo, PhD, Civil engineer, team leader in the Department of Strategic Affairs/River Basin Management with long-term experience on issues of river basin management. Currently involved in NoPILLS and several DWA working groups.

Mechthild Semrau, Landscape planner with long-term experience in river restoration and river management planning. Currently leading the Emscher restoration planning team at EG and the DWA working group GB-2.11 on river restoration.

Mario Sommerhäuser, PhD, Hydrobiologist with long-term expertise in river restoration, assessment of ecological quality of rivers, biodiversity and sustainability. Currently head of the bureau of directors.

Jürgen Mang, PhD, Civil engineer with long-term expertise in the design and operation of urban sewers and decentralized water treatment in CSOs. Currently team leader Urban Drainage Operation and Management Concepts and involved in several DWA working groups.

Gender balance in the EG team: 1 female, 3 males

EYDAP **Partner No 13**

Athens Water Supply and Sewerage Company, Greece **CASE**

General description

Athens Water Supply and Sewerage Company (EYDAP SA) is the largest of its kind in Greece. The Company serves in the water supply sector approximately 4,300,000 customers through an extensive network of 2,020,000 water meters and a 9,500 km of water pipes. The sewerage sector serves 3,500,000 residents with sewers spreading at almost 6,000 km. The Company operates four water treatment plants that have a nominal supply from 200.000 to 600.000 m^3 daily each.

Four reservoirs are the company's raw water source. All reservoirs are artificial except one, the Lake Yliki. The largest reservoir is Lake Mornos with a capacity of 764 million m^3, while the smallest one, Lake Marathon, has a capacity of 25 million m^3. EYDAP's aqueduct has a length of 485 km and operates under a combination of free flow and pumping.

EYDAP's expertise in operating large water and wastewater treatment plants and networks ranks it very high among the Mediterranean water and wastewater companies.

EYDAP maintains an up-to-date R&D department staffed with experienced researchers as well as modern laboratories and installations. EYDAP's researchers have already published a large number of scientific work regarding water quality control and related innovative analytical methods. The R&D department of EYDAP is going to be responsible for the participation of the company in the project and for the implementation and evaluation of the actions.

Main tasks in the project

Previous relevant experience

- Hydroplan EU 2006 as end user.
- EYDAP has a large experience in national funded projects dealing with water and wastewater management and water and wastewater quality control.
- EYDAP participates in the on-going EU funded program "CYANOCOST" - "Cyanobacterial blooms and toxins in water resources: occurrence, impacts and management" as coordinator.
- EYDAP participates in the on-going EU funded program "TRUST" - "TRansitions to the Urban Water Services of Tomorrow"

Key staff

Dr. Efthymios Lytras, Head of the Research and Development Department. Dr. Lytras has a B.Sc. in Chemistry and a Ph.D. in Metallurgy Engineering. He works in EYDAP for 20 years, most of them in the Water Quality Control Department of which he has been head for three years. As the Head of the R&D department of the company, Dr. Lytras is the coordinator of all research programs of EYDAP. He has an extended experience in water quality control and environmental monitoring and has more than 25 published scientific papers including conference proceedings. He speaks English and French in excellent level.

Gender balance in the EYDAP team: 1 male 0 female

VAV **Partner No 14**

Oslo Water and Sewerage Works, Norway **CASE**

General description

Oslo Water and Sewerage Works (VAV) supplies water and collect/treat sewage for the city's 624,000 inhabitants. It is a self-financing company within the municipality of Oslo. Income is derived from existing legislation to ensure that annual and connection fees for water and sewage are fair and reasonable for the customers. Oslo has a political strategy to meet the future challenges-front with robust technological solutions and an economic and administrative capability to make necessary investments and take up adequate technological developments. Thus, Oslo has major investments plans (250 MEUR over the next 5 years) to compensate for the major driving forces of change, namely climate change, ageing of infrastructure and migration. The political support also includes the ambition to participate and contribute internationally in meeting the new challenges that has already appeared and we are ready to use as well direct financial support as in-kind measures to support developments and take up new developments as pilot project. We have a tradition of quick uptake of new technologies and have already for many years provided financial and practical support for pilot investigations of new pipe renovation methods as well as condition monitoring technologies.

Main tasks in the project

VAV will be involved in DESSIN as Hoffselva demosite owner and participate to the development of the technologies proposed in WP21 and most of all to their demonstration in WP32. The results obtained from the project TRUST in which Oslo VAV is one of the main case studies will be brought to test the sustainability assessment framework in WP13.

Previous relevant experience

VAV is currently involved in TRUST as partner and demosite. Oslo is one of the major demonstration pilot cities with active participant in WP 11, 13, 34, 41, 43, 45, 46, 54 and 64. TRUST (www.trust-i.net). Furthermore, VAV is part of the European PREPARED consortium on the adaptation of water supply and sanitation systems to cope with climate change. Oslo VAV is also active partner of the WSST Platform.

Key staff

Per Kristiansen, Director. MSc in Water supply and sanitary engineering, 30 years

of practice, active participation in Water Supply and Sanitary technology platform (WSSTP),

participation in CITYNET (CARE-S)

Arnhild Krogh, Head of Section. MSc in Water supply and sanitary engineering, 15 years of experience, active participation in TRUST and PREPARED. Main contact person in the project.

Frode Hult, MSc in Water supply and sanitary engineering, 15 years of experience, coordinator of VAV's activities in PREPARED

Gender balance in the VAV team: 1 female, 2 males

CETaqua **Partner No 15**

CETaqua Water Technology Centre, Spain **RTD**

General description

CETaqua is a non-profit foundation that integrates, manages and conducts research, technological development and innovation projects on the integral water cycle. CETaqua's founding partners are: Spain's biggest water utility, Sociedad General de Aguas de Barcelona S.A. (SGAB, Agbar Group); the Technical University of Catalonia (UPC) and the Spanish National Research Council (CSIC). CETaqua benefits from both academia and industry, which enable the centre to be aware of the sector's current and future needs and to effectively transfer and apply the results of its research. The main research areas are: alternative water resources (such as aquifer recharge, water reclamation and reuse); health and the environment (involving advanced water treatment and sludge management); efficient infrastructure management; crisis management (floods and droughts) related to global change; water and energy and water demand management.

Main tasks in the project

CETaqua will carry out the demonstration of flexibilisation of Aquifer Storage and Recovery (ASR) in the Barcelona demo site (WP22 and WP35). AB, owner and operator of the ASR facilities in Barcelona, will participate as Third Party (linked to CETaqua under special clause 10) in the analytical tasks. CETaqua will lead the WA4 focused on communication, dissemination and visibility of solutions developed in DESSIN. Moreover, CETaqua will contribute in the WA1 regarding the ESS Evaluation Methodology development.

Previous relevant experience

CETaqua has a portfolio of more than sixty projects including eight LIFE+ Programme projects as a coordinator (WATER CHANGE, BIOCELL, ENSAT, GREENLYSIS, UFTEC, AQUAENVEC, AQUATIK and AWARE), eight FP7 projects as a partner (IMPRINTS, PREPARED, CORFU, PIPEGUARD, DEMEAU, EFFINET, EUPORIAS and AQUAVALENS), ten nationally-funded projects and several privately funded projects.

Key staff

Marta Hernández, M.Sc. in Environmental Sciences, Universitat Autònoma de Barcelona (UAB, 2004), Degree in hydrogeology (UPC, 2009). She has 3 years of experience in CETaqua managing and executing European research projects (ENSAT project LIFE08 ENV/E/000117 and DEMEAU project FP7-ENV-2012-two-stage 308339 DEMEAU) and private funded projects.

Dr. Xavier Bernat, PhD in advanced oxidation processes and membrane processes for wastewater treatment (Universitat Rovira i Virgili, Spain), M.Sc. (Université de Technologie de Compiègne, France) and Chem. Eng (Universitat Rovira i Virgili, Spain). He actively participates in several RTD projects related to water treatment technologies. He is nowadays the Alternative Water Resources Area Manager in CETaqua.

Dr. Montserrat Termes received her MSc and PhD degrees from the Universitat de Barcelona (UB) in 1982 and 1989 respectively. Since 1989, she is associated professor in the Economics and Business Faculty in the UB. Her main research area is Public Sector Economics, regional and Urban Economics and Economics of water. She is also scientific consultant of CETaqua, leading of Water, Economics and Society Programme.

Laura Ventura, M.Sc in Journalism (UAB, 2008), and a Master's degree in PR and Communications (UAB, 2012). She has 5 years of experience in media, including newspapers, magazines, online press, radio and TV, and 1 year of experience in an international press agency. In CETaqua she is leading the European research projects' communication actions.

Gender balance in the CETaqua team: 3 females, 1 male

DHI **Partner No. 16**

RES

General description

DHI is an independent, international research and consulting organization. The objectives are to advance technological development and competence within the fields of water, environment and health. DHI is authorized as an Approved Technological Service Institute by the Danish Minister of Science, Innovation and Higher Education. DHI core competencies include numerical modelling, environmental laboratories and scale model test facilities, field surveys and monitoring programmes, and institutional capacity building and training. The total number of staff in DHI Group is app 1,100. DHI runs an ISO-9001 certified QM-system. The annual research budget of DHI is about 25 million euro.

Main tasks in the project

DHI will lead the development of the software framework for ESS valuation (WP23) and will contribute to tasks on (i) development of an evaluation framework (to account) for impacts from changes in Ecosystem Services (WP11) and (ii) demonstrating and improving the ESS valuation methodology by using mature sites (WP13).

Previous relevant experience

Examples of recent and on-going relevant research projects funded by EU include (i) FP7 AdvanceETV on promoting international harmonization and mutual recognition of the international Environmental Technology Verification systems and to ease the access to international markets for environmental technologies, (ii) FP7 PREPARED the purpose of which is to develop adaptation technologies and decision-support tools based on real-time management that will allow a quick response to extreme events, to prevent and limit any damages, risks and disturbances in the urban water – DHI is the overall technology coordinator. DHI is also presently providing services to the EU Commission on a project "Support Policy Development for Integration of Ecosystem Services Approach with Water Framework Directive and Flood Directive Implementation".

Key staff

Jesper Overgaard, PhD has more than ten years of experience in design, development, and application of numerical models in a wide range of water related fields, and today he is one of the key architects behind the MIKE CUSTOMISED software platform. He has participated in a large number of decision support system projects, in the role of software developer as well as project manager. He is PRINCE2 and ISTQB certified. He will lead WP 23 and contribute to WP 11.

Louise Korsgaard, PhD, Dr. Korsgaard main expertise is Integrated Water Resources Management (IWRM). She has experience with design and implementation of river rehabilitation projects and development of decision support systems for water allocation, including water allocation for ecosystems (environmental flows). Recently her experience has widened to include economic valuation of ecosystem services provided by rivers, wetlands and coastal zones. She will contribute to WP 11 and WP 13

Lisbeth Pedersen, PhD is business area manager of information management systems in Department of Urban Water and Industry. She is presently project manager of the RTC project for the Århus River project in Denmark that will serve as case study for testing of the ESS methodology (WP13).

Gender balance in the DHI team: 2 female, 1 male

KWR	Partner No 17
KWR Water B.V., The Netherlands	RES

General description

KWR is the Dutch research institute for the drinking water sector, their current shareholders. Unique in the world, this collaboration of the Dutch water supply companies has resulted in a powerful knowledge base and an extensive collective memory (> 60 years) for the drinking water sector. We develop and unlock relevant knowledge about the small water cycle: from water systems to water technology and (clean) water quality. Our objective is to provide the water sector with the means to identify and effectively meet the challenges of our time: from climate change to the increasing amount of contaminants, and the growing pressure to use space intensively and for multiple purposes. KWR works together with other leading research institutes and partners inside and outside the Netherlands. KWR has managed and conducted the Joint Research Programme of the Dutch Water Sector with an annual budget of 7.6 million euro, for more than thirty years.

Main tasks in the project

KWR will act as Work Area leader of WA3 (Demonstration). In addition KWR will lead WP22, WP33 and contribute to WP11, WP12, WP41 and WP51.

Previous relevant experience

Coordinator of integrated EU funded research projects such as WEKNOW, TECHNEAU, PREPARED and DEMEAU. KWR is founding member of GWRC (Global Water Research Coalition), founding and board member of WssTP (EU Water Platform) and ACQUEAU.
KWR is represented in the EIP-Water Steering Group as well as the corresponding Task Force. Other EU-funded research projects that KWR is or has been involved in, are SCENES, MICRORISK, LEGIONELLOSIS, CPDW, TOXIC. SOCOPSE, TESTNET, ARTDEMO, TRUST and TAPES. KWR has acted as advisor to DGENV on scientific issues of drinking water and the EC Directive.

Key staff

Dr. Theo van den Hoven (M) has been the coordinator of various EU projects such as WEKNOW, TECHNEAU and is currently leading DEMEAU. Theo has many years of experience with all scientific matters related to the water cycle in Europe and at a global level. Theo is a Board member of GWRC and WssTP and member of the EIP-Water Task Force.
Koen Zuurbier MSc. (M) is lead researcher in various aquifer storage and recovery (ASR) field pilots in Dutch coastal areas with expertise in ASR design, site characterisations, and groundwater quality monitoring and modelling.
Dr. Marcel Paalman (M) is an experienced research with expertise in the field of geochemistry, hydrology and water policy.
Prof. Kees van Leeuwen (M) is a leading expert on urban water system and regulation.
Dr. Adriana Hulsmann (F) has experience as legal and scientific advisor to DGENV and is very familiar with EU policy transposition and implementation in all Member States, and has a track record in dissemination and branding of project results.
Dr. Gerard van den Berg (M) is an experienced researcher with expertise in water quality. Gerard is project manager for the FP7 PREPARED and DEMEAU projects which are coordinated by KWR.

Gender balance in the KWR team: 1 female,4 males

NTUA **Partner No 18**

National Technical University of Athens **RTD**

General description

NTUA is the oldest and most prestigious Engineering School in Greece. NTUA will participate with three expert teams (i) The **Laboratory of Hydrology and Water Resources Managemen**t of the School of Civil Engineering is a centre of excellence on water resources analysis and urban water systems management with active role at both national and European levels. Of particular interest to the Laboratory is the domain of Hydroinformatics and the modelling of the complete socio-technical urban water system. The Laboratory is a member of European Networks, such as EurAqua and WSSTP and part of the European Topic Centre for Water (ETC-Water) of the European Environment Agency (EEA) (ii) **The Laboratory of Sanitary Engineering** of the School of Civil Engineering with extensive expertise on novel treatment technologies development and process optimisation (iii) The **Microwave And Fiber Optics Laboratory** (MFOL) of the School of Electrical Engineering specializes in the design and development of prototype innovative devices making use of microwave technology. MFOL has a wide experience in design and development of software algorithms systems, subsystems and circuits such as transmitter-receiver units, amplifiers, mixers and digital processing circuits applied in a variety of areas such as electromagnetic sensors, satellite and wireless communications, systems, software and hardware engineering.

Main tasks in the project

NTUA will be the main research partner for the Athens demonstration (WP3) in collaboration with EYDAP. It will provide input to innovation development (sewer mining and ICT) in WP2 focusing on solutions for water scarcity and draught and support WP1 through sustainability assessment and model development for the DSS system

Previous relevant experience

NTUA is engaged in several European and National research programs. A selection of the most recent activities include: i-adapt: Innovative approaches to halt desertification in the Pinios River Basin. TRUST: Transition to Water Services of Tomorrow (FP7, ongoing). iWidget: smart metering in water distribution systems (FP7, ICT-Water, ongoing) EPI Water: Economic Policy Instruments for Sustainable Water Management in Europe (FP7, ongoing). OpenMI-LIFE: Bringing the OpenMi to LIFE (LIFE Env. Programme, 2006-2010): ETC/W: European Topic Centre on Water (European Environmental Agency, 2007-ongoing). EU Water Saving Potential (DG ENVIRONMENT, 2007). On the ICT side, relevant projects include: WaterPIPE (FP6), AQUAKNIGHT (ENPI), ICeWATER (FP7, ICT-Water).

Key staff

Dr Christos Makropoulos is an Assistant Professor in the Laboratory of Hydrology and a Visiting Fellow in the Centre for Water Systems of the University of Exeter. He is the Associate Editor of Urban Water Journal. Dr Makropoulos is an expert in urban water management with an emphasis on distributed infrastructure and whole city modelling. He is an expert in risk analysis, uncertainty quantification, multi-objective evolutionary optimization and long-term policy scenario development.

Dr Daniel Mamais is an Associate Professor with expertise on water and wastewater treatment technologies, emerging pollutants in wastewater treatment plants, wastewater disposal and reuse and bioremediation He the National representative for Working Group E on Priority Substances and river-basin-specific pollutants for the WFD.

Dr. Angelos Amditis is a Research Director at MFOL/NTUA. His research interests include microwave and acoustic wave radar, software and hardware engineering, digital systems design, microwave. Dr Amditis has been the scientific responsible in more than 40 research projects.

Dr. Athanasia Tsertou works as Communications Technical Manager at MFOL/NTUA and is responsible for several ongoing FP7 research projects. She holds a PhD in Wireless Networks and has extensive experience in software development, especially for embedded devices.

Gender balance in the NTUA team: 1 female, 3 males

SINTEF **Partner No 19**

Stiftelsen SINTEF, Norway **RES**

General description: SINTEF is a multidisciplinary private research institute that performs contract research and development for industry and the public sector. It is Scandinavia's largest independent research organisation with about 2000 employees. SINTEF performs projects primarily within the technological area, but also in natural sciences, medicine and social sciences.

Main tasks in the project: SINTEF will participate to DESSIN with 4 departments, SINTEF- *Water and Environment* (WE), SINTEF- *Communication Systems* (ICT), SINTEF – *Applied Economics* (AE) and SINTEF *Energy*. The main task of SINTEF will be the co-ordination of the WA2, WP21 and WP32. SINTEF will contribute on RTD and DEM activities.

Previous relevant experience: *SINTEF-WE* research focus is on water and sanitation services, Infrastructure Asset Management and risk management. *SINTEF-ICT* performs R&D within analog and digital communication. *SINTEF – AE* has broad experience in economics and operations research, including governance, financing, and innovation. *SINTEF Energy* currently leads several national research centres related to sustainable use of renewable energy sources and subsequent environmental and societal consequences, including ecosystem services. SINTEF has been WA leader of IP Project TECHNEAU in FP6, and a contributing partner in the project AWARE-P on EEA funds. SINTEF is currently partner of the FP7 IP Projects PREPARED and TRUST, as well as LogistEC. SINTEF-WE and SINTEF ICT collaborate on a national research project, analysing current status and potential improvements of IT security, wireless communication and condition monitoring for the Oslo water and wastewater infrastructure.

Short profile of key staff in the project

Rita Maria Ugarelli, PhD, is a Senior Scientist at SINTEF WE and Adjunct professor at NTNU. She has participated to all the EU projects from 5th to 7FP mentioned before; she is leader of the projects related to infrastructure asset management and internal coordinator for SINTEF in TRUST and AWARE-P.

Herman Helness, PhD, is a Research Manager at SINTEF WE. Helness participated to the EU project TECHNEAU, has extensive experience from R&D on water treatment processes and is part of the project team in the project 'Rainwater Harvesting for resilience to climate change impact on water availability in Ghana' (RHG), with focus on sustainability assessment.

Stig Petersen, MSc, is a Research Scientist at SINTEF ICT. His research area focuses on wireless technologies for industrial applications. Petersen has long experience of collaboration with industry; he is currently project manager of "WiCon" project to investigate the potential of using wireless instrumentation for process control.

Sigrid Damman, Cand. Polit, is a Research Scientist at SINTEF AE. Damman is a social anthropologist with focus on institutional relations, management and organization. She is working on social sustainability in LogistEC and leads the project 'RHG'.

Håkon Sundt, MSc, is a Research Manager at SINTEF Energy, responsible for team Water Resources emphasising on hydrology and ecohydraulics. Sundt works mainly with ecology and environmental impact assessments of river system regulations. Sundt currently leads the (national) large scale EcoManage project that handles EcoSystem Services, Water Consumption and MCA in water management.

Gender balance in the SINTEF team: 2 female, 3 males.

UDE **Partner No 20**

University of Duisburg-Essen, Germany **RES**

General description

The University of Duisburg-Essen has a focus on water-related topics, to which about 15 departments contribute. Two of these will contribute to DESSIN: The Department of Aquatic Ecology and the Department of Hydraulic Engineering and Water Resources Management. Both groups are experienced in the application of ecosystem services concepts and the development of ecosystem service based approaches. The Dept. of Aquatic Ecology has played a key role in developing tools for implementing the Water Framework Directive (WFD), both in Germany and Europe. The Dept. of Hydraulic Engineering and Water Resources Management is dealing with a broad range of topics related to sustainable use of water resources; in the fields of ecosystem services; it has an ongoing cooperation with the Portland State University, Oregon and its ESUR-IGERT program (Ecosystem services for urbanizing regions) carried out with the Institute for Sustainable Solutions. The department has also years of experience in monitoring, evaluating and modelling of structures for combined sewer overflow.

Main tasks in the project

The tasks of UDE are:

- WP 11: Contribution to the development of the overall ecosystem-service valuation
- WP 13: Modelling ecosystem services in the Emscher catchment
- WP 21: Scientific supervision for the small scale model of the cross-current lamella settlers to determine basic sedimentation performance and for the preparation of the full scale demonstrations. Additionally numerical simulations of the hydraulic conditions of the CSO-tank will be conducted to ensure smooth parallel through flow.
- WP 31: Scientific analysis and maintenance of the full scale demonstration sites.

Previous relevant experience

The Dept. of Aquatic Ecology has participated in nine FP5, FP6 and FP7 projects coordinating three of them (AQEM, NOMATEC, WISER). It acted as a WP leaders of RUBICODE (FP6) dealing with the linkages of biodiversity and ecosystem services. The department is currently involved into the FP7 projects REFORM (hydromorphology) and BIOFRESH (biodiversity), and coordinates a national project on HMWB.

The Dept. of Water Resources Management has carried out a lot of national and international research projects focusing on sustainable water management also in emerging countries and especially china. Research was also focusing on urban drainage including monitoring and modelling of CSO facilities and receiving water impacts.

Key staff

Prof. Dr.-Ing. André Niemann, head of the department of hydraulic engineering and Water Resources Management. He has more than 15 years of practical and theoretical experience with the Emscher conversion process comprising individual construction site situations as well as the overall catchment area.

Dr.-Ing. Thorsten Mietzel has been working on CSO-monitoring, analysis of performance and CSO-modelling for more than 10 years.

Prof. Dr. Daniel Hering is co-leading the Dept. of Aquatic Ecology and has a strong record of national and international RTD projects in the fields of catchment management, biodiversity and macroecology.

Gender balance in the UDE team: 3 males 0 females

2.3. Consortium as a whole

The DESSIN consortium is built around 5 demo sites with case site operators, providing the R&D and demonstration setting for technology SMEs. Every demo site works in association with a research institute, in order to target research into marketable and visible products (Figure 6). The area of expertise of research partners and technology SMEs matches the focus of the respective demo sites and is complementary in terms of the entire DESSIN approach. In addition, research institutes and research & consulting SMEs work on cross-cutting topics, such as the ESS methodology or international marketing strategies.

In two cases (Westland and Llobregat site) the actual site owner decided not to join the DESSIN consortium as a formal beneficiary for administrative reasons. Nevertheless, they are fully committed to the project, have granted to provide access to the site and to fully support and enable the demonstration. Furthermore, in both cases there is a long-term collaboration history with the local research partner who is acting as the representative of the site owner within the DESSIN consortium. In the Llobregat case, the site owner AB is one of the three components in the board of trustees of the research partner CETaqua, financing the research projects that are not fully-covered by public financing and therefore closely linked to the project. Furthermore, sites owners are part of the local stakeholder groups that are associated with each demonstration site (cf. Table 10 below).

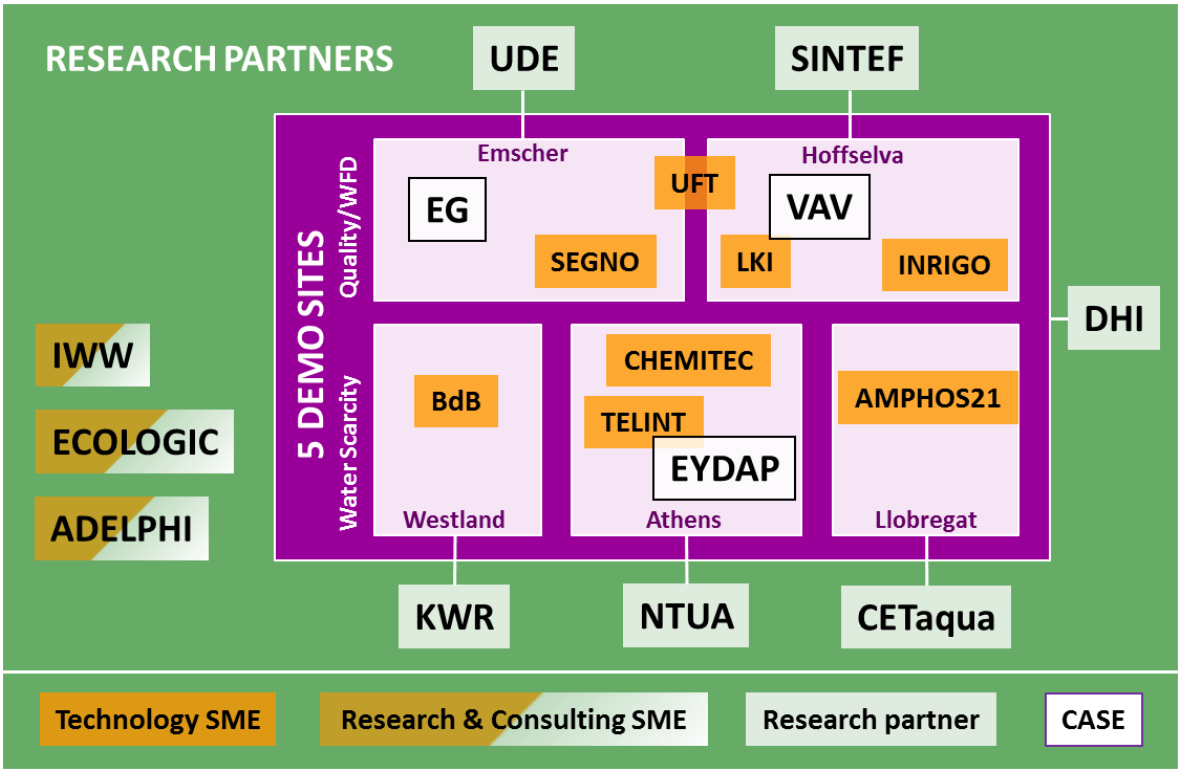


Figure 6 DESSIN consortium: 5 demo sites with case site operators (3), RES institutes (6), Technology SMEs (8) and Research&Consulting SMEs (3).

How we built the consortium

In late summer 2012, during a regular meeting within the European water research network ARC (Aqua Research Collaboration), the core members IWW, KWR, SINTEF and CETaqua exchanged perspectives on innovative water demonstration sites in their respective countries. It turned out, that promising demo sites with lighthouse potential were available in Germany (Emscher river basin), the Netherlands (Westland region), Norway (Hoffselva river basin) and Spain (Llobregat river basin), in close connection to the ARC partners, with own ambitions on innovation and strong links to technology suppliers. A little later, via the link of the water scarcity cluster within the EU-FP7 TRUST project, the city of Athens with the University NTUA joined with a potential demo site on innovative reuse for urban water management.

This was the nucleus of the DESSIN approach, which was elaborated in the following months by investigating the thematic focus of the individual demo sites. Major water challenges with global impact were identified, such as degraded industrial landscapes (Ruhr region), water scarcity and brackish water intrusion due to over-exploitation (Westland), water scarcity in the metropolitan water cycle (Barcelona), capacity limits of a municipal sewer and wastewater treatment system (Oslo with the Hoffselva catchment), heat island effects due to water scarcity and over-exploitation of resources (Athens) - a promising background for the DESSIN initiative. In every case, large-scale water management improvements were already under planning or in the process of implementation. In every case technological innovation, ICT needs, governance and financing issues were high on the agenda of the responsible operators. And in every case, the operators were used to active collaboration with research institutions and technology providers.

What was missing at that time, was the connecting link between the individual sites and the water challenges, providing a general framework to measure the value of better water management through innovation. Finally, this was provided by the EIP strategic implementation plan, published on 18 Dec 2012, defining Ecosystem Services (ESS) as one of the 5 priority areas of the EIP. In joint workshops with operators and research institutions, the ESS approach was discovered as the missing link between the demo sites and the several innovation pathways followed at the individual sites. Moreover, it turned out that the DESSIN scope of work was mostly represented in the EIP priority areas (reuse, treatment, drought management, governance, financing). Thus, the ambitions of DESSIN partners matched both the expectations of the call text and the EIP priorities.

The final formation of the DESSIN network followed stringent consortium building rules: from a thorough analysis of competence gaps, leading research units and consultancy companies were addressed, on ESS and water policies (ecologic), ICT technology (DHI), urban water engineering and biodiversity (UDE), technology transfer and market uptake (Adelphi). Each of the partners was selected according to its scientific reputation, project records and the close relation to the demonstration sites. Finally, for the SME technology companies, most of them were already in collaboration with the DESSIN demonstration site operators, so that they were selected carefully among the promising candidates on account of their innovative potential, their own R&D interest and their ambition to expand on international markets.

The DESSIN approach was designed following the four principles scientific excellence, collaborative research, implementation and demonstration, market orientation:

- **Scientific excellence** - The DESSIN consortium contains some of Europe's premier research institutions in the fields of WFD implementation, water and wastewater management, ICT and RCT technologies, policy analysis and implementation, economic evaluation of water-related infrastructural services, and associated disciplines/topic areas. Many consortium members are leaders in their respective fields with significant publication profiles and enviable records of winning competitive grants. To ensure that the science output is original, question-driven, and robust to peer review, the DESSIN consortium will ensure that each activity is overseen by a

senior scientist, expose methods and findings to independent peer review, and consult with monitoring and advisory bodies.

- **Collaborative research** - Many consortium members have previously collaborated on national or European scale research, providing an essential backbone of reliable relationships from which the project will benefit. Our direct relationships with previous and on-going EC funded research projects are also excellent (e.g. PREPARED, TRUST, DEMEAU, WaterDISS, WateRtoM, EPI-water, BioFresh, PHARMAS, KNAPPE, EAQC-WISE, PILLS, EUPORIAS, AQUAVALENS, SOCOPSE, WEKNOW, RUBICODE, WISER, REFORM, BIOFRESH), ensuring that our work is informed by recent developments in complementary fields and does not cut across other initiatives. By deliberate design of mixed working groups with ESS experts, water technologists and operators in all WAs, collaborative research on the application of the ESS concept to the demo sites is secured.
- **Implementation and demonstration** – DESSIN is driven by a group of ambitious river basin managers and water utilities that have their own agenda on developing their urban water systems by applying innovative technology solutions and effective governance schemes. They are committed to making innovative water management solutions visible and have strong records to develop, implement, demonstrate and promote new technology and management schemes (also as participants in national and European projects). All demonstration sites in DESSIN are embedded in existing water infrastructure of large scale up to whole regional water management, which will survive the end of the project and thus be internationally visible as showcases for innovative European water management.
- **Market orientation –** Our technology companies, mostly SMEs, have remarkable R&D experience in national and European projects, and they have shown records in bringing innovative solutions to the market. In a dedicated Work Area (WA 4) the way to the market of DESSIN innovations is paved: Demo sites will be transferred to showcases of international visibility, and market uptake will be supported by a targeted marketing strategy.

In summary, the DESSIN consortium was designed to demonstrate innovative water management solutions at lighthouse scale, to establish the ESS approach as an enabling catalyser in sustainable water management schemes, and to effectively support research-driven SMEs by leading scientific institutions in water research. The DESSIN consortium is convinced that with the sample of innovative demo sites, the careful design of the consortium and the proven collaborative records between individual partners of the consortium we will effectively contribute to the Europe 2020 Flagship Initiative on Innovation Union and the EIP on Water.

DESSIN research partners, competences and specific roles in the project

The capabilities of the DESSIN consortium are focussed around the actual transformation needs of water bodies (in particular in urban and peri-urban settings).

We are fully convinced of the broad and complementary competences in the consortium:

- The DESSIN team consists of organisations and experts with extensive backgrounds in water management and technology research, such as involvement in European research COST C18, TECHNEAU, PREPARED, TRUST, EFFINET, DEMEAU and numerous others at national, European and international scale.
- DESSIN research partners have strong records on water policy and water economics research, as can be seen from the involvement in European and national research on WFD implementation, ESS schemes, governance and pricing issues.
- The DESSIN team is closely connected to the WssTP: Tomas Michel from CETaqua holds the chair, KWR and SINTEF are represented in the governing board, coordinator IWW is a WssTP

member and several consortium members were involved in drawing up its Strategic Research Agenda (SRA).

- Likewise is there a strong link to the EIP on Water, with KWR director Wim van Vierssen as member of the High Level Steering Group, with Wolf Merkel from IWW associated to the task force.
- Many research organisations in DESSIN have long traditions of collaboration with the water/wastewater industry and policy-making bodies: as shareholders, organisers of or participants in national research programmes, and in collaborative research.
- Likewise, the ambitions of the regional demo site operators cover the whole range of adaptation pressures and opportunities mentioned in the call, such as water scarcity, urban water management, resource efficiency, financing and governance issues of effective water management.
- In addition, we have appropriate and strong involvement of SMEs in terms of technology, IT and consulting companies. The majority of SMEs have been in close collaboration on research and business with the site operators, thus building on an already established professional relationship.
- We are convinced of the significant impact that DESSIN can achieve in demonstrating European water innovation to the world outside, by selecting the most ambitious and most prominent sites in Europe.
- There is a stress on dissemination, communication and market transfer of the innovative solutions. This is guaranteed by the intrinsic motivation of the SMEs to make their solutions visible, and the dedicated efforts of an experienced partner on marketing strategies.
- Last but not least, the project management will effectively meet the challenges of a large-scale European project. IWW Water Centre has proven effective FP7 co-ordination of the TRUST project. There is continuity in the core group with KWR, SINTEF and CETaqua, providing enormous experience from successful European research under the FP5, FP6 and FP7 framework.

Table 6 Project partners, their role in the project and related specific expertise

Project Partner	Role in the project	Specific expertise
1. IWW Consult, Germany (SME), including its mother company IWW Research linked as 3rd party under special clause 10	▪ Project co-ordination (IWW Consult) ▪ Lead WP11 ESS evaluation methodology (IWW Research) ▪ Economic and regulatory framework (IWW Research) ▪ Finance, economic modelling (IWW Research) ▪ Communication (IWW Consult)	▪ Coordination FP7 TRUST ▪ Management team COST C18 ▪ WP-leader e.g. in EU-SECUREAU, EU-PREPARED, EU-DEMEAU ▪ Water resources management ▪ Water technology ▪ Conference organisation
2. Amphos 21, Spain (SME)	▪ Linked to Demo Site: Llobregat ▪ ESS provided by Managed Aquifer Recharge ▪ Numerical model of interactions between ground-surface water (WP2.2) ▪ Analysis of ESS (WP3.5)	▪ Coord. FP7 OBRA, FUNMIG, CROCK ▪ WP-lead in WaterDISS, MUSTANG etc ▪ Research uptake and dissemination ▪ Environmental engineering ▪ Groundwater management, modelling ▪ Payment for ESS
3. Adelphi, Germany (SME)	▪ WP 42: Market analysis and market uptake, technology transfer ▪ WP 12: Contributions to Policy, finance, governance	▪ Partner in FP7 ECO-India, SWITCH, Twin2Co, AWARE, … ▪ Policy analysis and strategic consultant ▪ International market strategies for innovative water technologies ▪ Corporate finance and sustainability

Project Partner	Role in the project	Specific expertise
4. Bruine de Bruin, The Netherlands (SME)	▪ Contribute to demo site Westland ▪ Manufacturing, monitoring and operation of RO (WP22, WP33) ▪ Water treatment in the horticultural industry	▪ Manufacturer of RO and water treatment installations ▪ Research experience in Dutch research projects with universities and institutes
5. CHEMiTEC, Greece (SME)	▪ Contribute to demo site Athens ▪ WP22 & 34: Optimising and demonstrating modular packaged treatment solutions	▪ Membrane technologies ▪ Filters, softeners, demineralisation ▪ Ultra-sonic applications
6. Ecologic, Germany (SME)	▪ Lead WA1 ▪ Task lead in WP12 on policy, finance and governance ▪ ESS Evaluation Methodology ▪ ESS algorithm development for DSS	▪ Coordination and involvement in several FP projects on water policy, economic analysis, WFD implementation ▪ Dissemination and communication tools ▪ Consultant for DG ENV and EEA
7. Inrigo Water, Norway (SME)	▪ Development of a high-rate filtration technology for local CSO treatment ▪ Contribute to Hoffselva demo site	▪ Technology for treatment of DW, municipal and industrial wastewater ▪ R&D projects on water technology for climate change adaptation ▪ Member of Norwegian Smart Water cluster (treatment, reuse)
8. Leif Kølner Ingeniørfirma A/S, Norway (SME)	▪ Contribute to demo site Hoffselva ▪ WP21 & 32: Integration of local CSO treatment units by monitoring and data communication	▪ Instrumentation for measurement and control of water flows
9. Segno, Germany (SME)	▪ Development and standardisation of RTC solutions (WP21) for a sewer network, based on the ADESBA tool ▪ Demonstration at Emscher (WP31)	▪ Supplier for process automation solutions with several 100 applications in WWTP, ▪ Active R&D activities on WWTP automation in national research ▪ Data handling, visualisation, data storage, logical routines in RTC
10. TELINT, UK (SME)	▪ Development of data collection systems from various sensing elements, communication and networking between sensors and front-end systems (WP22) ▪ Linked to demo site Athens (WP34)	▪ Partner in EU-FP7 DARIUS on information management and other R&D projects ▪ Experience in innovative information management projects, including management of mobile distributed platforms, remote monitoring, software development
11. UFT, Germany (SME)	▪ Develop and investigate an innovative cross-flow lamella clarifier ▪ Model test and optimisation (WP22) ▪ Prototyping and demonstration in Emscher and Hoffselva demo sites (WP31, WP32)	▪ Development, construction, installation of hydro-mechanical and electrical equipment for stormwater tanks etc. ▪ R&D experience and engineering for innovative products in national research on urban drainage systems
12. EG, Germany (Case)	▪ Operator of Emscher demo site (WP31) ▪ Lead WP13: Demonstration of ESS ▪ ESS evaluation methodology ▪ Assessment of ecological river quality ▪ Policy, finance and governance ▪ Model sites for demonstration of innovative solutions	▪ Emscher basin manager with operation, governance, financing tasks ▪ Operator of large-scale wastewater and sewer systems ▪ Co-ordinator or partner in several Interreg, FP-research projects ▪ National WFD implementation projects
13. EYDAP, Greece (Case)	▪ Operator of demo site Athens ▪ Application of innovative solutions for sewer mining (WP22 and WP34)	▪ Experienced partner and co-ordinator in EU-FP projects CYANOCOST, TRUST ▪ Operation of large-scale reservoir, treatment, supply, sewer system, WWTP
14. VAV, Norway (Case)	▪ Operator of Hoffselva demo site ▪ Participation of technology development for Water Quality/WFD	▪ Partner in several EU-FP projects, such as PREPARED, TRUST etc. ▪ Active partner in WSSTP

Project Partner	Role in the project	Specific expertise
	▪ Demonstration of innovative CSO treatment technology and RTC	▪ Own research and rapid uptake of innovative solutions
15. CETaqua, Spain (RES), including AB linked to CETaqua as 3rd party under special clause 10	▪ Linked to the Llobregat demo site (Barcelona) ▪ Take the vast experience of AB operating the ASR facilities ▪ Lead WA4 Dissemination and markets ▪ Research and demonstration on ASR	▪ Experienced coordinator in several LIFE+ and FP7 projects ▪ Chair of WssTP ▪ Consultancy for the water industry ▪ R&D work on alternative water resources, water & health, environment, treatment, water infrastructure
16. DHI, Denmark (RES)	▪ Access to historic site Aarhus ▪ Lead WP23 ESS software framework ▪ Development of evaluation framework on ESS impacts from technology ▪ Application of ESS to Aarhus site	▪ Experienced co-ordinator and partner in several EU-funded projects, incl. FP7 Advance ETV, PREPARED ▪ Strong modeling and RTC experience ▪ Software development (MIKE) ▪ Consultant to the EC on ESS
17. KWR, NL (RES)	▪ Represents operator of the Westland demo site ▪ Lead in WA3, WP22	▪ Co-ordination of large IP-projects ▪ Drinking water supply, EU legislation ▪ Governing member of GWRC, WssTP, ACQUEAU ▪ Represented in EIP Steering group ▪ Advisor to the DG ENV on drinking water and WFD issues
18. NTUA, Greece (RES)	▪ Linked to demo site Athens ▪ Innovation development in sewer mining and ICT applications (WP34) ▪ Solutions on water scarcity ▪ Sustainability assessment ▪ Models for DSS	▪ Experienced co-ordinator and partner in several EU FP6 and FP7 projects, incl. TRUST, WaterPIPE, iWidget etc ▪ Water scarcity research ▪ Sanitary Engineering ▪ Communication and Computer Research
19. SINTEF, Norway (RES), including SINTEF Energi AS (SINTEF-E) linked to SINTEF as 3rd party under special clause 10	▪ Linked to demo site Hoffselva ▪ Lead: WA2, WP21, WP32 ▪ ICT technology ▪ Decentralised water treatment ▪ Hydraulic and water quality modelling needs to assess ESS changes (SINTEF-E, T11.1) ▪ Hydrology and water quality in Hoffselva for evaluation of the effects of the demonstrated solutions (SINTEF-E, T32.4).	▪ Experienced co-ordinator and partner in several EU-projects TECHNEAU, AWARE-P, PREPARED, TRUST etc. ▪ IT security and wireless communication research ▪ Condition monitoring solutions for Oslo water and wastewater infrastructure
20. UDE, Germany (RES)	▪ Linked to Emscher demo site ▪ ESS methodology evaluation and modelling in the Emscher case ▪ Numerical simulation of decentralised treatment systems ▪ Scientific support to full-scale demo	▪ Partner in FP5-FP7 projects on biodiversity and ecosystem services ▪ National research on sustainable water management and urban drainage ▪ Monitoring of CSO ▪ Impact assessment of receiving waters

Sub-contracting: Subcontracting is foreseen only for minor tasks, such as logistic and transport services, site preparation for the demonstration activities, laboratory analysis and modelling, renting of venues for workshops and conferences, printing services and likewise. More details are given in chapter 2.4.

Third parties:

- Linked to the Coordinator *IWW Rheinisch-Westfälisches Institut für Wasser Beratungs- und Entwicklungsgesellschaft* (hereinafter referred to as „IWW Consult“) is its mother company *IWW Rheinisch-Westfälisches Institut für Wasserforschung gemeinnützige GmbH* (hereinafter referred to as „IWW Research“) which is part of DESSIN as a third party under special clause

10 to the Grant Agreement. “IWW Consult” will carry out activities of the type “Management” and “Other” whereas “IWW Research” will carry out activities of the type “RTD” and “Demonstration”. The coordinator David Schwesig is an employee of the 3rd party IWW Research. For a part of his working time (equivalent to the personnel months of IWW Consult for Management activities within DESSIN), there will be a personnel secondment, putting the coordinator David Schwesig under the full responsibility and control of IWW Consult. For this part of his working time, the coordinator will work for IWW Consult, on the premises of IWW Consult and report to IWW Consult. The personnel cost related to the coordinator David Schwesig working for IWW Consult will be reported in the form C statement of IWW Consult. The coordinator will also be part-time involved in the scientific work of DESSIN (RTD activities), but this part of the work he will carry out as an employee of the 3rd party IWW Research, on the premises of IWW Research, and will report to IWW Research. The personnel cost related to his work for 3rd party IWW Research will be reported in the cost statement of 3rd party IWW Research. The same principle will apply to Mrs. Lisa Zimmermann, who will work partly for IWW Consult (Work Packages of activity type “OTHER”, cost reported in form C statement of IWW Consult), and may also work part-time for IWW Research (cost reported in form C statement of IWW Research). For staff member Andreas Hein, the situation will be reverse. Andreas Hein is an employee of beneficiary IWW Consult. For the part of his working time equivalent to his person months in the RTD and DEM work packages of DESSIN, there will be a personnel secondment, putting him under the full responsibility and control of 3rd party IWW Research, where he will work under the control of IWW Research, on the premises of IWW Research and report to IWW Research. Consequently, 3rd party IWW Research will reporte these personnel costs in its own form C.

- Linked to the partner CETaqua (Water Technological Centre), is Aigües de Barcelona, Empresa Metropolitana de Gestió del Cicle Integral de l'Aigua, S.A (hereinafter referred to as "AB") which is part of DESSIN as a third party under special clause 10 to the Grant Agreement. The connection between CETaqua and AB is as follows: CETAqua is a non-profit foundation existing under the laws of Spain. AB is a company existing under the laws of Spain. AB and CETaqua are both under the same control through Sociedad General de Aguas de Barcelona (SGAB, PIC 999615944). Regarding CETaqua, SGAB is one of the founders of this foundation, and has the right to appoint most of the members of the Board of Trustees of CETaqua. With regard to AB, SGAB owns more than half of the share capital of the company. So both CETaqua and AB are under the same control (SGAB). The relationship by nature is broad and not limited to the ECGA nor specifically created for the work in the EC-GA, and its duration goes beyond the duration of the DESSIN project and actually pre-dates and outlasts the DESSIN EC-GA. AB will carry out analytical activities in the WP22 and WP35 related to the flexibilisation of existing ASR located in their facilities, so their technicians will be involved in the decisions and strategies to be applied in the demonstration phase of the Barcelona case study. The participation of AB as Third Party will complement the current engagement of the DESSIN partners Emschergenossenschaft, EYDAP and Oslo Kommune VAV. The involvement of these utilities in the project with the role of partners or Third Parties will foster the market uptake of the technologies developed. It will suppose an excellent opportunity to drive the Ecosystem Services approach to operators and end users.

- Linked to the beneficiary SINTEF is SINTEF Energi AS (hereinafter referred to as "SINTEF-E") which is part of DESSIN as a third party under special clause 10 to the Grant Agreement. The connection between SINTEF and SINTEF-E has a formal external recognition, in the framework of the legal SINTEF Group structure: an established formal relationship between SINTEF and SINTEF Energi AS as mother and daughter companies, within the SINTEF Group. The relationship by nature is broad and not limited to the EC-GA nor specifically created for the work in the EC-GA, and its duration goes beyond the duration of the DESSIN project and actually pre-dates and outlasts the DESSIN EC-GA. SINTEF-E will carry out the work corresponding to 2.5 person months, within the following tasks; Task 11.1 in WP 11 "Development of ESS Valuation Framework" where they will review existing approaches and methodologies to assess changes in freshwater ESS provision focusing on modelling options for the Norwegian case study site, Hoffselva. SINTEF-E will also participate in WP 32 "Hoffselva (NO) Demonstration" performing the hydraulic and water quality modelling in Task 32.4 that will be used in the evaluation of the demonstrated solutions.

The budget distribution between beneficiary IWW Consult and its 3rd party under special clause 10 IWW Research is as follows:

Table 7 Budget distribution between beneficiary IWW and its 3rd party (special clause 10)

	Beneficiary IWW Consult (without cost of 3rd party IWW Research)				
	RTD/ Innovation	*Demonstration*	*Management*	*Other*	*Total*
Personnel costs	0	0	120 000	48 000	168 000
Subcontracting	0	0	26 000	25 000	51 000
Other direct costs	0	0	20 000	7 625	27 625
Indirect costs	0	0	84 000	33 375	117 375
Total costs	0	0	250 000	114 000	364 000
Requested EC contribution	0	0	250 000	114 000	364 000
	3rd party IWW Research (without cost of beneficiary IWW Consult)				
	RTD/ Innovation	*Demonstration*	*Management*	*Other*	*Total*
Personnel costs	164 000	8 000	0	0	172 000
Subcontracting	0	0	0	0	0
Other direct costs	5 000	1 000	0	0	6 000
Indirect costs	101 400	5 400	0	0	106 800
Total costs	270 400	14 400	0	0	284 800
Requested EC contribution	202 800	7 200	0	0	210 000
	Sum: IWW Consult including 3rd party IWW Research				
	RTD/ Innovation	*Demonstration*	*Management*	*Other*	*Total*
Personnel costs	164 000	8 000	120 000	48 000	340 000
Subcontracting	0	0	26 000	25 000	51 000
Other direct costs	5 000	1 000	20 000	7 625	33 625
Indirect costs	101 400	5 400	84 000	33 375	224 175
Total costs	270 400	14 400	250 000	114 000	648 800
Requested EC contribution	202 800	7 200	250 000	114 000	574 000

The budget distribution between beneficiary CETaqua and its 3rd party under special clause 10 AB is as follows:

Table 8 Budget distribution between CETaqua and its 3rd party AB (special clause 10)

	Beneficiary CETaqua (without cost of 3rd party AB)				
	RTD/ Innovation	*Demonstration*	*Management*	*Other*	*Total*
Personnel costs	155 460	158 051	2 591	82 912	399 014
Subcontracting	16 170	12 814	5 000	16 544	50 528
Other direct costs	42 078	67 632	7 200	11 200	128 110
Indirect costs	39 507.60	45 136.60	1 958.20	18 822.40	105 424.80
Total costs	253 215.60	283 633.60	16 749.20	129 478.40	683 076.80
Requested EC contribution	189 911.70	141 816.80	16 749.20	129 478.40	477 956.10
	3rd party AB (without cost of beneficiary CETaqua)				
	RTD/ Innovation	*Demonstration*	*Management*	*Other*	*Total*
Personnel costs	18 137	38 865	0	0	57 002
Subcontracting	0	0	0	0	0
Other direct costs	7 773	18 473.33	0	0	26 246.33
Indirect costs	5 182	11 467.67	0	0	16 649.67
Total costs	31 092	68 806	0	0	99 898
Requested EC contribution	15 546	34 403	0	0	49 949
	Sum: CETaqua including 3rd party AB				
	RTD/ Innovation	*Demonstration*	*Management*	*Other*	*Total*
Personnel costs	173 597	196 916	2 591	82 912	456 016
Subcontracting	16 170	12 814	5 000	16 544	50 528
Other direct costs	49 851	86 105.33	7 200	11 200	154 356.33
Indirect costs	44 689.60	56 604.27	1 958.20	18 822.40	122 074.47
Total costs	284 307,60	352 439.60	16 749.20	129 478.40	782 974.80
Requested EC contribution	205 457.70	176 219.80	16 749.20	129 478.40	527 905.10

The budget distribution between SINTEF and its third party under special clause 10 SINTEF-E is as follows:

Table 9 Budget distribution between SINTEF and its 3rd party SINTEF-E (clause 10)

	Beneficiary SINTEF (without cost of 3rd party SINTEF-E)				
	RTD/ Innovation	*Demonstration*	*Management*	*Other*	*Total*
Personnel costs	331 500	195 000	6 500	0	533 000
Subcontracting	0	5 000	3 600	0	8 600
Other direct costs	26 000	13 368,42	0	0	39 368,42
Indirect costs	321 750	187 531,58	5 850	0	515 131,58
Total costs	679 250	400 900	15 950	0	1 096 100
Requested EC contribution	509 437.50	200 450	15 950	0	725 837.50
	3rd party SINTEF-E (without cost of beneficiary SINTEF)				
	RTD/ Innovation	*Demonstration*	*Management*	*Other*	*Total*
Personnel costs	13 000	19 500	0	0	32 500
Subcontracting	0	0	0	0	0
Other direct costs	1 000	1 000	0	0	2 000
Indirect costs	12 600	18 450	0	0	31 050
Total costs	26 600	38 950	0	0	65 550
Requested EC contribution	19 950	19 475	0	0	39 425
	Sum: SINTEF including 3rd party SINTEF-E				
	RTD/ Innovation	*Demonstration*	*Management*	*Other*	*Total*
Personnel costs	344 500	214 500	6 500	0	565 500
Subcontracting	0	5 000	3 600	0	8 600
Other direct costs	27 000	14 368,42	0	0	41 368,42
Indirect costs	334 350	205 981,58	5 850	0	546 181,58
Total costs	705 850	439 850	15 950	0	1 161 650
Requested EC contribution	529 387.50	219 925	15 950	0	765 262.50

Other countries: Only partners from the EU and associated countries (Norway) participate in DESSIN.

Additional partners: The DESSIN consortium is complete in terms of capabilities, competences and implementation partners. Consequently, we have no general ambition to approach additional partners.

However, in terms of reaching maximum visibility and dissemination, DESSIN integrates local stakeholder groups at each of the demo sites. Stakeholder groups consist of representatives from governmental and non-governmental organisations, environmental interest groups, business facilitators, water users (agriculture, power generation, logistics,…) and others. In most cases, local stakeholder groups are already in place, such as the "Stakeholder group of subsurface water supply Horticulture Westland", the "Hoffselva group of private and public stakeholders" or the "Stakeholder group on the restoration of the Emscher valley". They will be formally invited to actively participate in DESSIN by the leader of the local demonstration (WP leaders on WA3), from the very beginning of the project. They will sign an adhesion letter where the degree of involvement will be specified, according to the capabilities of the entity/group and their interest in partial or total aspects of the demonstration. Local stakeholders will be multipliers of DESSIN results at local level, with direct impact in the society.

Table 10 Local stakeholder groups for the five demonstration sites

Case study	Name	Type of organisation / stakeholder group
Westland	Prominent Tomatos	Demonstration site owner, tomato producer
	Hoogheemraadschap Delfland	Water Board (region Westland)
	Stichting Waterbuffer	Foundation to stimulate use of the subsurface for freshwater management
	B-E De Lier	Design, engineering and installation company
	Agriport A7	Agro Parc for full scale horticulture application
	Tuinbouw Ontwikkelings Maatschappij	Horticulture development centre
	Stowa	National Foundation of applied water research
	LTO Noord Glaskracht	Advocacy organisation for horticulture companies
	Productschap Tuinbouw	Public organisation for the horticulture sector in The Netherlands
Llobregat	Comunitat d'Usuaris d'Aigües del Delta del Llobregat	Public corporation (community of users of the aquifer at the site)
	Agència Catalana de l'Aigua	Public organisation / authority: Water Agency
	Àrea Metropolitana de Barcelona	Metropolitan Agency, responsible for water supply & sanitation
Hoffselva	Hoffselvas Venner	Local Public Interest Group
	Bymiljøetaten	Public authority, section for urban environment & WFD in Oslo Municipality
	Vestfjorden Avløpsselskap	Local Waste Water Treatment Plant Operator
Emscher	Natur – und Umweltschutz-Akademie NRW	Nature - and Environmental protection academy
	EmscherFreunde	Association of "Friends" of Emscher
	Wassernetz NRW	Environmental network for implementing the Water Framework Directive
	Biol. Stationen NRW	Biological stations, regional institutions for biodiversity and ecosystem conservation

Case study	Name	Type of organisation / stakeholder group
	Regionalverband Ruhr	Regional Association Ruhr
	Industrie- und Handelskammer Essen	The Chamber of Commerce and Industry
	Wirtschaftsförderung Metroplole Ruhr	Initiative for improving the quality and attraction of the Ruhr Region
	Emschergenossenschaft	Key operator, site owner, water board
Athens	Special Secretariat for Water, Ministry of Environment	National Water Authority
	Region of Attica/Dept. of Hydro-Economy	Local Authority
	Hellenic Association of Hydro-Engineers	Professional Association
	Mesogeios SOS	NGO
	National Agriculture Research Foundation	National Agriculture Research Centre
	Local Union of Municipalities and Town Councils of Attica	Association of Local Authorities

2.4. Resources to be committed

If not stated differently, numbers in this chapter are rounded to full EUR for convenience. Exact figures are given in the budget tables of part A.

2.4.1. Budget distribution to activities

With a requested EC contribution of EUR 5,980,942 DESSIN will carry out work with a total cost of EUR 9 048 052. This makes a leverage factor of 150% of the seed money provided by the European Commission. The allocation of the total eligible cost to the different types of activities is visualised in Figure 7.

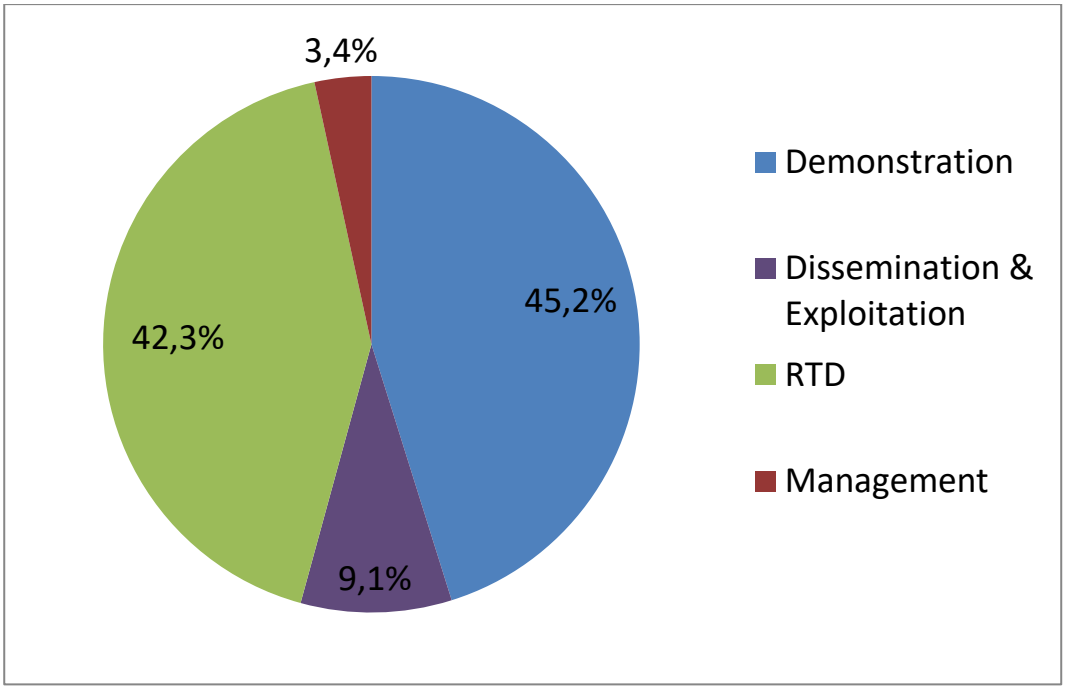


Figure 7 Allocation of resources (total eligible cost) to activity types

Demonstration and exploitation of innovative solutions are at the core of the Water Inno & Demo Call, and therefore also at the core of DESSIN. In summary, we allocate 54% of the total project budget to these activities (45% to Demonstration activities, 9% to Other activities i.e. dissemination and exploitation (%-values are rounded to whole numbers). In terms of EC contribution, this still gives a ratio of 34% for Demonstration, 14% for Dissemination & Exploitation, 47% for RTD activities and 5% for management. Table 11 gives the detailed figures of the budget distribution.

Table 11 Detailed budget allocation to activity types (rounded to full EUR)

Activity	Total eligible cost in EUR	% of total cost	contr. In EUR	% of EC total contr
RTD	3.830.358	42%	2.806.453	47%
DEM	4.086.408	45%	2.043.203	34%
OTHER	822.598	9%	822.598	14%
MGT	308.688	3%	308.688	5%
Sum	**9.048.052**	100%	**5.980.942**	100%

The total effort mobilised by the DESSIN consortium will amount to 768.11person months. Of these, the majority (414.16 PM) is dedicated to Demonstration and Dissemination/Exploitation activities (344.16 and 70 PM, respectively), whereas 336.95 PM are allocated to supporting RTD activities and 17 PM for project management.

Demonstration and implementation activities (DEM)
Demonstration, implementation and validation of innovative solutions in the five case studies are at the core of DESSIN. The approx. EUR 2 million requested EC contribution for demonstration are complemented by an equal amount of financial resources that is covered by the project beneficiaries, in particular by the end-users and research-driven technology SMEs, which indicates the strong interest and expectations in the DESSIN solutions from these types of beneficiaries.

Dissemination and Exploitation activities (OTHER)
Dissemination of results, developing the demonstration sites into showcases, and efficient promotion of the solutions are of paramount importance for DESSIN in order to ensure that knowledge transfer to the water sector, policy and the broader public is optimised. Therefore, DESSIN has a dedicated work are for these activities (WA4) that is endowed with 70 Person months and a requested EC contribution of EUR 822,598, which is 14% of the EC contribution or 9% of the total eligible cost.

Research and Technical Development Activities (RTD):
The DESSIN consortium made a rigorous selection of RTD activities that are going to be carried out within the project. We have excluded technical solutions that are still predominantly at the research level or that have fully completed their research stage. Hence, DESSIN has a focus on solutions that have already been validated at the concept and laboratory level, but still need supporting RTD to enable and consolidate a full-scale demonstration at actual sites. All RTD activities within DESSIN are tailored to support the demonstration itself and in an iterative process (feedback loop from WA3 to WA2) exploit the lessons learnt from the demonstration for the further development of the solutions.

Management (MGT)
DESSIN is a complex project with 20 beneficiaries (and two 3rd parties) from 7 countries, comprising technology-oriented and consulting-oriented SMEs, universities and research centres as well as water utilities and other end-users. Coordination and management of the project require an effective and flexible management structure and appropriate resources. DESSIN has set up an experienced team and allocates 5.2% of its requested EC contribution to management activities.

2.4.2. Resource allocation to different types of beneficiaries (in particular SMEs)

The allocation of resources to the different types of beneficiaries present in DESSIN is presented in Figure 8. As small and medium-sized enterprises are one of the main target groups of the Water INNO&DEMO call, DESSIN has included 11 SMEs into the consortium, and allocated a total EC contribution of nearly 2.8 million EUR to SMEs (which is 46% of the requested EC contribution).

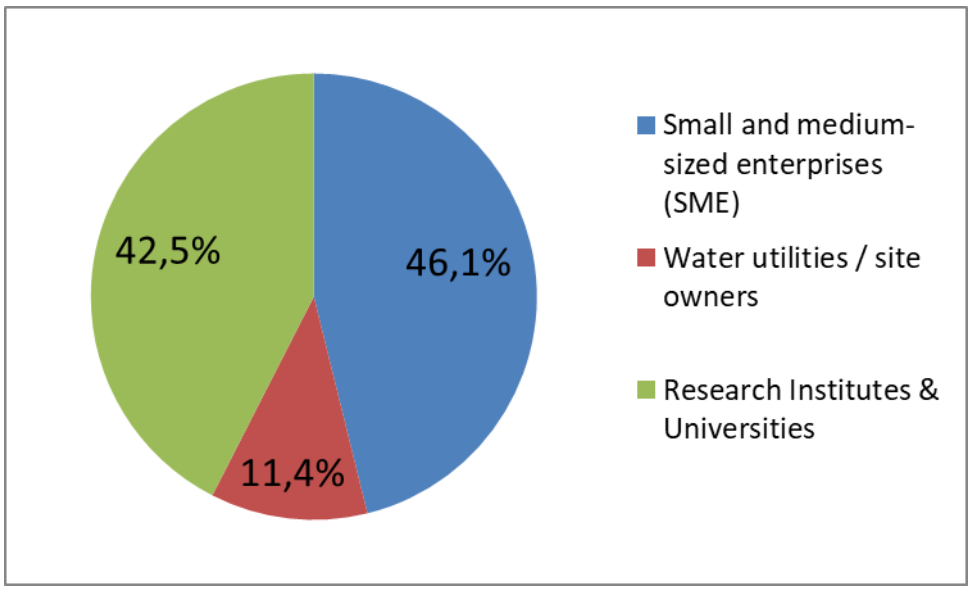


Figure 8 Allocation of EC contribution to SMEs and other types of beneficiaries (rounded to whole numbers)

2.4.3. Budget allocation to cost types

Table 12 gives the budget allocation to different cost types. The majority of the EC contribution will be used for the 768.11 Person Months in DESSIN.

Table 12 Budget allocation to different cost types (rounded to full EUR)

Cost Category	Costs in EUR	Requested EC contribution in EUR
Personnel	4,629,276	4,907,013
Other direct cost	984,805	886,038
(thereof travel)	*(379,805)*	*(278,959)*
Subcontracting	261,738	187,892
Indirect costs	3,172,234	included in items above, where applicable
Total SUM	9,048,052	5,980,942

Travel cost

An EC contribution of EUR 278,959 is requested for travel. DESSIN aspires to be aware of its own environmental impact, e.g. in terms of carbon footprint. Travels will be minimised by bundling project meetings and using video and phone conferences wherever appropriate. Nevertheless, with 20 partners distributed across 7 countries, and demonstration sites in 5 countries, travel cost of less than 5% of the project budget are a reasonable relation.

Other direct cost

An EC contribution of EUR 607,079 is requested for other direct costs. This is mainly used for equipment (EUR 156,802) and Consumables (EUR 450,277) for setting up the demonstration activities at the five demonstration sites. On average, this is slightly more than EUR 120 000 per demonstration site for a project of 48 months duration, with most of the demonstration activities starting already from the first project month and extending towards month 42 or even 48. Examples of consumables and equipment needed are:

- A transportable container with the lamella clarifier unit for demonstration first at Emscher, then at Hoffselva (WP31 and WP32).
- The reverse osmosis installation incl. monitoring system, chemicals for cleaning and replacement parts (e.g. membranes) for the ASR solution at the Westland site (WP33).
- The packaged treatment plant for urban sewer mining to be set up in Athens (WP34).
- Sensors and ICT for monitoring and real-time control at Emscher and Athens (WP31 & WP34).
- Pumping system, piezometers, electrical and piping connections for the MAR system at the Llobregat site (WP35).

Subcontracting

Subcontracting is a minor position of the DESSIN budget (costs of EUR 261,738). In principle, the DESSIN consortium is complete and has the key expertise for carrying out the tasks of the project. However, there are some task that are either minor services (e.g. logistical support in the execution of meetings, layout/printing services) or requiring highly specialised equipment or expertise not available in the consortium because they are beyond the core activities of the beneficiaries, such as e.g. special transport services, special analytical techniques.

Subcontracting will be carried out respecting the terms of the ECGA, in particular by using tendering or selection procedures that ensure transparency, equal treatment and best value for money. As DESSIN is aiming at demonstrating technical innovations at existing sites, this demonstration in some cases includes also the need to adapt or change existing installations, models or control units at the sites. Subcontracting for some of these tasks requires very specific knowledge and familiarity with the specific local circumstances and installations of the demonstration site, which is only available to organisations that have been involved in the installation, operation or maintenance by appointment or order of the site owner or within a framework agreement with the site-owner that pre-dates the DESSIN Grant Agreement. In such cases were the foreseen subcontractor is already known, they are already named in the following breakdown. Also in these cases and in the case of framework agreements pre-dating the EC-GA, selection of subcontractors has been done respecting the terms of the ECGA, in particularly by procedures that ensure transparency, equal treatment and best value for money.

The allocation of subcontracting cost to partners and items is as follows:

IWW (beneficiary No. 1) allocates EUR 51 000 for subcontracting of minor tasks, as follows:

- EUR 20 000 (MGT) for subcontracting related to support in the organisation and execution of major project meetings. DESSIN is a large and complex project with 20 beneficiary institutions plus associated third parties. Costs were estimated based on experience with the coordination of collaborative FP7 projects of a similar size. Anticipating a duration between one full day (noon-to-noon) and one and a half day, and a participation of (on average) three participants per beneficiary, cost of EUR 2500 for venue rental and EUR 2 500 for subcontracting of catering services are allocated per meeting. This amounts to EUR 5 000 per meeting, i.e. EUR 20 000 for all four major project meetings (kick-off, M18, M36, final meeting).
- EUR 25 000 (OTHER) for final graphical layout, printing and production of site-specific dissemination and information material in order to transform the five demonstration sites into

real European Showcases (WP41). Cost of EUR 5000 per demonstration site will include production of flyers, banners, brochures but also other services such as installation of information boards at the sites to enable targeted information events at the demonstration sites. These printing & production services require special expertise and equipment which are not available in-house of IWW nor the other beneficiaries, because it is not related to their core business.

- EUR 3 000 (MGT) for one financial audit certificate, which is contractually required due to the amount of the requested EC contribution of this beneficiary.
- EUR 3 000 (MGT) for fees for bank account and use of a specific electronic service to transfer the payments received by the EC to the other beneficiaries. This is based on four times the annual costs of EUR 450 for the bank account and EUR 300 for the electronic transfer service.

ADELPHI (beneficiary No. 3) allocates EUR 1 200 (MGT) for one financial audit certificate, which is contractually required due to the amount of the requested EC contribution of this beneficiary.

SEGNO (beneficiary 9) allocates EUR 2 375 (DEM, i.e. EC contribution EUR 1 187.50) to WP 34 for very subcontracting of very specific work understood as minor services which do not represent the core of the project. SEGNO will remain the final responsible for the execution of the tasks, and the subcontracting implies very specific work which SEGNO will supervise and complement in order to reach the objectives of the WP. This subcontracting is about re-programming of programmable logic controllers (PLC) necessary to enable the demonstration activities of the real-time-control (RTC) solution at the Emscher demo case within WP34.

EG (beneficiary No. 12) allocates EUR 4 700 (MGT) for one financial audit certificate, which is contractually required due to the amount of the requested EC contribution of this beneficiary. Furthermore, EG allocates EUR 60 000 (WP31, DEM, i.e. requested EC contribution of EUR 30 000) for subcontracting of very specific work understood as minor services which do not represent the core of the project. EG will remain the final responsible for the execution of the task, and the subcontracting implies very specific work which EG will supervise and complement in order to reach the objectives of the tasks. This subcontracting is necessary to enable two different WP31 demonstration activities at Combined Sewer Overflow units (CSO) at the locations Ohmstraße in Castrop-Rauxel and 5 CSOs in Dortmund. Subcontracting for WP31 is necessary at the following CSO locations for the following reasons:

a) 5 CSOs in Dortmund: remote real-time control (RTC) of a group of 5 CSOs by use of the ADESBA algorithm and system (Task T31.2) requires comprehensive checks of and changes in the existing control systems, and also some technical installations and re-fitting (e.g. throttle valves, electricity, telecommunication).

b) CSO Ohmstraße: demonstration of the container with the lamella settler at this CSO location (Task T31.1) requires preparation of connections from the pump sump of the CSO to the container (feeding pipe) and back to the sewer system (discharge pipe). As the container is going to be removed for a second demonstration phase at a Norwegian site (Hoffselva) after a couple of months, disconnection and restoration to the original state need to be conducted.

In addition to the general principles for subcontractor selection in DESSIN, as described in the introductory paragraph to this section, selection and contracting procedures for the subcontractors of

beneficiary EG (an association under public law) are in full compliance with the German national regulation for public procurement (VOL/A: "Vergabe- und Vertragsordnung für Leistungen Teil A").

No.	Cost item	Explanation	Cost estimate in €
1	Analysis of PLC programs of CSOs at demo site	Analysis of the existing Programmable Logic Controller (PLC) programs of the 5 CSOs where real-time-control (RTC) is to be demonstrated: The company Janzon that had originally programmed the PLC programs when the CSOs were built, had to check these programs for compatibility with the RTC solution (ADESBA) that is going to be implemented here for the demonstration activities of WP31	4000
2	Seminars on ADESBA solution for RTC	External consulting by the ifak institute, who was the developer of the ADESBA algorithm that will be used for RTC of the CSOs. Ifak needs to be involved for consultation on the ADESBA algorithm in order to ensure safe implementation and operation of the RTC.	4000
3	Compilation of a set of specifications for implementation of the RTC	External compilation of a specification document for the implementation of the RTC. This specification document is compiling all relevant current information on the single CSO facilities and is setting local rules and security modules for an automatic switch from RTC to manual mode in order to allow safe ADESBA operation.	9000
4	Adjustment of throttle section of pipe in CSO Strickerstr., installation of 2nd throttle valve	A throttle valve in each discharge pipe is a precondition for all CSOs to be controlled via RTC. The CSO Strickerstr has two discharge pipes but had only one throttle so far. Therefore, a 2nd throttle needs to be re-fitted to prepare the facility for the ADESBA demonstration activities.	3000
5	Adjustment and update of Eplan documentation in CSO Strickerstr.	Update of the electrical installation plan of the CSO: include all changes done to the electrical installation related to the DEM operation of the CSO with the new RTC solution. This is essential in order to ensure a safe operation of the CSO during the DEM phase.	2000
6	Integration of 2nd throttle valve at CSO into PLC program & hardware components	Integration of the control of the 2nd throttle valve at CSO Strickerstr into the PLC program. This new hardware element in the CSO needs to be integrated into the internal automatic control and operation mode. Furthermore, some new hardware components are required at this point and need to be installed by the external company.	6000

No.	Cost item	Explanation	Cost estimate in €
7	Electrical works	Changes to the electrical installation, for installation of 2nd throttle valve at CSO Strickerstr.	5000
8	Programming the PLC program for implementing link to ADESBA computer	This program adjustment is necessary in order to prepare each CSO's internal automatic control and operation mode for linking the CSO to the ADESBA computer. The local rules and security modules for an automatic switch from RTC to manual mode that are compiled in the specifications document are the basis for these adjustments. The aim is to allow safe ADESBA operation.	9000
9	Adjustments in the telecommunication system	High frequency telecommunication is needed for remote control of the CSO units and the RTC system.	3000
10	Installation of feeding pipe for lamella settler at CSO Ohmstr.	This is required to feed the lamella settler container at the CSO Ohmstr with combined sewage. The lamella settler is one of the devices to be demonstrated at a CSO unit of beneficiary EG and needs to be fed with sewage water from the CSO inflow. Such a feeding pipe was not present at the CSO because it is only needed for the demonstration work under DESSIN.	3000
11	Installation of discharge pipe for lamella settler at CSO Ohmstr.	Such a discharge pipe was not present before and is only required for discharging the combined sewage water coming from the demonstration container to the nearest sewer. The pipe needs to be laid in the ground for connecting it to the closest sewer and needs to be drilled through the sewer wall to make the connection.	6000
12	Cleaning the CSO pump sump	The pump that is feeding the demonstration container is located in the pump sump. Cleaning the pump sump was necessary for the installation of the container pump and might become necessary also during the operation of the container in case of pump blockages or when demounting the container after the DESSIN demo phase.	1000
13	Removal of the discharge pipe	After completion of the DEM phase at CSO Ohmstr, disconnection of the feeding and discharge pipe and restoration to the original state needs to be conducted. As the pipe is laid in the ground for connecting it to the closest sewer by drilling through the sewer wall, it might become necessary to replace that sewer section when demounting the container after the DESSIN demo phase.	5000

No.	Cost item	Explanation	Cost estimate in €
Sum subcontracting cost beneficiary EG			**60000**
Requested EC contribution for subcontracting (DEM, 50%)			**30000**

EYDAP (beneficiary No. 13) allocates EUR 15 000 (WP34, DEM, i.e. requested EC contribution of EUR 7500) for Subcontracting activities that will entail non-scientific work undertaken by external contractors to prepare and install the packaged plant and related infrastructure (incl. excavations, restoration of existing wastewater holding tanks in the demo location, construction of local network and treatment unit support structures). EYDAP does not currently have in-house capacity to perform such works, since the company's strategy, particularly within the current financial crisis context, has been to outsource non-core activities to external contractors.

Furthermore, EYDAP allocates EUR 7 000 (WP34, DEM, i.e. requested EC contribution of EUR 3 500) for subcontracting activities that will entail very specific analytical services on water samples which are necessary to prove compliance of the demonstrated water treatment solution with the national Greek regulation for water re-use. These analyses requires very specific equipment and standardised analytical methods that are not available at EYDAP in-house, due to the above mentioned company strategy and because currently EYDAP is not offering water reuse options on an operational basis. These analyses do not represent the core of the scientific / demonstration work assigned to EYDAP in WP34, but are necessary to achieve the WP objectives. The selection process will follow standard EU and national legislation for tendering, compliant with the EC financial guide and GA.

VAV (beneficiary No. 14) allocates subcontracting costs of EUR 7 000 (DEM, i.e. requested EC contribution of EUR 3 500) for shipping / transport of a special container with the pilot plant for demonstration activities from the German Emscher site (WP31) to the Norwegian Hoffselva site (WP32). This is not a scientific-technical task of the project but nevertheless essential for the progress and success of the project. Such specialised transport services cannot be carried out by any of the beneficiaries, because this is not their core business and requires special transport equipment only available to companies (subcontractors) specialised in this sort of transport services.

CETaqua (beneficiary No. 15) allocates costs of EUR 50 528 (requested EC contribution of EUR 40 078.50) for subcontracting of very specific work understood as minor services which do not represent the core of the project. CETaqua will remain as the final responsible for the execution of the task and the subcontracting implies very specific work which CETaqua will supervise and complement in order to reach the objectives of the tasks. CETaqua takes into account the sustainability of each potential purchase, and a multi-criteria selection is made, including technical considerations, financial conditions and environmental aspects, together with other practical and ethical qualities. Green procurement is also considered to take environmental considerations into account within the procurement process and as a way to improve the efficiency of the project while using market power to bring about environmental benefits locally and globally. In this regard, the European Commission’s toolkit is used. Local and ISO-certified subcontractors and suppliers are also favoured. In particular, subcontracting is related to the following items / services:

- EUR 10 000 (RTD, i.e. requested EC contribution of EUR 7 500) related to support Task T22.3.2: external services to adjust local flow modelling by subcontractor CUADLL (the community of users of Groundwater in the Llobregat Aquifer), which is the organisation that eventually works for the site owner AB to control groundwater level. They have information from field campaigns and controlled points of the aquifer network. The regional groundwater model is already constructed. The subcontracting task will consist in the adaptation to a smaller scale to quantify the impact of ASR injection in the surroundings of the AB facilities.
- EUR 6 170 (RTD, i.e. requested EC contribution of EUR 4 627.60) for very specific analysis of water samples to evaluate the impact of the ASR solution on the ecosystem in WP22. The evaluation will be done by CETaqua and will be based on several indicators. Two indicators are composition of stygofauna and biofilms. CETaqua carries out the sampling, but analysis for these two parameters requires very specific expertise and equipment not available to CETaqua and hence needs to be subcontracted.
- EUR 1359 (DEM, i.e. requested EC contribution EUR 679.50) for in WP35 for external mineralogy analysis (X-Ray Diffraction). This will be needed to determine the mineralogical composition of the aquifer material. This will allow to determine potential interaction of injected water with the aquifer geology. This service requires very specific expertise and equipment not available to CETaqua.
- EUR 2 823 (DEM, i.e. requested EC contribution of EUR 1 411.50) for virus analysis in groundwater samples from the Llobregat demonstration case (WP35). This requires very specific expertise and equipment not available to CETaqua and hence needs to be subcontracted.
- EUR 8 632 (DEM, i.e. requested EC contribution of EUR 4 316)for activities in WP35 tailored to foster the impact of achieved results. These costs will be necessary to cover the expenses to organize and carry out local meetings with various groups interested in or involved in the Llobregat demo case, such als relevant stakeholders and relevant actors (public bodies involved in management of resources, end-users, universitits and research centers). This requires cost allocation for e.g. venue renting, catering, translation, printed materials and transportation services).
- EUR 16 544 (OTHER, i.e. requested EC contribution of EUR 16 544) for external design of project logo and templates, cost for images, design and printing newsletters and other communications (EUR 6 544) and two video productions (EUR 10 000): one general video about the whole DESSIN project, and one video specifically about the Llobregat demonstration site (which is not included in the video production budget of beneficiary 17 – KWR). CETaqua has a person who gives support to all communication issues in European projects and in charge of communication strategy of projects. Contents and pictures selection and preparation for the website, newsletters and the video will be directly carried out by CETaqua, but we need specific expertise for brand design and production as well as the video production. This specific external expertise will allow high quality in design and resolution of the graphic material to be adapted to different applications (e.g. website, templates etc.).
- EUR 5 000 (MGT, i.e. requested EC contribution of EUR 5 000) for an external financial audit to issue the financial audit certificate which is required due to the amount of the requested EC contribution of this beneficiary.

DHI (beneficiary No 16) allocates EUR 835 (WP 23, RTD, i.e. requested EC contribution of EUR 626,25) subcontracting costs for catering during a 3-days workshop & training course that is held at DHI together with the beneficiaries responsible for contribution the specifications of the WP23 software deliverables DHI is responsible for.

KWR (beneficiary No 17) foresees subcontracting for coupling the RO membrane system to the already operating ASR field system at the demonstration site in the Westland, plus the setting up of an additional well in order to carry out the demonstration activities (cost of EUR 30 000 in WP33; DEM; i.e. requested EC contribution of EUR 15 000). This is specialized technical work that needs to be carried out by a geotechnical engineering consultant. To ensure transparency and best value for money the installation work will be carried out after a tendering procedure. Subcontracting is also foreseen for establishing demosites as showcases, specifically the production of videos aiming at sharing information on specific showcases with potentially interested SME's, public authorities, stakeholders and the general public (cost of EUR 20.000 in WP41; OTHER). In addition, subcontracting is foreseen by KWR for one financial audit certificate (€ 3.500; MGT).

SINTEF (beneficiary No. 19) allocates EUR 3600 (MGT) for one financial audit certificate, which is contractually required due to the amount of the requested EC contribution of this beneficiary. SINTEF furthermore allocates EUR 5 000 for subcontracting in WP 32 (DEM, i.e. requested EC contribution of EUR 2 500), which are needed to lease and maintain specific water samplers, including calibration and testing, which are not available as in-house capacities of SINTEF. The subcontracted activity does not concern the core of the scientific work itself but covers just a minor service, which is needed to enable SINTEF to carry out the successful demonstration activities of the water treatment technologies at the Hoffselva demo site in WP 32.

2.4.4. Complementarity with other funding / investment activities:

At most of the five demonstrations sites, activities of DESSIN are linked to or build on existing investment plans (Table 13). This means that the requested EC contribution of less than 6 million EUR will have a leverage effect, also with regard to stimulation of the demand-site of water technology solutions. Some of the investments are already completed and directly prepared the ground for the work that is going to be carried out by DESSIN (e.g in the Westland or Llobregat case), other investments are part of long-term conversion projects that will extend beyond the duration of DESSIN (e.g. Emscher, Hoffselva and Athens), where the end-user / site owner can use the results of DESSIN (technology as well as the ESS tool) to guide the decision-making and selection process of technologies and solutions that are going to be implemented in the coming steps of the investment project.

Table 13 Ongoing investment projects at the five DESSIN sites

Site	related investment projects in EUR	Type and Scope
Emscher (WP31)	4 500 million	30 years river conversion project: underground sewer channel; restoration of river system back to a more natural system
Hoffselva (WP32)	20 million	4 years mitigation plan to improve hydraulic capacity of the system
Westland (WP33)	1 million	Development and construction of a full scale ASR system at the location of Prominent, Westland)
Athens (WP34)	37.9 million	public investment in a black-water re-use program
Llobregat (WP35)	1.5 million	Enlargement of ASR system to increase injection volume (75.000 m3/day) of drinking water in Barcelona DWTP

3. Impact

3.1. Strategic Impact

DESSIN will produce impacts in the water sector as well as on research and environmental policies. SMEs, site owners and research centres involved are a good representation of the potential beneficiaries of business lines generated by the project: (i) new technology will be developed and demonstrated, (ii) existing technology will be applied in innovative ways and (iii) new consultancy services related to ESS will be created and put into value (Figure 9).

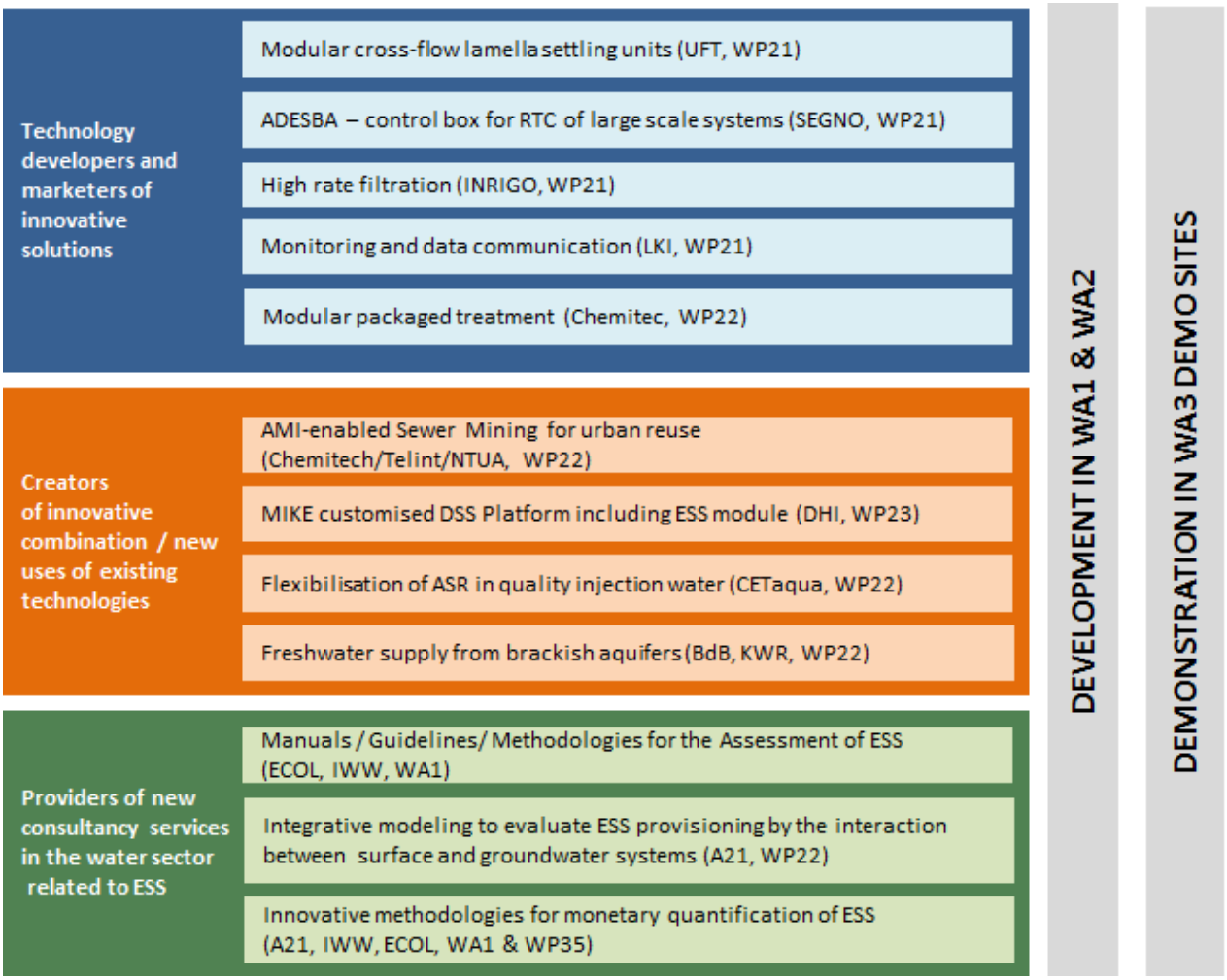


Figure 9 Main innovative solutions developed by DESSIN grouped into business lines

3.1.1. Contribution to the expected impacts

In chapter 1.1, Table 1 describes how DESSIN contributes to the objectives of the call. The following paragraphs outline how DESSIN will achieve the impacts stated in the work programme and the call:

Support implementation of the Europe 2020 Flagship Initiative on Innovation Union

The Innovation Union (EU-IU) highlights innovation to put the European economy back on track and tackle societal challenges. DESSIN contributes to the EU-IU by: (i) effective collaboration between business and academia, transferring research output into new products and new services, (ii) dedicated efforts to smooth the path from the idea to the market, by demonstrating innovative technology at sites in five countries, providing market opportunities and visibility to customers in Europe and worldwide, (iii) establishing the ESS methodology as an enabler for innovative water solutions, and supporting the EIP on Water (cf. below).

Contribute to the Commission's initiative on 'Smart Cities and Communities'

The potential boost of ICT technology in urban areas is prominent in the SCC. DESSIN demonstrates the benefit of ICT in urban water management (e.g. D21.2, D22.1b, T23.2, M31.2, D34.2), thus overcoming several obstacles identified in the SCC initiative, and provides the opportunity to scale up and deploy innovative ICT solutions. DESSIN helps to implement new ICT solutions in water management, monitoring and remote control, and lowers financial barriers by offering direct access for water managers and municipalities to the ICT solutions at the demonstration sites.

Contribute to the aims of the European Innovation Partnership on 'Water'

The DESSIN group had also applied as an action group of the EIP Water on "Ecosystem Services", in order to contribute to the three major aims of the EIP:

"Facilitate, support and speed up the development and deployment of innovative solutions to water challenges; Contribute to sustainable growth and employment and create market opportunities for these innovations both inside and outside of Europe"

For practical reasons, this application is put on hold and as a first priority, the options to link-up with an already existing EIP Action Group (ESE Ecosystem Services for Europe) will be explored (cf. Task T51.3), but returning to the pending application as a separate, complementary Action Group is maintained as a backup solution.

Either way, DESSIN will pave the road for the actual deployment and market opportunities for solutions to water scarcity and quality – two important water challenges in Europe. Successful case studies will be developed into "lighthouse sites" where organized visits, exhibitions, and workshops serve to speed up the dissemination and exploitation of results (WP41). The following steps are needed to achieve the expected impact:

- Successful implementation of the solutions at the demonstration sites and quantification of their benefits in terms of increased value of Ecosystem Services (WA3).
- Early involvement (participatory approach) of relevant authorities and stakeholders to ensure acceptance of innovative solutions (WA3; five local stakeholder groups).
- Support SMEs in developing specific strategies to facilitate their route to market (WP42).

Promote growth and job creation in Europe

DESSIN will provide economic arguments for use of the innovative solutions in terms of increased value of Ecosystem services. Targeted dissemination activities and support to SMEs in developing strategies for market uptake, will facilitate growth and job creation. The following steps are needed to achieve the expected impact:

- Development of an evaluation framework (WA1), including guidance in the evaluation of ESS, indicators to measure changes in ESS and quantification of monetary benefits.
- The framework will have to include components about sustainability assessment (T11.1.4) and recommendation on governance structures and financing mechanisms (WP12).

Industry, including agri-/horticulture, and tourism are sectors that benefit from DESSIN's solutions to water scarcity, with consequences for economic growth and job creation.

Partnership between public authorities, regulators, water utilities and companies, the research community and the public

Within DESSIN, this is organized via 5 local stakeholder groups. They are an essential part and ambassadors for the project that will ensure dissemination and acceptance of solutions demonstrated by DESSIN. The following steps are needed to achieve the expected impact:

- Identification and involvement of relevant stakeholders for each case study. This has already been done during proposal preparation (cf. Table 10 in chapter 2.3).
- Comprehensive assessment and evaluation of solutions to be demonstrated (WA3).

- Proper dissemination / communication of the benefits and increased value of Ecosystem Services ESS to ensure a high level of acceptance (WA4).

Make best use of existing instruments

DESSIN will build on existing approaches for valuation of Ecosystem Services through links to relevant projects and initiatives (e.g. REFORM, EPI-water, BioFresh, Aquamoney, OPERAS, OpenNESS, Ecosystem Services Partnership ESP). An analysis of currently existing typologies and approaches for ES definition and valuation will be carried out to identify the most appropriate elements for further development. Also, existing frameworks of sustainability, policy, governance, finance and payment will be analysed, with special focus on their suitability to foster and support innovation in the water sector (relevant FP7 Environment Theme projects: TRUST, SWITCH, Prepared). The following steps are needed to achieve the expected impact:

- Analysis of existing typologies / valuation methodologies for Ecosystem Services (WP11).
- Analysis of policy, governance and payment frameworks fostering innovation (WP12).

Align and pool resources in order to adopt innovative water solutions more rapidly.

DESSIN is composed of all relevant actors to ensure an adoption of the developed solutions beyond the project team: (i) Solutions developed by technology-providing SMEs are validated and showcased at prominent sites in Europe, (ii) consulting SMEs for the water sector can extend their portfolio based on the experience gained in the demonstration; (iii) utilities and consulting SMEs can act as ambassadors for the solutions and can also increase their own visibility by involvement in DESSIN. These three different actors supported by leading research institutions enable a rapid adoption of the innovations by the water sector and market. This requires the following steps:

- Successful RTD and demonstration in Work Areas 1 to 3.
- Identification of business opportunities for the SME members of the project in particular, but also for other parties by the activities of Work Area 4.
- Further refinement of opportunities and exploitation plans during the project. Continuous identification of exploitable results, and how the solutions could be practically implemented elsewhere to tackle similar water-related challenges (WA4).

Achieving the objectives of water-related policy

Recent EU policy and strategy documents such as the Blueprint for Water indicate the need to improve water resource management, promote adaptation and sustainability, and better account for the costs and benefits of policy and implementations. In this context, the tailored ecosystem services approach of DESSIN will become a practical tool to:

- Highlight the potential points of convergence between the WFD and other policies (e.g., Flood Directive, Urban Wastewater Directive, Habitats Directive, Birds Directive) and aid in establishing the necessary links for their coordination.
- Clarify the link between the ecological status of water bodies, their functions, and their capacity to provide the ESS on which other natural, as well as human systems depend.

DESSIN's methodology for ESS valuation will stimulate investment in ecosystem services restoration, enhancement, and protection. Adoption of the ESS approach can enhance the accounting of benefits achieved by the Programmes of Measures (PoMs) and portray the objectives of the WFD in a broader social and economic context. The ESS valuation methodology will encourage the subsequent evaluation of innovative financing mechanisms such as Payment for Ecosystem Services (PES), which is one of the actions mentioned in both the EC Blueprint and the EC Biodiversity 2020 Strategy. To achieve this impact, a successful completion of work in Work Area 1 is required.

Creation of market opportunities and increased demand for innovation leading to global leadership for the European water technology and services sectors.

Addressing the objectives of the WFD from an Ecosystem Services perspective will also result in opportunities for innovative solutions that account for the demands of the multiple stakeholders related to water resource management. This will create incentives to enhance innovation and thus competitiveness in the industry. This requires the following steps:

- Careful selection of demo-sites, covering representative scenarios and ESS in Europe and beyond, to ensure that the demonstrated solutions are relevant at a large number of sites. This has already been considered when selecting the DESSIN demo-sites.
- Targeted dissemination activities to increase the potential transferability of results/lessons learnt to areas beyond the DESSIN case studies. (WA4).

Demonstrate capability to facilitate market uptake and their potential to stimulate demand side measures for innovation.

In DESSIN, development of solutions is based on the principles of user centred design (UCD) building on the demo site's specific challenges to identify innovative solutions. UCD is focused on solutions to user demands with a multidisciplinary approach in contrast to the traditional technology driven, specialized approach more focused on technical components (Vredenburg et al. (2002)[19]. The interaction between WA1 (ESS methodology), WA2 (Development), WA3 (Demonstration) and WA4 (Route to market) will ensure that DESSIN delivers validated solutions that are tailored to the needs of the end-user and current as well as future customers / market. The ESS valuation methodology, by itself, has the potential to stimulate the demand side and establish a new standard in water management where decision makers demand solutions with a measurable impact on Ecosystem Services. This in turn will motivate innovation. To achieve this impact requires the following steps (WP42):

- Support supply side push for water technologies by developing sample development approaches (T42.1 – T42.3).
- Assure pan-European market uptake of water technologies, by addressing and overcoming market barriers and promoting solutions (T42.4 – T42.5 and T42.7).
- Create demand side dynamics to further stimulate water technology innovation (T42.6).

Synergies with European Structural Funds

DESSIN will explore synergies with structural funds in the involved regions (NRW, Greater Athens, Catalonia, Southern Netherlands). National (especially Norway) and European funding schemes (e.g. JPI Water, other) shall also be explored for possible exploitation measures. DESSIN suffers from actually starting early 2014 whereas the discussion on the design of the different structural funds in the involved regions is already ongoing and will be nearly finished when the project starts. The operational programs are not yet finalized, so it is difficult to develop a grounded strategy at this point. DESSIN will, nevertheless, include strategies for follow-up financing in its mobilization strategy (under Task 42.3). This may include activities such as:

1. Activation of downstream funding from structural funds for commercialization of DESSIN demonstrators, when and where applicable. A monitoring of SF development shall be conducted and first contacts made by the DESSIN advisory committee, i.e. for NRW by the representative of Zenit
2. Activation of venture capital/ business angels on regional, national and European level to support market replication actions and other public/ private financing instruments

[19] Vredenburg, Karel, Isensee, Scott and Righi, Carol (2002). User-Centered Design: An Integrated Approach. Upper Saddle River, NJ: Prentice Hall PTR.

3. Activation of regional and international technology transfer channels.
    a. Regional: contacts to regional clusters and sector networks (e.g. Umweltcluster NRW in Germany)
    b. Transnational: Enterprise Europe Network (represented in the Project Advisory Committee)

The operational programs will support the improvement of the competitiveness and adaptability of the economy and the creation of employment. Most probably they will cover different priority axes which will allow upstream and downstream financing support for research and innovation projects. In the case of NRW for SF period 2007-2013 these axes are

1. Strengthening the entrepreneurial basis
2. Innovation and knowledge-based economy
3. Sustainable urban and regional development
4. Technical assistance

Especially actions in tradition of axes one and two shall be a perspective for follow-up financing in the regions. Given the 48 month duration of DESSIN such a positioning should be achievable, acknowledging informal information, but cannot be clearly described due to missing formal information base for SF 2014-2020 period at the time this EC-GA is negotiated.

3.1.2. Specific impact of the innovative solutions developed within DESSIN

DESSIN solutions for Water Quality Challenges / WFD implementation (decentralized treatment, real-time control of large-scale systems) will have the following impact:

- Reduced pollutant load and volume from CSO overflows
- Improved water quality in water bodies receiving CSO overflows, some classified as heavily modified that require measures to improve the ecological and chemical status.
- Facilitate increased implementation of mitigation measures by incremental implementation of local treatment and upgrading the efficiency of existing infrastructures with RTC, in comparison to large scale expansion of sewer systems.
- Improved aesthetic value of urban water bodies enabling improved recreational services and functions as environmental elements in urbanized areas.
- Safeguard of a habitats and protection of aquatic species.

DESSIN solutions to tackle Water Scarcity Challenges (Managed Aquifer Recharge / Deep aquifer injection, Sewer mining) will have the following impacts:

- Enhancement of groundwater resources in quality and quantity, contribution to the good ecological, chemical and quantitative status groundwater bodies
- Safeguarding water supply to areas with intermittent availability and peak demands.
- Reducing ecological and chemical pressures caused by high abstraction.
- Increase operators' competitiveness in the drinking water treatment process, with a substantial reduction of the cost and environmental impact of injected water.
- Provision of irrigated urban green spaces in arid/semi-arid regions.
- Increase the resilience of water supply systems under extreme conditions (scarcity and drought periods, periods of imbalances between demand and available resources)
- Service sectors such as tourism, trade or leisure will break water availability constraints.
- Increase reliable fresh water resources of high quality for a sustainable urban, agricultural and industrial development.
- Enhanced potential to supply fresh water from brackish (coastal) areas to decrease the negative effects on surrounding freshwater ecosystems.

3.1.3. Potential areas and markets of application

Table 14 summarizes the needs addressed by solutions developed within DESSIN, their competitive advantage and potential market areas for application.

Table 14 Solutions developed in DESSIN: competitive advantage and potential market

Technology	Addressed needs	Competitive advantage	Market area
Cross-flow lamella settler for local treatment of CSOs (WP21, WP31, WP32).	Avoid that settled sludge may be re-entrained into the inflow.	Improved removal of particulate material.	Water and wastewater operators
High rate filtration system with specially designed filter media (WP21, WP32).	Capture of debris, organic material and particles.	Compact unit, adaptable to local CSO design.	Water and wastewater operators
ADESBA-control box - fully automated real time control system (WP 21, WP 31).	Minimize combined sewer overflow.	Standardized ICT solution for optimized volume utilization.	Water and wastewater operators
Integration of local treatment units by monitoring and data communication (WP21, WP32).	Ensuring performance and sustained operation of local treatment units.	Efficient monitoring and operation of distributed treatment.	Water and wastewater operators
Distributed reuse technologies (both modular and mobile) with focus on sewer mining technologies (WP22, WP34).	High quality effluent close to point of reuse. Efficient and safe operation.	Minimum infrastructure and low transportation costs for treated effluent.	Water and wastewater operators
Hybrid Aquifer Storage and Recovery (ASR) / desalination (RO) systems (WP22, WP33).	Increased freshwater storage, in near coastal areas with saline groundwater.	Use of ‘free’ natural sources, saving expensive above-ground space.	Water and wastewater operators; Industries.
Aquifer Storage and Recovery (ASR) systems (WP22, WP35).	Increasing the flexibility of storage in strategic groundwater reservoirs, without compromising WFD compliance.	Reduce energy consumption and reagents needs; ESS provide novel and powerful arguments for deep injection.	Private/ public water operators.
ESS Valuation Toolkit (WP11, WP13, WP23).	Standardized, broadly applicable ESS valuation methodology for water bodies to support selection of mitigation solutions.	Clear links between ESS and innovative solutions; new incentives for marketable products and services.	Public authorities; Technology developers (other SME).

3.1.4. Advantages of DESSIN solutions compared to those available today

Table 15 provides an overview on the advantages of the innovative technologies and solutions developed and demonstrated within DESSIN – as compared to currently available technologies and their limitations.

Table 15 Advantage of DESSIN solutions as compared to those available today

Challenge	Technologies before DESSIN and their limitations	Advantage of innovative solution from DESSIN
Water quality: Reduction due to pollution from CSOs in receiving water bodies.	Mechanical pre-treatment by sedimentation in the CSO tank, no / limited instrumentation. **Limitation:** i) Poor treatment efficiency. ii) Requires a holding tank volume for sedimentation. iii) No monitoring of performance.	i) A modular cross-flow lamella settling unit enabling improved particle separation in local treatment of combined sewer overflows from tanks. ii) High rates filter solution that can be installed on the CSO outlet pipe for smaller structures without a holding tank. iii) An integrated instrumentation and data communication package for monitoring performance and operation of local treatment units.
Water quality: Reduction of CSO overflow frequency and volume.	Optimization of the retention volume for wastewater and stormwater in sewer networks including CSO tanks by RTC. **Limitation**: Great optimization effort to be repeated for each sub catchment.	A standardized RTC system for efficient implementation.
Water scarcity: Water shortage for civil and industrial use incl. agriculture and horticulture.	Aquifer storage and recovery (ASR) **Limitation:** In coastal areas, recovery efficiencies of ASR systems can be limited by density differences between the injected freshwater and ambient brackish or saline groundwater.	Combine Aquifer Storage and Recovery (ASR) and desalination with an innovative well design.
Water scarcity: Water shortage for civil use.	ASR systems working in a very restricted way, injecting pure water. **Limitation:** Existing regulations tend to impede uptake of recharge projects with non-potable quality of water.	Flexible ASR systems to deal with different pre-potable quality injection waters.
Water scarcity in arid semi-arid zones.	Re-use of treated water in centralized sewer systems. **Limitation:** High energy and infrastructure costs: End of pipe treatment away from the points of re-use of treated water.	Combine for the first time membrane-based, small footprint, sewer mining technologies and distributed low energy sensor networks coupled with distributed ICT intelligence for remote control and operation (under high health and water quality standards).

3.1.5. Why do we need a European approach?

There is a number of reasons to address in an European approach the topic of fostering innovative solutions to cope with the challenges of water quality (WFD implementation) and water scarcity, including:

- Sharing experiences in adaptation, implementation and operation of technology and operation solutions to avoid duplication of work.
- Build critical mass in terms of competences and make use of range of competences and experiences in Europe with different focal areas (e.g. different solutions, analytics, policy analysis etc.).
- The water technology market is international and needs trans-national cooperation to be addressed.
- Assessing the applicability and overall sustainability of innovative solutions under a wide range of climatic, hydrological and hydrogeological situations, and also under different settings of policy, governance, finance and payment modes.

3.1.6. How do we link to other national or international research activities?

To ensure that DESSIN will go beyond the state of the art, we both build on and contribute to national and international research activities. This is achieved in a number of ways:

- Several DESSIN partners are members of the Water Supply and Sanitation Technology Platform (WssTP) and have been involved in one or more of the thematic task forces and projects of WssTP. Hence, there is a detailed knowledge of the State of the Art in the various areas addressed in DESSIN such as decentralised treatment, real-time control of large-scale systems and managed aquifer recharge.
- DESSIN will either link up to the approved EIP Action Group ESE ("Ecosystem Services for Europe") or return to its own application as a separate, complementary Action Group on Ecosystem Services. Either way, DESSIN will be linked to up to all action groups that will be set up under the umbrella of the EIP.
- Many of the DESSIN partners have been or still are involved in related EC Framework projects such as e.g. TRUST, PREPARED, SWITCH, TECHNEAU, SCENES, WEKNOW, Aquastress, CityNet, DEMEAU, REFORM, EPI-Water, EXIOPOL, Aquamoney and BioFresh and are part of European networks of key players in their field.
- All end-users involved in DESSIN will work with a dedicated national research partner. These are established and well-known institutes and universities that have a complete overview of the national research activities within their country and beyond.

DESSIN partners are members of international research organisations and networks such as IWA and the Global Water Research Coalition (GWRC), which ensures good links with research at a global level. Hence, DESSIN will be an integral and influential component of several international urban water initiatives such as the IWA 'Cities of the Future' programme and UNESCO's 7th Urban Water Programme.

3.1.7. How do we address the specific feature of strengthening SMEs and industries

DESSIN is focussing on innovative technology and consulting solutions provided by or RTD-oriented SMEs. DESSIN puts a specific focus on SMEs as 11 out of the 20 project partners in the consortium are SMEs, and we allocate 47% of the requested EC contribution to these partners. Furthermore, Work Package 42 is specifically tailored to provide support to the SMEs on their route to market with the solutions they are going to demonstrate and validate within DESSIN.

3.2. Plan for the use and dissemination of foreground

Dissemination and exploitation of results are of paramount importance. To maximize the impact of DESSIN, we will showcase the validated solutions, informing stakeholders, decision makers, end-user groups and key forums in the international water sector and market.

3.2.1. Multiple products and target audiences

DESSIN will produce a variety of technical reports, application notes, guidelines and training material, different types of models and tools, technological and managerial innovations. A specific outcome is the successful demonstration and application of solutions, where the local partners will play an important role, e.g. by organized on-site events, showcasing the solutions in workshops, tours or exhibitions (WP 41). In order to reach audiences, produce user-friendly deliverables and outcomes addressing specific needs, the major outcomes and information will be channelled via a dedicated "Route to society and market" (WA4). The following main audiences will receive results from DESSIN through specific strategies developed in WP41:

- Water and Wastewater utilities
- Water authorities and planning institutions
- Technology providers and consultants
- Stakeholder groups and related organisations (e.g. end-users/consumers and other groups)
- Scientific community

3.2.2. Link with relevant networks, dissemination hubs and initiatives

Central for dissemination in DESSIN are a variety of institutions, e.g. stakeholder organisations, governmental institutions, water authorities and agencies, banks and financing bodies. For each demonstration site, Local Stakeholder Groups will be set up (some already exist) and serve as dissemination / exploitation hubs (cf. ch. 2.3 and 3.1).

In workshops and showcasing events organized by WA4, the different target audiences will be addressed, e.g. regional workshops utilising existing collaboration, including local stakeholder groups. The case study regions have multiple roles in the dissemination: As a research and demonstration partner providing sites to demonstrate best practices and practical experience, as 'living showcases' for successful solutions, and as ambassadors for the DESSIN innovations and results. We will encourage the participating utilities to invite other regional utilities or site owners in their DESSIN stakeholder groups. Local networks and local knowledge sharing will give long-lasting impacts for the society, since international knowledge from the project will be communicated in the national language.

DESSIN will also reach target groups via key members of the Project Advisory Committee which is going to be chaired by a representative of the organization heading the Environment Group within the Enterprise Europe Network, a powerful network to disseminate and mobilise market-relevant organisations all across Europe (confirmed by support letter).

3.2.3. Dissemination and transfer strategy

DESSIN's strategy for dissemination of results and enabling their uptake by the market, will follow the principles described in the paragraphs below:

A coherent and homogeneous range of deliverables: All final deliverables will be according to a book of style designed in WP41, using DESSIN branding to homogenize and give a consolidated picture. Deliverables will be made attractive and readable, including executive summaries, clear conclusions and graphical schemes.

A project legacy: The DESSIN website with a repository of results and publications will be maintained for five additional years after month 48. This will ensure that dissemination efforts during DESSIN (brand recognition, search engine placement, etc.) are not lost, and more people can benefit from DESSIN deliverables for a longer period of time.

Targeting stakeholders: Identifying and addressing the right audiences will be a cornerstone of DESSIN dissemination. Development of a target audience analysis and exploitation strategy is a key step in WP 41 which is dedicated to dissemination. For each sort of product and target audience, the most effective communication channel will be defined. All DESSIN deliverables will be designed from the start taking into account the final user.

Effective dissemination: DESSIN will use primarily the following channels:

- The DESSIN website will provide an adequate search engine for key searches. This requires selecting a proper format for the contents allowing indexing by search engines and use of the relevant keywords. Web contents will be constantly updated (by WP41) to encourage visitors to revisit the site often. Related websites such as FP7 projects and the WssTP will be asked to make a link on their sites to the DESSIN site.
- Workshops and events, including regional workshops, exhibitions and other promotional events related to the sites, to showcase results in a real-live environment, and using the local stakeholder groups as relevant dissemination hubs in and for these events.
- Articles and papers with results will be published in literature relevant for the sector, including peer-reviewed papers in Open Access Journals. However, due to the market perspective of DESSIN an emphasis will be put on publication media that are read by more technical or business-oriented professionals or decision makers in the water sector.
- Cooperation with other projects and the networks will also bring valuable expertise and resources to DESSIN and, provide an instrument for advertising the results widely.

Dedicated knowledge dissemination team: The DESSIN dissemination team in WA4 has a professional background in writing (general and scientific journalism), knowledge transfer, and information product design. It will be responsible for the DESSIN branding to ensure that outputs are presented and delivered to the high quality expected in commercial environments. Raising awareness in the non-scientific community is also important. Use of plain language and translation results into terms that can be understood by citizens will facilitate media coverage. By addressing communities and media, DESSIN will contribute to an important horizontal effort in FP7 and its environment theme: bridging the gap between science and society.

3.2.4. Exploitation synergies by the different SME types within DESSIN

The technology supplying SMEs in DESSIN will commercially exploit the results, as may other industrial partners in DESSIN including the utilities and technology/research centres, with potential for export elsewhere in Europe and world-wide. DESSIN also has SMEs of another type, i.e. SMEs specialized in research-based consulting services for the water sector such as IWW (coordinator), Amphos 21, Adelphi and Ecologic, which will contribute further to the diffusion of DESSIN outcomes into the water sector. There is considerable synergy and mutual benefit by teaming up these different types of SMEs that have a high interest in generating marketable solutions and services from the demonstration activities in DESSIN.

3.2.5. Increasing likelihood of market uptake

Market analysis will be done as part of the market uptake strategy for all demonstrated solutions (WP42). SMEs and technology developers will be involved by an inside-out approach, taking into account, e.g. business modelling, focus groups, regions and sectors. WA4 also includes an outside-in

approach, to provide strategic key information regarding modes of governance and finance, and useful tools to increase competitiveness in the market. This will be supported by the Project Advisory Committee in particular by the Head of the Environment Group in the Enterprise Europe Network (Zenit) and the WssTP representative.
Full scale demonstrations in WA3 will publicize innovative solutions for water scarcity areas and improved water management to comply with WFD in complex urban areas. At three demo sites, the demonstration activities are going to be led by the actual end-users (Oslo: VAV, Emscher: EG, Athens: EYDAP), which will increase the confidence in the actual applicability of DESSIN products and thus their acceptance / demand within the water sector.

3.2.6. Management of Knowledge and Intellectual Property Rights (IPR)

DESSIN aims to achieve a better commercial and advanced position for the European water sector. For SMEs in DESSIN, scope to exploit the results commercially on the open market is important. It is also important to increase the competitiveness of private and public water technological centres participating in DESSIN, by protecting their results and products, as for instance, PR, particularly patents, provide the primary means for assuring necessary private sector investment in the invention, development and deployment of the technologies needed to address current challenges in the water sector[20]. IPR facilitates the free flow of information by sharing the protected know-how critical to the original, patented invention. In turn, this process leads to new innovations and improvements on existing ones[21].

In DESSIN, we apply the following general approach regarding IPR matters:

- Knowledge that was developed prior to the project, remains the property of the original owner and can only be used for the aim of the project, unless explicitly stated otherwise by the owner. All prior knowledge that has limited use will be reported to the project coordinator who will make sure DESSIN partners respect the limitations.
- Knowledge generated in the project (foreground) will have both public (EC) and private (utilities/industry) funding. The knowledge should freely be available for use within the consortium during the project, but there might be a need to offer some protection for public usage of specific utility data and for use after the duration of the project.
- When we go beyond generic research and enabling technology development and move towards the area of industrial commercialization, IPR needs to be even better organized. This is part of the Consortium Agreement which is based on the DESCA Model Consortium Agreement v 3.0, and is fully compliant with the EC "Guide to Intellectual Property Rules for FP7 Projects".
- All matters related to IPR will pass through the project coordinator, who will make sure agreements and right rights of all partners are being respected.

4. Ethics Issues

No Ethic issues are involved in DESSIN.

[20] **International Chamber of Commerce (2008).** Technology Development and Deployment to address Climate Change for the UNFCCC 14th Conference of the Parties (COP) meeting in Poznan Poland. Prepared by the Commission on Environment and Energy and the Commission on Intellectual Property. Paris, France, 16 pp. : http://www.hydrology.nl/images/docs/dutch/cpwc/PPs/11_Financial_Issues.pdf

[21] http://www.theglobalipcenter.com/why-are-intellectual-property-rights-important/

5. Consideration of gender aspects

Gender aspects emerge in three ways in the DESSIN project:

- There is first of all the issue of gender involvement and gender-specific roles in the urban communities, the ultimate end-users of water and water-related ecosystem services and therefore also of our project deliverables,
- Secondly there is the gender issue in the water technology sector
- Thirdly, there is the issue of gender balance and equality within the DESSIN project team

Water supply and sanitation is an issue with gender implications world-wide, but of varying degree depending on the level of industrialisation, urbanisation and technical development.
Inadequate water supply and sanitation strongly impacts on women, which are primarily concerned with the hygienic circumstances in their domestic settings, safe drinking water and food preparation. This is more urgent in developing countries and in rural areas without centralised urban water service systems.

However, the DESSIN project focuses on urban areas in European countries where centralised facilities are available. In such situations the situation of end-users of water-related services and ecosystem services is less gender-specific and the role of women is much less pronounced as e.g. in comparison to developing countries without centralised facilities. Once central plants and infrastructure for supply and sanitation are being built, the gender focus shifts very rapidly from female to male. Hence, as our project primarily and firstly focuses on urban areas in developed countries, gender issue and the need to specifically include and target the female part of the population is less obvious. But we are aware that this will be an issue to address when we exploit the deliverables of our project to other less developed areas around the world and in Europe.

Gender balance and equality in the DESSIN team
In DESSIN the research-driven SMEs providing water-related technology and consulting services form the centre of the project, together with water boards / utilities and research institutes with a focus on engineering and natural sciences. In most European countries, women are underrepresented in these sectors.

We are of the opinion that it is beyond the scope and capabilities of a research project such as DESSIN to change the gender balance in this sector.

But what we could do is to address the gender balance in our project team. We have tried to better balance both genders in our project as follows.

- Right from the start we have confronted all research partner organisations with the gender balance in their respective project teams, by requiring them to state the number of males and females they proposed. Mentioning the gender balance raised the attention of the participating organisations towards gender issues and more female experts being included in the teams where possible.
- At the time of submission we have a DESSIN team of 75, with a gender balance of 23 females and 52 male (30% females, 70% males). This is itself is quite an achievement as we have found out that especially the waste water and water technology sector holds only a minority of female experts.