



EUROPEAN COMMISSION

Executive Agency for Small and Medium-sized Enterprises (EASME)

H2020 Environment & Resources



ANNEX 1 (part A)

Coordination and support action

NUMBER — 642224 — FREEWAT

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1.1. The project summary

Project Number ¹	642224	Project Acronym ²	FREEWAT
One form per project			
General information			
Project title ³	FREE and open source software tools for WATER resource management		
Starting date ⁴	01/04/2015		
Duration in months ⁵	30		
Call (part) identifier ⁶	H2020-WATER-2014-one-stage		
Topic	WATER-4a-2014 Dissemination and exploitation, ICT, knowledge, gaps, research needs, etc		
Fixed EC Keywords	Water cycle, Water system modelling, Water resources, Water management		
Free keywords	Implementation of EU water related policies, Participatory approach, Open source and public domain software, GIS integrated water management modelling		
Abstract ⁷			
<p>FREEWAT aims at promoting water management and planning by simplifying the application of the Water Framework Directive and other EU water related Directives. FREEWAT will be an open source and public domain GIS integrated modelling environment for the simulation of water quantity and quality in surface water and groundwater with an integrated water management and planning module. Specific objectives of the FREEWAT project are:- to coordinate previous EU and national funded research to integrate existing software modules for water management in a single environment into the GIS based FREEWAT;- to support the FREEWAT application in an innovative participatory approach gathering technical staff and relevant stakeholders (in primis policy and decision makers) in designing scenarios for the proper application of water policies. FREEWAT will initiate a process aimed at filling the gap between EU and US on widespread-standardised ICT tools and models for management of water quantity and quality and will set a well recognisable and flagship initiative. The open source characteristics of the platform allow to consider this an initiative "ad includendum" (looking for inclusion of other entities), as further research institutions, private developers etc. may contribute to the platform development. Through creating a common environment among water research/professionals, policy makers and implementers, FREEWAT main impact will be on enhancing science- and participatory approach and evidence-based decision making in water resource management, hence producing relevant and appropriate outcomes for policy implementation. The Consortium is constituted by partners from various water sectors from 10 EU countries, plus Turkey and Ukraine. Synergies with the UNESCO HOPE initiative on free and open source software in water management greatly boost the value of the project. Large stakeholders involvement guarantees results dissemination and exploitation.</p>			

1.2. List of Beneficiaries

Project Number ¹	642224	Project Acronym ²	FREEWAT
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List of Beneficiaries

No	Name	Short name	Country	Project entry date ⁸	Project exit date
1	SCUOLA SUPERIORE DI STUDI UNIVERSITARI E DI PERFEZIONAMENTO SANT'ANNA	SSSA	Italy	01/04/2013	30/09/2017
2	TEA SISTEMI SPA	TEA SISTEMI SPA	Italy	01/04/2013	30/09/2017
3	TECHNISCHE UNIVERSITAT DARMSTADT	TUDA	Germany	01/04/2013	30/09/2017
4	AGENCIA ESTATAL CONSEJO SUPERIOR DE INVESTIGACIONES CIENTIFICAS	CSIC	Spain	01/04/2013	30/09/2017
5	OSLANDIA	OSLANDIA	France	01/04/2013	30/09/2017
6	UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION -UNESCO	UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION -UNESCO	France	01/04/2013	30/09/2017
7	REGIONE TOSCANA	RT	Italy	01/04/2013	30/09/2017
8	METCENAS OPS	METCENAS OPS - METHODOLOGY CENTRE FOR ENVIRONMENT ASSESSMENT	Czech Republic	01/04/2013	30/09/2017
9	ZETA AMALTEA SL	ZETA AMALTEA	Spain	01/04/2013	30/09/2017
10	INSTITUT ZA EKOLOSKI INZENIRING DOO	IEI	Slovenia	01/04/2013	30/09/2017
11	ERCIYES UNIVERSITESI	ERCIYES UNIVERSITESI	Turkey	01/04/2013	30/09/2017
12	ETAIREIA AXIOPOIISEOS KAI DIACHEIRISEOS TIS PERIOUSIAS TOU ETHNIKOU METSOVIU POLYTECHNEIU (E.M.P.)	NTUA /AMDC	Greece	01/04/2013	30/09/2017
13	INSTITUTUL NATIONAL DE HIDROLOGIE SI GOSPODARIRE A APELOR	INHGA	Romania	01/04/2013	30/09/2017
14	TARTU ULIKOOL	UTARTU	Estonia	01/04/2013	30/09/2017
15	TARAS SHEVCHENKO NATIONAL UNIVERSITY OF KYIV	TSNUK	Ukraine	01/04/2013	30/09/2017

1.2. List of Beneficiaries

No	Name	Short name	Country	Project entry date ⁸	Project exit date
16	PARAGON LIMITED	Paragon Europe	Malta	01/04/2015	30/09/2017
17	UNIVERSITAET BREMEN	UNIVERSITAET BREMEN	Germany	01/04/2015	30/09/2017
18	STICHTING INTERNATIONAL GROUNDWATER RESOURCES ASSESSMENT CENTRE	IGRAC	Netherlands	01/08/2015	30/09/2017
19	SCUOLA UNIVERSITARIA PROFESSIONALE DELLA SVIZZERA ITALIANA (SUPSI)	IST-SUPSI	Switzerland	01/04/2015	30/09/2017

1.3. Workplan Tables - Detailed implementation

1.3.1. WT1 List of work packages

WP Number ⁹	WP Title	Lead beneficiary ¹⁰	Person-months ¹¹	Start month ¹²	End month ¹³
WP1	Project management	1 - SSSA	24.20	1	30
WP2	Software Integration Engineering and Customisation	2 - TEA SISTEMI SPA	50.20	1	28
WP3	Capacity building	4 - CSIC	38.30	5	26
WP4	Application to WFD/GWD	12 - NTUA /AMDC	65.10	9	26
WP5	Application to rural water management	6 - UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION - UNESCO	34.30	9	26
WP6	Enhanced science- and participatory approach evidence-based decision making	8 - METCENAS OPS - METHODOLOGY CENTRE FOR ENVIRONMENT ASSESSMENT	24.40	2	30
WP7	Guidance on model-supported application of EU water-related Directives for water quantity and quality	3 - TUDA	8.50	26	30
WP8	Dissemination and Exploitation and Communication	1 - SSSA	19.00	1	30
Total			264.00		

1.3.2. WT2 list of deliverables

Deliverable Number ¹⁴	Deliverable Title	WP number ⁹	Lead beneficiary	Type ¹⁵	Dissemination level ¹⁶	Due Date (in months) ¹⁷
D1.1	Project manual	WP1	1 - SSSA	Report	Confidential, only for members of the consortium (including the Commission Services)	1
D1.2	Data Management Plan	WP1	1 - SSSA	Report	Confidential, only for members of the consortium (including the Commission Services)	6
D1.3	Final Report	WP1	1 - SSSA	Report	Public	30
D1.4	Mid-term evaluation report	WP1	1 - SSSA	Report	Confidential, only for members of the consortium (including the Commission Services)	18
D1.5	Contractual periodic management reports and Cost Statements	WP1	1 - SSSA	Report	Confidential, only for members of the consortium (including the Commission Services)	6
D1.6	Project website	WP1	1 - SSSA	Websites, patents filling, etc.	Public	2
D2.1	Beta version of the FREEWAT platform and preliminary User Manual	WP2	2 - TEA SISTEMI SPA	Other	Confidential, only for members of the consortium (including the Commission Services)	10
D2.2	Report on the water management module	WP2	2 - TEA SISTEMI SPA	Report	Confidential, only for members of the consortium (including the Commission Services)	15
D2.3	Report on the calibration and sensitivity module	WP2	3 - TUDA	Report	Confidential, only for members of the consortium (including the Commission Services)	15

Deliverable Number ¹⁴	Deliverable Title	WP number ⁹	Lead beneficiary	Type ¹⁵	Dissemination level ¹⁶	Due Date (in months) ¹⁷
D2.4	Report on the solute transport in vadose zone module	WP2	2 - TEA SISTEMI SPA	Report	Confidential, only for members of the consortium (including the Commission Services)	15
D2.5	Report on the irrigation management and crop modelling module	WP2	1 - SSSA	Report	Confidential, only for members of the consortium (including the Commission Services)	15
D2.6	Report on tools for the hydrochemical analysis and interpretation	WP2	4 - CSIC	Report	Confidential, only for members of the consortium (including the Commission Services)	15
D2.7	Report on hydrogeological analysis and interpretation tools	WP2	4 - CSIC	Report	Confidential, only for members of the consortium (including the Commission Services)	15
D2.8	FREEWAT platform v.0.1 and User Manual v.0.1	WP2	2 - TEA SISTEMI SPA	Other	Confidential, only for members of the consortium (including the Commission Services)	16
D2.9	FREEWAT platform v.1.0 and User Manual v.1.0	WP2	2 - TEA SISTEMI SPA	Other	Public	28
D2.10	Report on Lake and Observations Analysis Tool (OAT) tools	WP2	19 - IST-SUPSI	Report	Confidential, only for members of the consortium (including the Commission Services)	15
D3.1	Courses held at premises of local project partners	WP3	4 - CSIC	Other	Confidential, only for members of the consortium (including the Commission Services)	16
D3.2	Training materials - final version	WP3	4 - CSIC	Other	Public	16

Deliverable Number ¹⁴	Deliverable Title	WP number ⁹	Lead beneficiary	Type ¹⁵	Dissemination level ¹⁶	Due Date (in months) ¹⁷
D3.3	Local courses to build capacity at national level	WP3	9 - ZETA AMALTEA	Other	Public	26
D4.1	Report by each partner on the FREEWAT application to the case studies, results and new/alternative management scenarios simulation on WFD/ GWD and water related Directives	WP4	12 - NTUA / AMDC	Report	Confidential, only for members of the consortium (including the Commission Services)	25
D4.2	Report on advantages/ drawbacks, strengths/ weaknesses of FREEWAT with results from the 14 case studies	WP4	12 - NTUA / AMDC	Report	Confidential, only for members of the consortium (including the Commission Services)	26
D5.1	Report by each partner on the FREEWAT application to the case study, results and new/alternative management scenarios simulation focusing on rural water management and EU vs. non-EU regulations	WP5	6 - UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION -UNESCO	Report	Confidential, only for members of the consortium (including the Commission Services)	25
D5.2	Report on advantages/ drawbacks, strengths/ weaknesses of FREEWAT with results from the case studies on rural water management	WP5	6 - UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION -UNESCO	Report	Confidential, only for members of the consortium (including the Commission Services)	26
D6.1	Evaluation grid for “needs/tools” comparison	WP6	8 - METCENAS OPS - METHODOLOGY CENTRE FOR ENVIRONMENT ASSESSMENT	Report	Confidential, only for members of the consortium (including the Commission Services)	4
D6.2	Guidelines for effective Focus Group running in the water sector	WP6	16 - Paragon Europe	Report	Confidential, only for members of the consortium (including the Commission Services)	9
D6.3	Policy briefs	WP6	16 - Paragon Europe	Report	Public	28

Deliverable Number ¹⁴	Deliverable Title	WP number ⁹	Lead beneficiary	Type ¹⁵	Dissemination level ¹⁶	Due Date (in months) ¹⁷
D7.1	Guidance on model-supported application of EU water related Directives for water quantity and quality	WP7	3 - TUDA	Report	Public	30
D8.1	Open workshop during the three official project meetings	WP8	1 - SSSA	Other	Public	30
D8.2	Communication Materials	WP8	1 - SSSA	Other	Confidential, only for members of the consortium (including the Commission Services)	3
D8.3	FREEWAT exploitation agreement	WP8	16 - Paragon Europe	Report	Confidential, only for members of the consortium (including the Commission Services)	4
D8.4	Mid-term report with statistics for the indicators of success for Dissemination and Exploitation Activities	WP8	16 - Paragon Europe	Report	Confidential, only for members of the consortium (including the Commission Services)	18
D8.5	National workshop organized by each partner involved with case study	WP8	1 - SSSA	Other	Public	29
D8.6	Report on market and business model and application scenario	WP8	16 - Paragon Europe	Report	Public	30
D8.7	Acceptance for publication of at least seven scientific and technical peer-reviewed papers	WP8	1 - SSSA	Report	Public	30
D8.8	Submission of at least twelve conference papers per year (minimum of thirty)	WP8	1 - SSSA	Report	Public	30
D8.9	Final report with statistics for the indicators of success for Dissemination and Exploitation Activities	WP8	1 - SSSA	Report	Confidential, only for members of the consortium (including the Commission Services)	30

Deliverable Number ¹⁴	Deliverable Title	WP number ⁹	Lead beneficiary	Type ¹⁵	Dissemination level ¹⁶	Due Date (in months) ¹⁷
D8.10	Final report on the Focus Groups integrating the participatory approach to technical modelling activities	WP8	16 - Paragon Europe	Report	Public	30
D8.11	Competing solution and services analysis document	WP8	16 - Paragon Europe	Report	Confidential, only for members of the consortium (including the Commission Services)	12
D8.12	Dissemination and Exploitation and Communication Plan	WP8	1 - SSSA	Report	Confidential, only for members of the consortium (including the Commission Services)	2

1.3.3. WT3 Work package descriptions

Work package number ⁹	WP1	Lead beneficiary ¹⁰	1 - SSSA
Work package title	Project management		
Start month	1	End month	30

Objectives

To perform:

- a. Technical and administrative coordination of the project;
- b. Maintaining internal and external communication;
- c. Ensure communication management, scope management, project planning, quality management, risk management, follow-up action.

Description of work and role of partners

WP1 - Project management [Months: 1-30]

SSSA, TEA SISTEMI SPA, TUDA, CSIC, OSLANDIA, UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION -UNESCO, RT, METCENAS OPS - METHODOLOGY CENTRE FOR ENVIRONMENT ASSESSMENT, ZETA AMALTEA, IEL, ERCIYES UNIVERSITESI, NTUA /AMDC , INHGA, UTARTU, TSNUK, Paragon Europe , UNIVERSITAET BREMEN, IGRAC, IST-SUPSI

The Coordinator is responsible for the overall implementation of the project as stated in grant agreement, Consortium Agreement and work plan. Project management has to ensure that all project partners fulfil their communication, reporting and cost statement commitments, also verifying that scheduled reports and deliverables are submitted on time. Regular project meetings have to be arranged and organised on schedule. The internal communication between the project participants or participants' groups, as well as between the Consortium and the European Commission has to be organised and maintained.

For any WP, the WP Leader partner will be responsible for the performance of the work conducted in that WP. The WP Leaders will organise WP meetings whenever needed.

Project management will be facilitated by the following roles and structural elements:

1. Steering Group (SG: SSSA, TUDa, TEA, IDAEA-CSIC): to support and assist the Coordinator (SSSA) and help streamline decision making and conflict resolution.
2. Core Group (CG: SSSA, TUDa, TEA, IDAEA-CSIC, NTUA/AMDC, UNESCO, METCENAS): group of WP leaders, which act as sub-coordinator for any WP.
3. Dissemination and Innovation Manager (SSSA): to coordinate dissemination activities towards stakeholders, and to deal with innovation management issues.

Task 1.1: Project Coordination (Task Leader: SSSA)

Administrative project management including financial coordination tasks (see also Section 3.2).

Technical coordination by supervising the progress of the work, as measurable by the completion of milestones and deliverables, and guaranteeing the required reporting. Specific tasks include:

- Grant negotiations, drafting of a Consortium Agreement.
- Preparation and facilitation of rotational project meetings, starting with a kick-off meeting of the whole consortium. Maintaining the meeting schedule, as laid out in Section 3.2.
- Set up of a comprehensive Project Manual (D1.1) with all relevant key data (participants' contact data, reporting guidelines, administrative guidelines), to ensure that all partners are familiar with the management procedures and terms of reporting and expenditure claim.
- Set up of a World Wide Web project site (D 1.2) for the dissemination of project activities, progress and results, to the general public and stakeholders. It will also serve as link to Horizon 2020 web page, including a section on networking with other EU projects and initiatives. The dissemination material and info on the planned dissemination activities will be made available on the web site. A restricted area, acting as platform for project partners to share working material and documents, after authentication (such as meetings agenda and minutes, grant agreement, etc.) will be included. To this purpose, a detailed and pervasive security policy will be implemented, based on encryption techniques and digital keys, to ensure the integrity and security of the critical data. A centralised "Virtual Forum" for the discussion of project activities will be activated, via mailing lists, newsgroups, and dynamically created web pages. The web site will be

updated (at least) on a quarter basis, according to a suitable protocol for updating information which will be circulated within the consortium.

- Guaranteeing thorough internal communication flow between the project partners by adequate means.
- Contributing, if necessary, to any conflict resolution.
- Organising contacts to other EU projects working in similar or related fields, including formal clustering effort if useful or if requested/required by the Commission.

Task 1.2: Operational Project Management (Task Leader: SSSA; all partners contribute)

This task is the operational backbone of the project. It consists in:

- 1) Maintenance and update of the project plan, 2) Definition and maintenance of project-internal processes, 3) Tracking of milestones and deliverables; escalation towards SG if deviations from the plan are observed, 4) Document management, including revision management, 5) Preparation and consolidation of project-internal reports as well as annual reports to the EC for quality review, 6) Preparation of cost statements, 7) Preparation of project document templates, 8) Monitoring of resource utilization (including financial/budget info) and preparation of interim reports to SG, 8) Monitoring of project work adherence to EC rules and regulations.

Task 1.3 Quality Assurance (Task Leader: SSSA, TEA, TUDa, IDAEA-CSIC)

Quality Assurance will be maintained by the SG (see 3.2) and will consist in:

- a) Defining and implementing suitable quality management processes, b) Review of all important documents published by the project (specifications, public reports, and deliverables, etc.) to ensure the utmost quality of all published material, c) Preparation of templates for document submissions and reviews, d) Identification and management of all risks related to the project (both internal and external), e) Track and continuous review of all project risks in a risk register, f) If required, implementation of suitable risk mitigation strategies.

Task 1.4: FREEWAT Expert Advisory Board (Task Leader: SSSA)

Set up of an external Expert Advisory Board, to inform, critique and validate the project directions, work and outputs. This panel would consist of named independent individuals having a wealth of experience in the field, one of whom would chair the group. The panel will work with other structures, activities and networks, as a means of both canvassing inputs from, and disseminating outputs to, the wider water management world on an international basis. The panel will be serviced and supported directly by the Coordinator and the Steering Group. It will determine its own modus operandi (within project budget limits). Members of the Expert Advisory Board will be invited to project meetings; members of the panel will also be invited to support the mid-term evaluation and report on the progress of the project.

Task 1.5: Data Management Plan (Task Leader: SSSA)

Partners will be required to follow specific rules on data management, that will be collected and presented in a specific Report (Deliverable D1.5) stating : (i) different classes of data used in the project or coming from project results; (ii) for each class, the different level of usability and replication (data license).

Participation per Partner

Partner number and short name	WP1 effort
1 - SSSA	13.00
2 - TEA SISTEMI SPA	0.70
3 - TUDA	0.50
4 - CSIC	0.50
5 - OSLANDIA	0.30
6 - UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION -UNESCO	0.70
7 - RT	0.80
8 - METCENAS OPS - METHODOLOGY CENTRE FOR ENVIRONMENT ASSESSMENT	0.70
9 - ZETA AMALTEA	0.50

Partner number and short name	WP1 effort
10 - IEI	0.70
11 - ERCIYES UNIVERSITESI	0.80
12 - NTUA /AMDC	0.60
13 - INHGA	1.00
14 - UTARTU	0.60
15 - TSNUK	1.00
16 - Paragon Europe	0.70
17 - UNIVERSITAET BREMEN	0.40
18 - IGRAC	0.20
19 - IST-SUPSI	0.50
Total	24.20

List of deliverables

Deliverable Number ¹⁴	Deliverable Title	Lead beneficiary	Type ¹⁵	Dissemination level ¹⁶	Due Date (in months) ¹⁷
D1.1	Project manual	1 - SSSA	Report	Confidential, only for members of the consortium (including the Commission Services)	1
D1.2	Data Management Plan	1 - SSSA	Report	Confidential, only for members of the consortium (including the Commission Services)	6
D1.3	Final Report	1 - SSSA	Report	Public	30
D1.4	Mid-term evaluation report	1 - SSSA	Report	Confidential, only for members of the consortium (including the Commission Services)	18
D1.5	Contractual periodic management reports and Cost Statements	1 - SSSA	Report	Confidential, only for members of the consortium (including the Commission Services)	6
D1.6	Project website	1 - SSSA	Websites, patents filling, etc.	Public	2

Description of deliverables

- D 1.1 Project manual (Month 1)
- D 1.2 Project website (Month 2)
- D 1.3 Contractual periodic management reports and Cost Statements (Month 6 and every 6 months until the end of the project)
- D 1.4 Mid-term evaluation report (Month 18)
- D 1.5 Data Management Plan (Month 6)
- D 1.6 Final report (Month 30)

D1.1 : Project manual [1]

The Project Manual will be a document including all relevant key data (participants' contact data, reporting guidelines, administrative guidelines), to ensure that all partners are familiar with the management procedures and terms of reporting and expenditure claim.

D1.2 : Data Management Plan [6]

Specific rules on data management will be collected and presented in a specific Report stating : (i) different classes of data used in the project or coming from project results; (ii) for each class, the different level of usability and replication (data license).

D1.3 : Final Report [30]

The deliverable will consist in a report summarizing the project activities performed and the results achieved during the project duration.

D1.4 : Mid-term evaluation report [18]

The Mid-term Evaluation Report will describe project advances and achievements until month 18.

D1.5 : Contractual periodic management reports and Cost Statements [6]

This deliverable consists in all the documents that must be provided to the Commission as stated in the grant agreement for the sake of reporting on the project and its cost progress.

D1.6 : Project website [2]

The World Wide Web project site will be set in place for the dissemination of project activities, progress and results, to the general public and stakeholders. It will also serve as link to Horizon 2020 web page, including a section on networking with other EU projects and initiatives.

Schedule of relevant Milestones

Milestone number ¹⁸	Milestone title	Lead beneficiary	Due Date (in months)	Means of verification
MS1	Kick off meeting	1 - SSSA	1	The kick-off meeting will be the event during which all the partners will meet, the project schedule and issues about project development will be discussed in detail.
MS2	Project web-site	1 - SSSA	2	This milestone is related to the set-up of the project web-site.
MS6	Mid-term project meeting	1 - SSSA	15	This meeting will gather all project partners to share issues on project evolution and discuss and address potential problems.
MS19	Final meeting	1 - SSSA	30	The final project meeting is held.

Schedule of relevant Milestones

Milestone number ¹⁸	Milestone title	Lead beneficiary	Due Date (in months)	Means of verification
MS21	Dissemination and Innovation Manager appointed	1 - SSSA	1	SSSA appoints the Dissemination and Innovation Manager in agreement with PRN and after consultation with the rest of the partnership.

Work package number ⁹	WP2	Lead beneficiary ¹⁰	2 - TEA SISTEMI SPA
Work package title	Software Integration Engineering and Customisation		
Start month	1	End month	28

Objectives

To build and release the FREEWAT modelling platform by integrating modules with results from previous EU and non-EU funded projects so to:

- include features that address specific end-users requirements related to the implementation of the EU water directives or local directives (for the countries outside EU);
- release a ready-to-use and well tested version, along with User Manual and support tools for installing and running the software.

Description of work and role of partners

WP2 - Software Integration Engineering and Customisation [Months: 1-28]

TEA SISTEMI SPA, SSSA, TUDA, CSIC, OSLANDIA, IST-SUPSI

In this WP a customized version of the FREEWAT modelling platform will be provided for its usage as a decision support system for water resources management.

The FREEWAT platform will implement several capabilities: their integration will be guaranteed by a modular structure (modules can be activated and/or de-selected to run different model scenarios) as well as by the approach selected for managing input/output data within the GIS desktop.

For each module, the creation of input data will always be passing through the definition of a “model data object”, namely a GIS-layer where the geographical and physical information are saved as vector-type data. The latter will then be transformed in a module input data file, according to the specific format required.

It turns out that an accurate integration of different process inputs can be achieved by applying GIS-embedded tools (i.e. geostatistics tools), also allowing the use of outputs from one module as input to another process (for instance groundwater balance as input for the water management tool).

The core of the FREEWAT platform will be the SID&GRID code (version ported to the QGIS desktop), open source and public domain modelling platform firstly developed within the EU-POR FSE 2007-2013 Regione Toscana – Italy and then ported to the QGIS desktop through a dedicated fund provided by Regione Toscana.

Activities will be mainly carried out on two branches: (i) integration of modules, so that the software will fit the end-users requirements, including tools for better producing feasibility and management plans; (ii) a set of activities devoted to fix bugs and to provide a well-integrated interface for the different tools implemented. The FREEWAT Consortium agrees that any module produced within the FREEWAT Project should not depend on third party non-open source software or service.

The following tasks will be implemented with details provided for each one.

Task 2.1: Water management module (Task Leader: TEA)

A specific tool to face water management issues (especially regarding groundwater management) will be implemented in connection with FREEWAT hydrological modelling capabilities. In particular, a specific interface will be set up to define: decision variables, objective functions, constraints. The possibility to solve linear, nonlinear, or mixed formulations will be considered.

This will allow an effective planning of long term water resources uses and management of short term water resources allocation (early warning system). Amongst those relevant stakes, river ecological status and nature conservation will be considered as well, introducing variables capable to deal with minimum environmental flow and sustainable hydrologic regime, in addition to withdrawal rules and demand side management options. Optimization problems (representing management scenarios) will be addressed by including in FREEWAT well-tested code such as GWM-USGS.

Task 2.2: Calibration, Sensitivity, and Uncertainty analysis module (Task Leader: TUDa)

The modelling framework will be completed by including GUIs to run automated codes (such as UCODE) for assessing sensitivity analysis, calibration and uncertainty evaluation of hydrological models. The GUI will generate the needed input information for the calibration algorithms and display model-analysis results. The inclusion of this tool is essential to ensure real-world applicability of FREEWAT, as it is well-known that calibration and uncertainty evaluation is crucial in practical applications of numerical hydrological models and it is necessary to increase model reliability. The latter is critical when models are used as decision support systems for water resources management.

Task 2.3: Module for solute transport in vadose zone (Task Leader: TEA)

A numerical code to simulate vadose zone solute transport will be included, selecting the most appropriate tool among possible instruments which can be easily coupled with the FREEWAT numerical core for water flow simulation (e.g. VS2DT, HYDRUS1D, etc.). Once the code has been selected, a plug-in for producing input data and show model results will be developed and the vadose zone simulation capability will be integrated within the GIS platform. This part will be relevant for usage of FREEWAT in Nitrate Directive context, as well as to assess i.e. landfill environmental impact to groundwater, and, in general, in any study in which a surface source of pollution is present. Results from the EU LIFE NITRATOS (Repercussions of agricultural practices on the nitrate pollution of inland waters- partner involved ZETA AMALTEA) project, aiming at defining and promoting best practices in the management of mineral and organic fertilisers, will be taken into account to perform this task.

Task 2.4: Irrigation management and crop growth modelling (Task Leader: SSSA)

This activity will be devoted to couple the existing features of FREEWAT with tools for the integrated water resource planning and management in agriculture. From a modelling point of view, there is the need to integrate the hydrological part of the future FREEWAT with additional codes for the dynamic simulation of water supply-and-demand components in agriculture. A specific module to run management decisions and evaluate different irrigation scenarios (e.g. Farm Process) will be included and coupled with codes dedicated to crop growth, such as EPIC, WOFOST, etc.

Task 2.5: Tools for the hydrochemical analysis and interpretation (Task Leader: IDAEA-CSIC)

To ensure compliance with standard regulatory guidelines (with a special focus on requirement deriving from the GWD), continuous monitoring, evaluation, and interpretation of a large number of physical and chemical parameters is required. A set of tools to facilitate the management of these different data will be included in FREEWAT, and in particular: (a) hydrogeochemical parameter calculator (to calculate charge balance error – CBE-, units conversion, ionic relationship, ICB index, SAR index); (b) hydrogeochemical diagram tools (e.g. Piper, Salinity diagrams, Schöeller-Berkaloff, and Stiff diagrams); (c) hydrochemical data analysis tools (e.g. data query such as sampling point, campaign, time interval, parameter, creating maps, plotting graphs, link to the free codes EASYQUIM and MIX, etc.); (d) regulatory parameter analysis tool (allowing the user to obtain thematic maps for the parameters measured in the queried area and classified according to the threshold approach established by a given guideline, e.g. WFD); (e) statistical tools (a set of instruments improving the statistical set of plug-in already included in the GIS platform).

Results from the QUIMET project funded by the Catalan Water Agency (partner involved IDAEA-CSIC), aimed at producing GIS based hydrogeochemical analysis tools, will be taken into account to perform this task.

Task 2.6: Hydrogeological analysis and interpretation tools (Task Leader: IDAEA-CSIC)

This activity concerns the development of an instrument devoted to a better interpretation of the groundwater units, which in turn is crucial in modelling activities to define the conceptual model. In particular, the following tools will be included in the FREEWAT platform: (i) groundwater observations query tools (enabling to calculate the minimum, maximum, average and standard deviation for each selected hydrogeological parameter, such as head level, depth to the water level or pumping rates, etc.); (ii) hydrogeological units query tools. The objective is to query the depth or thickness of the hydrogeological units and to represent these values in a map as point features, with the possibility to interpolate results. Still results from the QUIMET project funded by the Catalan Water Agency (partner involved IDAEA-CSIC) will be taken into account to perform this task.

Task 2.7: Software integration and engineering (Task Leader: OSLANDIA)

This activity will be carried out in parallel with all other tasks in this WP, since it is devoted to guarantee a good integration of different plug-ins, as well as the compliance of the newly developed tools with the GIS platform standards. Furthermore, within this task the crucial and necessary bug-fixing will be provided, and it will continue through all the duration of software development and testing. This task also includes the needed communication and technical interactions with existing open source communities to ensure that the resulting software can be integrated into the greatest number of existing tools.

Task 2.8: FREEWAT platform release and User Manual preparation (Task Leader: TEA)

Within this task the activities necessary to the FREEWAT platform release and distribution along with the preparation of the User Manual will be performed.

Namely, the activities foreseen in this task are related to the release of the beta v1.0 (and subsequent beta versions, D2.1), FREEWAT v.0.1 (D2.8) and FREEWAT v.1.0 (D2.9) first public release version and related versions of the User Manual. The latter will also include an Appendix on Programmer documentation.

Within this task all the strengths and weaknesses (by a technical point of view) of the FREEWAT platform and suggestions for further development and amelioration as drawn from WP4 and WP5 (D4.2 and D5.2) will be incorporated into the FREEWAT platform v.1.0. From all the case studies, we expect to collect many suggestions: among

those, the ones that are out of scope, or not included in the present proposal and therefore not possible to be implemented within the FREEWAT proposal, because of lack of time, will be discussed and presented in a dedicated Appendix to the User Manual and will be considered in further development of the platform.

Task 2.9: Lake and Observations Analysis Tool (OAT) tools (Task Leader: IST-SUPSI)

In this task the FREEWAT platform will be improved by adding and developing the following modules:

- (i) aquifer-lake interaction (integration of the MODFLOW – LAK7 package);
- (ii) development of a tool for time-series analysis in data processing for model calibration (Observations Analysis Tool - OAT) .

The Lake Package (developed by USGS) is a module that enables the analysis of existing interactions between aquifers and stationary surface-water bodies (lakes) either during extreme or standard events. It can also be used to study the groundwater contamination due to the surface water contamination. We plan to use the Lake Package (LAK7), the groundwater recharge simulated using the Unsaturated Zone Flow (UZFI) Package, and also the Stream Flow Routing (SFR7) Package controlling groundwater interactions with rivers and drains.

On the other hand, time-series data processing is a key factor to conduct effective calibration. A new module, named Observations Analysis Tool (OAT), will be developed in order to add a number of time-series processing functionalities that will help in the statistical analysis of observations and in the preparation of model input data. This will allow to better focus the model calibration to intended uses: simulate extreme events, simulate daily flow volume, etc. The tool will be developed taking steps from TSPROC code (Westenbroek et al. 2012). This module will enable the analysis of raw data (regularization, data interpolation, fitting, filling, validation and data quality assessment); decomposition or filtering of time-series (low, medium, high frequencies); aggregation and exceedance-time calculation, summary statistics and period statistics; hydrological indexes; etc. The two new modules will be validated once integrated.

Participation per Partner

Partner number and short name	WP2 effort
1 - SSSA	2.50
2 - TEA SISTEMI SPA	10.80
3 - TUDA	10.20
4 - CSIC	14.20
5 - OSLANDIA	4.00
19 - IST-SUPSI	8.50
Total	50.20

List of deliverables

Deliverable Number ¹⁴	Deliverable Title	Lead beneficiary	Type ¹⁵	Dissemination level ¹⁶	Due Date (in months) ¹⁷
D2.1	Beta version of the FREEWAT platform and preliminary User Manual	2 - TEA SISTEMI SPA	Other	Confidential, only for members of the consortium (including the Commission Services)	10
D2.2	Report on the water management module	2 - TEA SISTEMI SPA	Report	Confidential, only for members of the consortium (including the	15

List of deliverables

Deliverable Number ¹⁴	Deliverable Title	Lead beneficiary	Type ¹⁵	Dissemination level ¹⁶	Due Date (in months) ¹⁷
				Commission Services)	
D2.3	Report on the calibration and sensitivity module	3 - TUDA	Report	Confidential, only for members of the consortium (including the Commission Services)	15
D2.4	Report on the solute transport in vadose zone module	2 - TEA SISTEMI SPA	Report	Confidential, only for members of the consortium (including the Commission Services)	15
D2.5	Report on the irrigation management and crop modelling module	1 - SSSA	Report	Confidential, only for members of the consortium (including the Commission Services)	15
D2.6	Report on tools for the hydrochemical analysis and interpretation	4 - CSIC	Report	Confidential, only for members of the consortium (including the Commission Services)	15
D2.7	Report on hydrogeological analysis and interpretation tools	4 - CSIC	Report	Confidential, only for members of the consortium (including the Commission Services)	15
D2.8	FREEWAT platform v.0.1 and User Manual v.0.1	2 - TEA SISTEMI SPA	Other	Confidential, only for members of the consortium (including the Commission Services)	16
D2.9	FREEWAT platform v.1.0 and User Manual v.1.0	2 - TEA SISTEMI SPA	Other	Public	28
D2.10	Report on Lake and Observations Analysis Tool (OAT) tools	19 - IST-SUPSI	Report	Confidential, only for members of the consortium (including the Commission Services)	15

Description of deliverables

D 2.1 Beta version of the developed FREEWAT platform and preliminary User Manual (Month 10)

D 2.2 Report on the water management module (Month 15)

D 2.3 Report on the calibration and sensitivity module (Month 15)

D 2.4 Report on the solute transport in vadose zone module (Month 15)

D 2.5 Report on the irrigation management and crop modelling module (Month 15)

D 2.6 Report on tools for the hydrochemical analysis and interpretation (Month 15)

D 2.7 Report on hydrogeological analysis and interpretation tools (Month 15)

D 2.8 FREEWAT platform v.0.1 and User Manual v.0.1 (Month 16)

D 2.9 FREEWAT platform v.1.0 and User Manual 1.0 (Month 28)

D 2.10 Report on Lake and Observations Analysis Tool (OAT) tools (Month 15)

D2.1 : Beta version of the FREEWAT platform and preliminary User Manual [10]

This deliverable will consist in the first available form of the FREEWAT platform as conceived in the present proposal. This deliverable, aside all the modules/package described in WP2, will specifically include the Lake and Observations Analysis Tool (OAT) tools. All these modules will be maintained through the subsequent versions. It will be used in Task 3.2 for starting the "trainers' training". During these training sessions the platform will still undergo through changes as suggested by the users. This version will be named FREEWAT beta1.0, beta1.1 and so on. As soon as stable new versions will be produced - they will be made available to project partners.

D2.2 : Report on the water management module [15]

This technical report describes the model selected to simulate water management scenarios, as well as details on its integration with other FREEWAT modules, and in particular with the water budget obtained as results of the surface/subsurface flow model. A list of "limitations and assumptions" will be included and commented, along with an appendix on Programmer documentation.

D2.3 : Report on the calibration and sensitivity module [15]

The package for model calibration, sensitivity and uncertainty analysis will be described in this report. Documentation will include a short technical reference to the code implemented (e.g. UCODE), along with an accurate description of code capabilities, especially related to the groundwater model included in FREEWAT. Furthermore, since this tool is strongly linked to statistical properties of model input/output, the relationship between this module and the statistical one (Task 2.6) will be reported. An appendix on Programmer documentation will be also included.

D2.4 : Report on the solute transport in vadose zone module [15]

This document will describe the model selected to simulate solute transport through the unsaturated zone, and the coupling of this process with flow and transport in the saturated zone. Limitations of included features will be also underlined, to avoid misleading usage of the software, with particular focus on the 1D-3D flow coupling procedure. An appendix on Programmer documentation will be included.

D2.5 : Report on the irrigation management and crop modelling module [15]

Models describing crop evolution will be described in this report, including a technical reference to codes (e.g. EPIC, WOFOST) and specific comments to time and space scales appropriate for the model, since the latter is a crucial aspect when coupling crop growth models and surface/subsurface flow. Programmer documentation will be included as report appendix.

D2.6 : Report on tools for the hydrochemical analysis and interpretation [15]

A thorough presentation of these tools will be given in this document, along with a series of examples showing the main capabilities of implemented models and their usage as pre-processors in particular for groundwater model inputs.

D2.7 : Report on hydrogeological analysis and interpretation tools [15]

This report will describe the capability of hydrogeological analysis included in FREEWAT, showing the statistical models implemented, as well as user guidelines for an accurate exploitation of this information to assess input data for subsurface flow model.

D2.8 : FREEWAT platform v.0.1 and User Manual v.0.1 [16]

This deliverable will consist in a stable and tested (during the "training the trainers" workshops, Task 3.2) version of the FREEWAT platform (v.0.1) along with its version of the User Manual. It will be used by the project partners to run local courses (Task 3.3) and for the activities of WP 4 and 5.

D2.9 : FREEWAT platform v.1.0 and User Manual v.1.0 [28]

This deliverable will consist in the final stable and largely tested (during local courses and WP4 and WP5) version of the platform along with the final version of the User Manual. This version will be named FREEWAT v.1.0. Within this deliverable all the strengths and weaknesses (by a technical point of view) of the FREEWAT platform and suggestions for further development and amelioration as drawn from WP4 and WP5 (D4.2 and D5.2) will be incorporated. All Software and Software Documentation (including User's Manual and Tutorials) developed within the FREEWAT Project will be released and published with an Open Source license approved by the OSI (Open Source Initiative). Any file written within the FREEWAT Project should provide the following information: * a copyright notice; * a mention of the license. Any software package written within the FREEWAT Project should provide: * a LICENSE file with the text of the license; * a CONTRIBUTE.md file with the contributions procedure and methodology. Licenses on non-software production (User's Manual) related to Software developed within the FREEWAT Project will also be Open Source such as CC-By or CC-By-Sa. The Project General Assembly will take an initial decision on the type of licenses to be applied during the Kick-Off Project meeting, following a proposal of licensing that will be prepared by the Steering Group. This decision will be reviewed during the Mid-Term Project Meeting. A Final decision will be taken during the Project Final Meeting, before the public release of the Software and Software Documentation.

D2.10 : Report on Lake and Observations Analysis Tool (OAT) tools [15]

This document will describe the integration of the Lake 7 package and of the tools for statistical analysis of observations "Observations Analysis Tool" (OAT). The related code will be delivered with the first release of the FREEWAT platform. Basic examples of the applications will be produced to document the code capabilities. Limitations of included features will be also underlined, to avoid misleading usage of the software. An appendix on Programmer documentation will be included.

Schedule of relevant Milestones

Milestone number ¹⁸	Milestone title	Lead beneficiary	Due Date (in months)	Means of verification
MS1	Kick off meeting	1 - SSSA	1	The kick-off meeting will be the event during which all the partners will meet, the project schedule and issues about project development will be discussed in detail.
MS3	Release of the FREEWAT beta v.1.0	2 - TEA SISTEMI SPA	10	This milestone consists in the release of the FREEWAT beta v.1.0 version to be used in the subsequent training the trainers (Task 3.2) activity.
MS4	Release of the FREEWAT platform v.0.1	2 - TEA SISTEMI SPA	16	This milestone consists in the release of the FREEWAT platform v.0.1 and it will allow subsequent activities foreseen in Task 3.2 and WP4 and WP5.
MS6	Mid-term project meeting	1 - SSSA	15	This meeting will gather all project partners to share issues on project evolution and discuss

Schedule of relevant Milestones

Milestone number ¹⁸	Milestone title	Lead beneficiary	Due Date (in months)	Means of verification
				and address potential problems.
MS7	FREEWAT v.1.0 and related User Manual release	2 - TEA SISTEMI SPA	28	This milestone set the public release of the FREEWAT platform along with the related User Manual.
MS19	Final meeting	1 - SSSA	30	The final project meeting is held.
MS25	Completion of the Evaluation grid for needs/tools	8 - METCENAS OPS - METHODOLOGY CENTRE FOR ENVIRONMENT ASSESSMENT	4	The completion of Task 6.1 constitutes a valuable input to the expansion of the FREEWAT platform

Work package number ⁹	WP3	Lead beneficiary ¹⁰	4 - CSIC
Work package title	Capacity building		
Start month	5	End month	26

Objectives

- a. To build knowledge capacity on using innovative scientific software for Water Resource Management (WRM);
- b. To improve the professional level of technical staff in water authorities, water utilities, private companies, and any other organization involved in WRM;
- c. To disseminate the use of FREEWAT platform as standard software used for modeling surface-/sub-surface water quantity and quality dynamics.

Description of work and role of partners

WP3 - Capacity building [Months: 5-26]

CSIC, SSSA, TEA SISTEMI SPA, TUDA, OSLANDIA, UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION -UNESCO, RT, METCENAS OPS - METHODOLOGY CENTRE FOR ENVIRONMENT ASSESSMENT, ZETA AMALTEA, IEI, ERCIYES UNIVERSITESI, NTUA /AMDC , INHGA, UTARTU, TSNUK, Paragon Europe , UNIVERSITAET BREMEN, IGRAC, IST-SUPSI

This WP is entirely dedicated to build knowledge and capacity on using scientific software technologies (FREEWAT platform), and aimed at improving the professional level of technical and managerial personnel involved in WRM issues in public institutions and companies (stakeholders of the project). The WP activities will be carried out according to the following tasks.

Task 3.1 Preliminary training (Task leader: SSSA, all the partners involved)

This preliminary activity is devoted to install a preliminary (potentially unstable) version of the platform, which is the core of the customised version developed during the project. Afterwards, existing tutorials for the hydrological part of the platform (already developed in the SID&GRID project) will be run, to gain confidence on the software instrument.

Task 3.2 Training of trainers (Task leader: IDAEA-CSIC, all the partners involved)

Once the beta version of FREEWAT will be released (WP2, Month 9) one week training will be delivered at the premises of each case study partner (SSSA, UNESCO, METCENAS, ZETA, RT, IEI, ERU, NTUA/AMD, INHGA, PRN, UTARTU, TSNUK, BUGS, IST-SUPSI) by the FREEWAT Steering Group (SSSA, TEA, TUDA, IDAEA-CSIC) and IST-SUPSI to demonstrate all the platform capabilities. Feedbacks are expected to improve the platform. Courses will serve as a testing phase as functionalities implementation is expected to be completed. A minimum of 6 trainers per partner (14 partners) are foreseen so that about 84 trainers will be formed.

Training materials will be prepared (lecture notes, tutorials, etc.) by the FREEWAT STEERING group (SSSA, TEA, TUDA, IDAEA-CSIC) and IST-SUPSI and then distributed to partners and improved in quality during the training phase. The final version of the training material is foreseen at month 16. IGRAC will also prepare and share with the other partners contents related to the Global Groundwater Information System (GGIS) to be presented during the training. At the end of the project, the training materials will be distributed through the web. User groups will be created to build a community of users and developers (as at present it is for the SID&GRID Italian community).

Task 3.3 Local courses to build capacity at national level (Task leader: IGRAC, case study partners involved)

All the trained partners (Task 3.2) will give a one week applied workshop in their own country to demonstrate the FREEWAT capabilities to relevant stakeholders (average class of 16 to 24 participants, to be repeated 2/3 times, 60 individuals to be trained in average per country). About 650 people will be directly trained to the use of the platform within the EU, 60 in Switzerland, 100 in neighbouring countries (Ukraine and Turkey) and another 80 in Africa (in South Africa, Namibia and Botswana) thanks to the involvement of UNESCO-IHP and IGRAC. Moreover, as far as the African context, teaching materials about the background and current situation of the Stampriet aquifer based on the Governance of Groundwater Resources in Transboundary Aquifer (GGRETA) project will be prepared by IGRAC.

Participation per Partner

Partner number and short name	WP3 effort
1 - SSSA	3.50
2 - TEA SISTEMI SPA	1.80
3 - TUDA	2.30
4 - CSIC	3.80
5 - OSLANDIA	1.00
6 - UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION -UNESCO	0.40
7 - RT	1.10
8 - METCENAS OPS - METHODOLOGY CENTRE FOR ENVIRONMENT ASSESSMENT	1.20
9 - ZETA AMALTEA	1.40
10 - IEI	1.80
11 - ERCIYES UNIVERSITESI	1.80
12 - NTUA /AMDC	2.00
13 - INHGA	3.50
14 - UTARTU	3.50
15 - TSNUK	3.50
16 - Paragon Europe	1.50
17 - UNIVERSITAET BREMEN	0.90
18 - IGRAC	0.80
19 - IST-SUPSI	2.50
Total	38.30

List of deliverables

Deliverable Number ¹⁴	Deliverable Title	Lead beneficiary	Type ¹⁵	Dissemination level ¹⁶	Due Date (in months) ¹⁷
D3.1	Courses held at premises of local project partners	4 - CSIC	Other	Confidential, only for members of the consortium (including the Commission Services)	16
D3.2	Training materials - final version	4 - CSIC	Other	Public	16
D3.3	Local courses to build capacity at national level	9 - ZETA AMALTEA	Other	Public	26

Description of deliverables

D 3.1 Courses held at premises of local project partners (Month 16)
D 3.2 Training materials - final version (Month 16)

D 3.3 Local courses to build capacity at national level (Month 26)

D3.1 : Courses held at premises of local project partners [16]

A minimum of 6 trainers per country will be trained by the core project team for a whole number of 84 trainers, with an optimum looking at 120 trainers all in all. Courses will also be held in Switzerland at premises of IST-SUPSI. Personnel of IGRAC will also be trained to the use of FREEWAT.

D3.2 : Training materials - final version [16]

Training materials consisting in lecture notes, tutorials (including dedicated files) will be prepared and distributed at the end of the project through the web site. The training material aim is to help the users of the FREEWAT platform to test its capabilities on all the subject of Water Resource Management implemented (as described in WP2). IGRAC will also prepare and share with the other partners contents related to the Global Groundwater Information System (GGIS) to be presented during the training. Licenses on non-software production (training materials) related to Software developed within the FREEWAT Project will be Open Source such as CC-By or CC-By-Sa.

D3.3 : Local courses to build capacity at national level [26]

The trainers formed in Task 3.2 will use the training materials delivered as D3.2 to demonstrate the FREEWAT platform capabilities through national workshops. About 650 people will be directly trained to the use of the platform within the EU, 60 in Switzerland, 100 in neighbouring countries (Ukraine and Turkey) and another 80 in Africa (in South Africa, Namibia and Botswana) thanks to the involvement of UNESCO-IHP. As such, courses will also be held in Switzerland at IST-SUPSI or collaborating universities premises. IGRAC will support UNESCO in performing training activities in Africa.

Schedule of relevant Milestones

Milestone number ¹⁸	Milestone title	Lead beneficiary	Due Date (in months)	Means of verification
MS1	Kick off meeting	1 - SSSA	1	The kick-off meeting will be the event during which all the partners will meet, the project schedule and issues about project development will be discussed in detail.
MS3	Release of the FREEWAT beta v.1.0	2 - TEA SISTEMI SPA	10	This milestone consists in the release of the FREEWAT beta v.1.0 version to be used in the subsequent training the trainers (Task 3.2) activity.
MS4	Release of the FREEWAT platform v.0.1	2 - TEA SISTEMI SPA	16	This milestone consists in the release of the FREEWAT platform v.0.1 and it will allow subsequent activities foreseen in Task 3.2 and WP4 and WP5.
MS5	Completion of the "training the trainers" courses	4 - CSIC	16	The activities to train the trainers at their own premises using the FREEWAT platform beta version are completed. Partners will be then able to run activities foreseen

Schedule of relevant Milestones

Milestone number ¹⁸	Milestone title	Lead beneficiary	Due Date (in months)	Means of verification
				in WP4 and WP5 as well as to run local courses.
MS6	Mid-term project meeting	1 - SSSA	15	This meeting will gather all project partners to share issues on project evolution and discuss and address potential problems.
MS7	FREEWAT v.1.0 and related User Manual release	2 - TEA SISTEMI SPA	28	This milestone set the public release of the FREEWAT platform along with the related User Manual.
MS8	Completion of capacity building at national level	9 - ZETA AMALTEA	26	Capacity building through courses at national level is completed.
MS19	Final meeting	1 - SSSA	30	The final project meeting is held.
MS20	List of Contacts	16 - Paragon Europe	3	A first database of contacts to target the stakeholders which can be interested in the open source and public domain FREEWAT platform is completed.

Work package number ⁹	WP4	Lead beneficiary ¹⁰	12 - NTUA /AMDC
Work package title	Application to WFD/GWD		
Start month	9	End month	26

Objectives

Apply the FREEWAT platform to case studies to solve selected issues for the implementation of the WFD, Groundwater Directive (GWD) and other water related Directives
 Demonstrate the advantages of using the platform and highlight possible problems.
 Use FREEWAT to develop scenarios for water resources management under the requirements of the WFD and GWD and other water related Directives for each case study
 Compare the results of different case studies and provide suggestions for improvements of the FREEWAT platform with respect to the practical application of WFD and GWD and other water related Directives.

Description of work and role of partners

WP4 - Application to WFD/GWD [Months: 9-26]

NTUA /AMDC , RT, METCENAS OPS - METHODOLOGY CENTRE FOR ENVIRONMENT ASSESSMENT, IEI, INHGA, UTARTU, Paragon Europe , UNIVERSITAET BREMEN, IST-SUPSI

Nine case studies from 8 different countries are related to the application of the WFD/GWD: 1) Banat Plain, Romania, 2) Selisoo, Estonia, 3) Lavrion, Greece, 4) Vrbanski plato, Slovenia, 5) Odra and Morava basins, Czech Republic, 6) Bremenhaven, Germany, 7) Follonica aquifer, Italy, 8) Il-Magħluq , Malta, 9) Lake Maggiore, Switzerland. The selected case studies are of particular interest because they cover a variety of topics and problems related to the application of the WFD/GWD and they will help testing and exploring all the capabilities included in FREEWAT. In summary:

- 1) In the Banat Plain aquifer, the shallow aquifer is used for drinking water supply and the potential impact of climate change to its depletion needs to be studied also because of potential water contamination due to the existence of industrial and agricultural activities.
- 2) The aim of the study in the Selisoo area is to assess the effect of underground mining and its possible future extension to a neighbouring wetland.
- 3) The aquifer system of Lavrion combines typical problems of water resources management of coastal regions, i.e. groundwater quality deterioration due to seawater intrusion and overpumping. The GW modelling tools provided within the FREEWAT platform will be used to optimise the water resources of the karst aquifer for irrigation, combat seawater intrusion and minimise concentrations of nitrates in the unconfined aquifer.
- 4) The banks of the Drava river are used to infiltrate water and this represents a first step of managed groundwater recharge and a comprehensive model to manage pumping, the recharge and possible pollution it is needed to plan future recharge scenarios.
- 5) The Odra and Morava study focuses on a river basin management problem where a distributed hydrological model exists and it is used for flood forecasting (WFD, Flood directive), but it would need to be connected to a groundwater and solute transport model.
- 6) The groundwater model developed for the city of Bremenhaven is used by local authorities to manage groundwater extractions rights in order to preserve the groundwater body from both quantity and quality (risk of seawater intrusion) perspectives. It refers to the WFD application.
- 7) The Follonica aquifer faces problems of overexploitation for civil and industrial purposes, pollution related to high concentration of heavy metals, and saline intrusion.
- 8) The Maltese site is a Natura 2000 site of high ecological importance. It is a coastal wetland water habitat close to an urban area. The site is under study for the development of a management plan: it is house of one of the endemic species of the killifish *Alphanius fasciatus* which has become very rare. Nature Trust (Malta) together with the Malta aquaculture Centre has in the pipeline a breeding programme to save this fish from extinction.
- 9) The case study of Lake Maggiore will be analysed and used to test the LAK7 module and to assess the potential impacts of pollutant and micropollutants in relation to river-lake-groundwater interactions. This is of particular concern because contaminated water can flow into rivers and/or infiltrate the groundwater and finally reach the lakes. Thus it is very important to understand and simulate this process to correctly manage the resource. The model will permit to predict possible adverse effects on aquatic life or on drinking water resources. During the case study set-up the OAT (Observations Analysis Tool) will be used to support the model calibration by preparing time series and the input

data starting from raw observations. Specifically OAT will allow: to automate the input files generation from raw observations, to asses data quality, to adjust observations weights based on assessed data quality and user preferences.

The activities are organized according to the following tasks.

Task 4.1 Problem statement, data gathering and preparation (Task leader: RT, all partners with case studies)

For all the case studies, initial clear statements on the problems to solve, the objectives to reach and the water policy to target will be made. Partners involved will have to prepare data for the modelling application on time (months 9-14).

Task 4.2 Application of the FREEWAT platform to case studies to solve selecting issues for the implementation of the WFD, GWD and other water relate Directives (Task leader: BUGS, all partners with case studies)

Each partner involved through a case study will take care of adjusting the existing model within the FREEWAT platform. The model will be assessed using sensitivity analysis and calibration to take advantage of the capabilities integrated in FREEWAT. Model reliability due to the use of sensitivity analysis and calibration will be assessed. The FREEWAT core team will support end users partners in their case study implementation (also additional testing of the platform functionalities and possible bug fixing).

Task 4.3 Development of water management scenarios under the requirements of the WFD/GWD (Task leader: UTARTU, all partners with case studies)

The capabilities of FREEWAT to produce valuable data in order to solve the specified problem and the design of different water management scenarios are tested in all the case studies. Each partner will summarize in a short report: 1) the results of the model developed in FREEWAT, 2) the new management scenarios developed thanks to the user-friendly FREEWAT.

Task 4.4 Collection of the experiences from the case studies: advantages and drawbacks of FREEWAT (Task leader: NTUA-AMDC/LTCP, all partners with case studies)

A questionnaire will be prepared with questions about advantages and drawbacks of using FREEWAT and input from all the partners will be collected. This will result in an evaluation of the FREEWAT platform with respect to the needs of the different case studies and will also allow troubleshooting the newly integrated platform. Each partner will deliver NTUA-AMDC the filled questionnaire where advantages and drawbacks of using FREEWAT will be described. Comparison of the results obtained in the different case studies and suggestions for further improvements will be collected.

Evaluation of the results obtained in the different case studies will highlight strengths and weaknesses of FREEWAT and it will represent the starting point for further improvements. All the results will be collected in a final report that summarize advantages/drawbacks, strengths/weaknesses of FREEWAT with respect to the application of EU Directives and suggestions for further improvements.

Participation per Partner

Partner number and short name	WP4 effort
7 - RT	9.00
8 - METCENAS OPS - METHODOLOGY CENTRE FOR ENVIRONMENT ASSESSMENT	4.40
10 - IEI	5.80
12 - NTUA /AMDC	7.50
13 - INHGA	12.40
14 - UTARTU	13.00
16 - Paragon Europe	5.00
17 - UNIVERSITAET BREMEN	3.50
19 - IST-SUPSI	4.50
Total	65.10

List of deliverables

Deliverable Number ¹⁴	Deliverable Title	Lead beneficiary	Type ¹⁵	Dissemination level ¹⁶	Due Date (in months) ¹⁷
D4.1	Report by each partner on the FREEWAT application to the case studies, results and new/alternative management scenarios simulation on WFD/GWD and water related Directives	12 - NTUA / AMDC	Report	Confidential, only for members of the consortium (including the Commission Services)	25
D4.2	Report on advantages/drawbacks, strengths/weaknesses of FREEWAT with results from the 14 case studies	12 - NTUA / AMDC	Report	Confidential, only for members of the consortium (including the Commission Services)	26

Description of deliverables

D 4.1 Report done by each partner on the FREEWAT application to the case studies, results and new/alternative management scenarios simulation (Month 25)

D 4.2 Report on advantages/drawbacks, strengths/weaknesses of FREEWAT with results from the 14 case studies (Month 26)

D4.1 : Report by each partner on the FREEWAT application to the case studies, results and new/alternative management scenarios simulation on WFD/GWD and water related Directives [25]

Each partner will compile a report synthesing its own modeling experience in applying FREEWAT to its case study. Also the Lake Maggiore case study, run by IST-SUPSI, will be included in the report. In particular, aside form technical issues, management scenarios simulated will be presented and discussed.

D4.2 : Report on advantages/drawbacks, strengths/weaknesses of FREEWAT with results from the 14 case studies [26]

This report will detail advantages/drawbacks, strenght and weakness of using FREEWAT and on the platform itself with the results form the 14 case studies (including the Lake Maggiore case study, run by IST-SUPSI). Each partner will deliver NTUA-AMDC the filled questionnaire where advantages and drawbacks of using FREEWAT . NTUA-AMDC will compile a synthetic report including the raw questionnaire distributed among the partners as an Annex.

Schedule of relevant Milestones

Milestone number ¹⁸	Milestone title	Lead beneficiary	Due Date (in months)	Means of verification
MS1	Kick off meeting	1 - SSSA	1	The kick-off meeting will be the event during which all the partners will meet, the project schedule and issues about project development will be discussed in detail.

Schedule of relevant Milestones

Milestone number ¹⁸	Milestone title	Lead beneficiary	Due Date (in months)	Means of verification
MS6	Mid-term project meeting	1 - SSSA	15	This meeting will gather all project partners to share issues on project evolution and discuss and address potential problems.
MS7	FREEWAT v.1.0 and related User Manual release	2 - TEA SISTEMI SPA	28	This milestone set the public release of the FREEWAT platform along with the related User Manual.
MS9	Completion of data gathering and preparation for WFD and related Directives case studies.	7 - RT	14	Data gathering and preparation for the use of the FREEWAT platform is completed by all the partners running case studies.
MS10	Completion of the application of the FREEWAT platform to all the case studies	17 - UNIVERSITAET BREMEN	25	The application of the FREEWAT platform is completed at all the case studies.
MS11	Completion of questionnaires distributed to all the case study partners	12 - NTUA /AMDC	25	Questionnaires distributed to all the case study partners are completed and delivered to the WP 4 Task 4.4 leader NTUA/AMDC.
MS19	Final meeting	1 - SSSA	30	The final project meeting is held.
MS20	List of Contacts	16 - Paragon Europe	3	A first database of contacts to target the stakeholders which can be interested in the open source and public domain FREEWAT platform is completed.
MS23	Minutes of each Focus group run at case study sites	16 - Paragon Europe	26	The delivery of each Minute is foreseen from Month 12 and then every two months until Months 26. Their completion is preliminary to the production of the Policy briefs. PRN is in charge of requiring each partner running a test site its preparation in due time.

Schedule of relevant Milestones

Milestone number ¹⁸	Milestone title	Lead beneficiary	Due Date (in months)	Means of verification
MS24	Completion of the Guidelines for effective Focus Group running in the water sector	16 - Paragon Europe	9	This milestone will allow Focus Groups to start their activities.

Work package number ⁹	WP5	Lead beneficiary ¹⁰	6 - UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION -UNESCO
Work package title	Application to rural water management		
Start month	9	End month	26

Objectives

Apply the FREEWAT platform to case studies to solve selecting issues for the implementation of the Nitrate Directives or other local/national regulations.
 Demonstrate advantages of using the platform, and highlight possible problems in softwares
 Use FREEWAT to develop scenarios for water resources management under the requirements of the EU or national/local regulations for each case study
 Compare the results of case studies from EU, associated and non-EU countries, providing suggestions for improvements of the FREEWAT platform with respect to the practical application of EU and/or national regulations mostly related to the rural environment.

Description of work and role of partners

WP5 - Application to rural water management [Months: 9-26]

UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION -UNESCO, SSSA, ZETA AMALTEA, ERCIYES UNIVERSITESI, TSNUK, IGRAC

Case studies from five different countries are related to the application of the FREEWAT platform in rural water management. The selected case studies cover a variety of topics and problems related to the application of the EU Directives, but they will also facilitate the comparison between regulation in EU countries, associated countries, and non-EU countries. The two European studies relate to the application of the Nitrate Directive and of the greening aspects of the Common Agricultural Policy.

In summary:

- 1) The Massaciuccoli lake basin (Tuscany, Italy) is a typical artificially drained coastal floodplain impacted by excess nutrient loading primarily from agricultural activities. Modeling activities will aim at demonstrating the benefits of adopting the greening part of the CAP in water management by producing a management model for a large scale phyto-treatment system.
- 2) In Navarra, Spain, the physically based agrohydrological model SWAP is combined with the hydrological model MODFLOW to simulate the effects of irrigation and fertilizer management on groundwater nitrate pollution. The model must point out the reliability of the specific measures taken by Navarra Government to implement the EU Nitrate Directive, as well as to provide an instrument to CAP cross-compliance evaluation in Navarra.
- 3) The north-east part of Ukraine is heavily modified by the hydro-melioration systems occurred in 70-80th. Such actions have changed not only the water regime of the lowland Desna River, but also wetlands into the peatlands, exacerbating the problem of water quality and its contamination, greenhouse gas emissions, peat fires and overall, bringing up the need of sustainable management.
- 4) In the Palas Basin, in Turkey, the objective is to develop a watershed model to determine the water and pollutant transport to a playa lake in the basin (Tuzla or Palas Lake) which collects surface and groundwater generated in the basin. Palas Basin is an agricultural basin, therefore the focus is on non-point source pollution from agricultural areas. The goal is to develop water management strategies for reducing the negative impacts associated with agricultural activities.
- 5) Groundwater resources in the Stampriet case study (a large transboundary aquifer in South Africa, Namibia and Botswana) are the mayor sources of domestic water supply and the need to be preserved, because they are easily vulnerable. The management problem is exacerbated by the transboundary characteristic of the aquifer: data availability and exchange remains limited, being one of the mayor obstacles towards sound management of the resources among aquifer states. In this case study, IGRAC will: a) coordinate data collection; b) harmonise data and information coming from three states (Botswana, Namibia and South Africa); develop the conceptual model of the case study. UNESCO and IGRAC will then work closely in model application

The activities are organized according to the following tasks.

Task 5.1 Problem statement, data gathering and preparation (Task leader: AMALTEA, all partners with case studies)

For all the case studies, initial clear statements on the problems to solve, the objectives to reach and the water policy to target will be made. Partners involved will have to prepare data for the modelling application on time (months 9-12).

Task 5.2 Application/adjustment of the models developed in the case studies using FREEWAT and evaluation of the new model results (Task leader: UNESCO, all partners with case studies)

Each partner involved through a case study will take care of adjusting the existing model within the FREEWAT platform. The model will be assessed using sensitivity analysis and calibration to take advantage of the capabilities integrated in FREEWAT. Results with the model developed and calibrated within FREEWAT are compared to the results obtained with the previous models. Improvements in model reliability due to the use of sensitivity analysis and calibration will be assessed.

Task 5.3 Development of water management scenarios appropriate for sustainable water use in rural areas (Task leader: SSSA, all partners with case studies)

The capabilities of FREEWAT to help with design of different water management scenarios appropriate for sustainable water use in rural areas will be tested in all the case studies. In particular, the requirements of the Nitrates Directive for EU countries or national regulation for the associated and non-EU countries will be assessed. Each partner will summarize in a short report: 1) the results of the model developed in FREEWAT, 2) the new management scenarios developed.

Task 5.4 Collection of the experiences from the case studies: advantages and drawbacks of FREEWAT (Task leader: UNESCO, all partners with case studies)

A questionnaire will be prepared with questions about advantages and drawbacks of using FREEWAT and input from all the partners will be collected by UNESCO.

This will result in an evaluation of the FREEWAT platform with respect to the needs of the different case studies and it will also allow troubleshooting the newly integrated platform.

Comparison of the results obtained in the different case studies and suggestions for further improvements will be collected.

Evaluation of the results obtained in the different case studies will highlight strengths and weaknesses of FREEWAT and it will represent the starting point for further improvements. All the results will be collected in a final report that summarize advantages/drawbacks, strengths/weaknesses of FREEWAT with respect to the application of EU Directives and suggestions for further improvements.

This WP will allow comparison of approaches to similar problems with respect to model development and regulations in EU, associated and non-EU countries with a special focus on rural water management.

Participation per Partner

Partner number and short name	WP5 effort
1 - SSSA	5.00
6 - UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION -UNESCO	2.30
9 - ZETA AMALTEA	5.00
11 - ERCIYES UNIVERSITESI	7.00
15 - TSNUK	12.30
18 - IGRAC	2.70
Total	34.30

List of deliverables

Deliverable Number ¹⁴	Deliverable Title	Lead beneficiary	Type ¹⁵	Dissemination level ¹⁶	Due Date (in months) ¹⁷
D5.1	Report by each partner on the FREEWAT application to the case study, results and new/alternative management scenarios simulation focusing on rural water management and EU vs. non-EU regulations	6 - UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION -UNESCO	Report	Confidential, only for members of the consortium (including the Commission Services)	25
D5.2	Report on advantages/drawbacks, strengths/weaknesses of FREEWAT with results from the case studies on rural water management	6 - UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION -UNESCO	Report	Confidential, only for members of the consortium (including the Commission Services)	26

Description of deliverables

D 5.1 Report done by each partner on the FREEWAT application to the case studies, results and new/alternative management scenarios simulation (Month 25)

D 5.2 Report on advantages/drawbacks, strengths/weaknesses of FREEWAT with results from the case studies (Month 26)

D5.1 : Report by each partner on the FREEWAT application to the case study, results and new/alternative management scenarios simulation focusing on rural water management and EU vs. non-EU regulations [25]

Each partner will compile a report synthesing its own modeling experience in applying FREEWAT to its case study. In particular, aside from technical issues, management scenarios simulated will be presented and discussed.

D5.2 : Report on advantages/drawbacks, strengths/weaknesses of FREEWAT with results from the case studies on rural water management [26]

This report will detail advantages/drawbacks, strenght and weakness of using FREEWAT and on the platform itself with the results form 13 case studies on rural water management. Each partner will deliver UNESCO the filled questionnaire where advantages and drawbacks of using FREEWAT are highlighted. UNESCO will compile a synthetic report including the raw questionnaire distributed among the partners as an Annex. This report will also include comparison among EU and non-associated countries regulations on rural water management.

Schedule of relevant Milestones

Milestone number ¹⁸	Milestone title	Lead beneficiary	Due Date (in months)	Means of verification
MS1	Kick off meeting	1 - SSSA	1	The kick-off meeting will be the event during which all the partners will meet, the project

Schedule of relevant Milestones

Milestone number ¹⁸	Milestone title	Lead beneficiary	Due Date (in months)	Means of verification
				schedule and issues about project development will be discussed in detail.
MS6	Mid-term project meeting	1 - SSSA	15	This meeting will gather all project partners to share issues on project evolution and discuss and address potential problems.
MS7	FREEWAT v.1.0 and related User Manual release	2 - TEA SISTEMI SPA	28	This milestone set the public release of the FREEWAT platform along with the related User Manual.
MS12	Completion of data gathering and preparation for rural water management case studies	9 - ZETA AMALTEA	14	Data gathering and preparation for the use of the FREEWAT platform is completed by all the partners running case studies on rural water management.
MS13	Completion of the application of the FREEWAT platform to the rural water management case studies	1 - SSSA	25	The application of the FREEWAT platform is completed at all the case studies dealing with rural water management.
MS14	Completion of questionnaires distributed to the rural water management case study partners	6 - UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION - UNESCO	25	Questionnaires distributed to all the case study partners are completed and delivered to the WP 5 Task 5.4 leader UNESCO.
MS19	Final meeting	1 - SSSA	30	The final project meeting is held.
MS20	List of Contacts	16 - Paragon Europe	3	A first database of contacts to target the stakeholders which can be interested in the open source and public domain FREEWAT platform is completed.
MS23	Minutes of each Focus group run at case study sites	16 - Paragon Europe	26	The delivery of each Minute is foreseen from Month 12 and then every two months until Months 26. Their completion is preliminary to the

Schedule of relevant Milestones

Milestone number ¹⁸	Milestone title	Lead beneficiary	Due Date (in months)	Means of verification
				production of the Policy briefs. PRN is in charge of requiring each partner running a test site its preparation in due time.
MS24	Completion of the Guidelines for effective Focus Group running in the water sector	16 - Paragon Europe	9	This milestone will allow Focus Groups to start their activities.

Work package number ⁹	WP6	Lead beneficiary ¹⁰	8 - METCENAS OPS - METHODOLOGY CENTRE FOR ENVIRONMENT ASSESSMENT
Work package title	Enhanced science- and participatory approach evidence-based decision making		
Start month	2	End month	30

Objectives

The activity of this WP is aimed at securing the uptake of scientific/technical knowledge provided by applying the FREEWAT platform throughout the policy cycle (namely, from policy design to implementation, monitoring and review).

Means to reach this goal are:

- a. introducing the participatory approach during the technical application of the FREEWAT platform;
- b. ensuring that project outcomes will reach policy implementation, by transfer of scientific and technical achievements of the project to stakeholders and in particular policy makers and authorities.

Description of work and role of partners

WP6 - Enhanced science- and participatory approach evidence-based decision making [Months: 2-30]
METCENAS OPS - METHODOLOGY CENTRE FOR ENVIRONMENT ASSESSMENT, SSSA, UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION -UNESCO, RT, ZETA AMALTEA, IEI, ERCIYES UNIVERSITESI, NTUA /AMDC , INHGA, UTARTU, TSNUK, Paragon Europe , UNIVERSITAET BREMEN, IST-SUPSI

In this WP all necessary activities to streamline project results to address the WFD and water related Directives challenges will be carried out.

In particular, these activities are organized according to the following tasks:

Task 6.1 Definition of a “needs/tools” evaluation grid (Task leader: METCENAS)

During this task a grid to intersect “needs and priorities” with “availability of software tools” will be drawn up. Needs will be collected among project partners and stakeholders. Conversely, a concise, but exhaustive list of software capabilities to be included in FREEWAT platform will be compiled by partners in charge of technical activities. Any need/ priority will be classified according to the WFD and water related Directives. A list of tools able to solve the directive-related issues will be included.

A Report will be produced and released after approval of project stakeholders.

Task 6.2 Local Focus Groups on ICT innovation for water management: Stakeholders involvement in running case studies (Task leader: PRN, all partners involved in case studies)

Once a common level of knowledge is defined (Task 6.1), for each case study included in the project (included the one run by IST-SUPSI) a Focus Group (FG) will be activated. Each FG will be led by the Partner coordinating the relative case study. The main purpose of Task 6.2 is to have active participation of stakeholders in the use of FREEWAT and in the analysis of the water management scenarios to:

- demonstrate the benefits of applying the FREEWAT platform also to a non-technical audience;
- guarantee and boost a more thorough FREEWAT distribution;
- help increase the numbers of FREEWAT users not only among scientists, but also among the technical and non technical stakeholders.

- ensure enhanced science- and participatory approach evidence-based decision making by using the results of the FREEWAT application.

Each FG will involve stakeholders from the case study area (as defined in the Annex B3), and at least 7 meetings will be held during the project.

The actions involved in this task are:

- preparing partners to run FG on the FREEWAT application to their case study;
- running the FG at the same time of the application of the FREEWAT platform to the case studies (WP4 and WP5);
- discussing the practical applications of ICT innovative tools such as FREEWAT to cope the water-related problems of the area of interest and their relationships with the WFD/GWD and water-related Directives.

FGs are then aimed at involving stakeholders during the whole phase of the FREEWAT platform application and scenarios building, introducing the participatory approach into the technical analysis and to discuss model assumptions as well as the progress of modelling exercise.

The experience gained by Paragon Europe (PRN) in organizing and participating in such FGs will be transferred to the partners leading the case studies in the form of guidelines. The goal is that the stakeholders can receive the best background preparation and therefore get the most benefit out of these meetings. This is a very important tool for the distribution of FREEWAT at all policy levels.

Main questions that will be addressed by the guidelines are:

- How much of a topic can be debated at one meeting?
- How much input will the local leader have to prepare?
- How much decision making is possible during such a meeting?

The intention is to ensure local success while keeping dedicated time resources limited.

PRN will then prepare an Agenda for the FG's meetings. At each of them, a particular topic dealing with the application of the FREEWAT platform to the WFD and water related directive will be discussed. As such, the discussion within the FG will encompass in detail the relationship between the use of innovative ICT tools and the WFD/GWD and water-related Directives.

Finally, the FG will evaluate the achievements of the application of the FREEWAT platform, discussing socio-economic and environmental consequences of the scenarios analysed aiming at emphasising the practical applications of ICT innovative tools to cope the water-related problems of the area of interest.

At the end of each meeting, the partners leading the case studies (including IST-SUPSI) will draw a Minute on the discussion run and its main conclusions.

The Minutes of each FG meeting will be the basis for drawing up specific policy briefs (see next Task 6.3). Besides the Minutes, at each case study, results from such FG will be presented in a final document prepared in WP8 (D8.10 Final report on the Focus Groups integrating the participatory approach to technical modelling activities).

Task 6.3 Preparation of “Policy briefs” (Task leader: PRN)

While Task 6.1 concerns the assessment of the “level of knowledge” related to the project stakeholders, this task is indeed devoted to produce ready-to-use short reports taking the experience coming from the Focus Groups (Task 6.2) on applying the FREEWAT platform to the case studies run in WP4 and WP5.

These short reports are called Policy Briefs and their topics will be related to the FGs Agenda dealing with particular aspects of the application of the FREEWAT platform to the WFD/GWD and water-related Directives. A Policy Brief consists in short reports to be distributed through policy makers and proposed as practical tool to be used in order to ensure better knowledge based decisions. They will summarise information from the Minutes prepared by the case study partners.

Policy Briefs are the direct result of Task 6.2 and, at each case study (WP4 and WP5), a successful FG is a requirement and important starting base for a good Policy Brief.

Policy Briefs are connected with dissemination materials (WP8), but having a different objective (i.e.: clear, concise, not exceeding four pages). An overall number of at least seven Policy briefs will be prepared by PRN in English: each case study leading partner will translate them, as soon as delivered, in its own national language to assure dissemination in its own country.

Participation per Partner

Partner number and short name	WP6 effort
1 - SSSA	1.50
6 - UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION -UNESCO	1.10
7 - RT	1.50
8 - METCENAS OPS - METHODOLOGY CENTRE FOR ENVIRONMENT ASSESSMENT	3.00
9 - ZETA AMALTEA	1.50
10 - IEI	1.50
11 - ERCIYES UNIVERSITESI	1.50

Partner number and short name	WP6 effort
12 - NTUA /AMDC	1.50
13 - INHGA	2.00
14 - UTARTU	2.00
15 - TSNUK	2.00
16 - Paragon Europe	2.60
17 - UNIVERSITAET BREMEN	1.20
19 - IST-SUPSI	1.50
Total	24.40

List of deliverables

Deliverable Number ¹⁴	Deliverable Title	Lead beneficiary	Type ¹⁵	Dissemination level ¹⁶	Due Date (in months) ¹⁷
D6.1	Evaluation grid for “needs/tools” comparison	8 - METCENAS OPS - METHODOLOGY CENTRE FOR ENVIRONMENT ASSESSMENT	Report	Confidential, only for members of the consortium (including the Commission Services)	4
D6.2	Guidelines for effective Focus Group running in the water sector	16 - Paragon Europe	Report	Confidential, only for members of the consortium (including the Commission Services)	9
D6.3	Policy briefs	16 - Paragon Europe	Report	Public	28

Description of deliverables

D 6.1 Evaluation grid for “needs/tools” comparison (Month 4)

D 6.2 Guidelines for effective Focus Group running in the water sector (Month 9)

D 6.3 Policy briefs (Month 28)

D6.1 : Evaluation grid for “needs/tools” comparison [4]

This deliverable will consist in a Report where needs from partners/stakeholders to be addressed by means of the FREEWAT platform will be checked and potential tools to be implemented (other than that described in WP2) assessed.

D6.2 : Guidelines for effective Focus Group running in the water sector [9]

The experience gained by Paragon Europe (PRN) in organizing and participating in the FGs will be transferred to the partners in the form of guidelines. The guidelines will address topic such as: How much of a topic can be debated at one meeting? How much input will the local leader have to prepare? How much decision making is possible during such a meeting? The intention is to ensure local success while keeping dedicated time resources limited.

D6.3 : Policy briefs [28]

An overall number of at least seven Policy briefs will be prepared by PRN drawing information from the Minutes prepared by the case study partners. Each Policy brief will address particular aspects of the WFD/GWD and water-

related Directives and will be translated in all the languages of the project partners (by each case study partner) and proposed as practical tool to be used in order to ensure better knowledge-based decisions.

Schedule of relevant Milestones

Milestone number ¹⁸	Milestone title	Lead beneficiary	Due Date (in months)	Means of verification
MS1	Kick off meeting	1 - SSSA	1	The kick-off meeting will be the event during which all the partners will meet, the project schedule and issues about project development will be discussed in detail.
MS6	Mid-term project meeting	1 - SSSA	15	This meeting will gather all project partners to share issues on project evolution and discuss and address potential problems.
MS7	FREEWAT v.1.0 and related User Manual release	2 - TEA SISTEMI SPA	28	This milestone set the public release of the FREEWAT platform along with the related User Manual.
MS19	Final meeting	1 - SSSA	30	The final project meeting is held.
MS20	List of Contacts	16 - Paragon Europe	3	A first database of contacts to target the stakeholders which can be interested in the open source and public domain FREEWAT platform is completed.
MS22	Completion of competing solution and services analysis	16 - Paragon Europe	12	This milestone foresees the completion of competing solution and services analysis, preliminary task to the preparation of the market and business model.
MS23	Minutes of each Focus group run at case study sites	16 - Paragon Europe	26	The delivery of each Minute is foreseen from Month 12 and then every two months until Months 26. Their completion is preliminary to the production of the Policy briefs. PRN is in charge of requiring each partner running a test site its preparation in due time.

Schedule of relevant Milestones

Milestone number ¹⁸	Milestone title	Lead beneficiary	Due Date (in months)	Means of verification
MS24	Completion of the Guidelines for effective Focus Group running in the water sector	16 - Paragon Europe	9	This milestone will allow Focus Groups to start their activities.
MS25	Completion of the Evaluation grid for needs/tools	8 - METCENAS OPS - METHODOLOGY CENTRE FOR ENVIRONMENT ASSESSMENT	4	The completion of Task 6.1 constitutes a valuable input to the expansion of the FREEWAT platform

Work package number ⁹	WP7	Lead beneficiary ¹⁰	3 - TUDA
Work package title	Guidance on model-supported application of EU water-related Directives for water quantity and quality		
Start month	26	End month	30

Objectives

To promote a consistent and sound approach to the development of ICT-based application of EU water related Directives with a special focus on water quantity and quality issues.
 To collect and publish the outcomes of the test sites analysis in a report named "Guidance on model-supported application of EU water related Directives for water quantity and quality".
 This report will be a proposal for a reference document at the European level to be used as support for decision makers dealing with Water Resources Management (WRM).
 The Guidance will define "best practices" for using GIS-based numerical modelling tools as fundamental instrument for preparing water management plans.

Description of work and role of partners

WP7 - Guidance on model-supported application of EU water-related Directives for water quantity and quality [Months: 26-30]

TUDA, SSSA, TEA SISTEMI SPA, CSIC, UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION -UNESCO, RT, METCENAS OPS - METHODOLOGY CENTRE FOR ENVIRONMENT ASSESSMENT, ZETA AMALTEA, IEI, ERCIYES UNIVERSITESI, NTUA /AMDC , INHGA, UTARTU, TSNUK, Paragon Europe , UNIVERSITAET BREMEN

The guidelines will cover all stages of model development: planning, conceptualization, design and construction, model calibration, predictive scenarios, uncertainty evaluation, model review and reporting. They will be divided into two main sections:

- 1) general section with guidelines for water quantity and quality modelling in general;
- 2) a more detailed section strongly connected to guidelines useful for the application of the European Directives.

In the first section "principles" for efficient set up and evaluation of models (definition of assumptions, output analysis, understanding of the strengths and limitations, of a model analysis), and definition of how model results can be included in a standard protocol to manage environmental problems, with reference to the specific problems analysed in the test cases will be presented. The second sections will include guidelines related to the WFD, GWD, and water related Directives (i.e. Nitrate Directive). Results from the non EU case studies will also be used for comparison.

The Guidance will be published in English, in order to disseminate the project outcomes within the EU and abroad. The activities are organized according to the following tasks.

Task 7.1 Collection and evaluation of the outcomes of the case studies (Task leader: TUDa):

Results of the modelling efforts developed in each case study will be collected and summarized in a table. Main information used to create different categories include: model objectives, conceptual model design, data available for sensitivity analysis and calibration, and uncertainty analysis results. Common characteristics will be presented in a grid used as a base for the development of the guidelines.

Task 7.2 Preparation of the general section of the "Guidance on water ..." (Task leader: TUDa)

The general section will contain guidelines on how to set up a model starting from the definition of the objectives and the goals to the calibration and uncertainty evaluation process.

Task 7.3 Preparation of the EU Directive related section of the "Guidance on water ..." manual (Task leader: TUDa)

The section devoted to the guidelines related to the application of the EU directives will strongly use the results of the case studies developed throughout the project. A chapter on how the guidelines for the application of the EU directive can be connected to the regulation in non-EU countries will also be presented.

Participation per Partner

Partner number and short name	WP7 effort
1 - SSSA	0.20
2 - TEA SISTEMI SPA	0.50
3 - TUDA	2.30
4 - CSIC	1.00
6 - UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION -UNESCO	0.20
7 - RT	0.50
8 - METCENAS OPS - METHODOLOGY CENTRE FOR ENVIRONMENT ASSESSMENT	0.20
9 - ZETA AMALTEA	0.50
10 - IEI	0.20
11 - ERCIYES UNIVERSITESI	0.30
12 - NTUA /AMDC	0.50
13 - INHGA	0.50
14 - UTARTU	0.60
15 - TSNUK	0.60
16 - Paragon Europe	0.20
17 - UNIVERSITAET BREMEN	0.20
Total	8.50

List of deliverables

Deliverable Number ¹⁴	Deliverable Title	Lead beneficiary	Type ¹⁵	Dissemination level ¹⁶	Due Date (in months) ¹⁷
D7.1	Guidance on model-supported application of EU water related Directives for water quantity and quality	3 - TUDA	Report	Public	30

Description of deliverables

D 7.1 Guidance on model-supported application of EU water related Directives for water quantity and quality (Month 30)

D7.1 : Guidance on model-supported application of EU water related Directives for water quantity and quality [30]
Report named "Guidance on model-supported application of EU water related Directives for water quantity and quality " that will be a proposal for a reference document at the European level to be used as support for decision makers dealing with Water Resources Management (WRM).

Schedule of relevant Milestones

Milestone number ¹⁸	Milestone title	Lead beneficiary	Due Date (in months)	Means of verification
MS1	Kick off meeting	1 - SSSA	1	The kick-off meeting will be the event during which all the partners will meet, the project schedule and issues about project development will be discussed in detail.
MS6	Mid-term project meeting	1 - SSSA	15	This meeting will gather all project partners to share issues on project evolution and discuss and address potential problems.
MS15	Completion of a comparative grid on the FREEWAT application to all the case studies	3 - TUDA	27	Results of the modelling efforts developed in each case study will be collected and summarized in a grid used as a base for the development of the guidelines.
MS16	Completion of the general section of the Guidance	3 - TUDA	28	The general section of Guidance is completed.
MS19	Final meeting	1 - SSSA	30	The final project meeting is held.

Work package number ⁹	WP8	Lead beneficiary ¹⁰	1 - SSSA
Work package title	Dissemination and Exploitation and Communication		
Start month	1	End month	30

Objectives

To raise awareness among stakeholders about the project aims and objectives.
 To disseminate relevant and appropriate information.
 To ensure maximal exploitation of project results.
 To update stakeholders with pertinent news and improvements about the open source and public domain FREEWAT platform that can facilitate the application of water related European Directives.
 To enhance the information flow and facilitate multilevel information exchange.
 Training of project participants and supporting stakeholders, to foster knowledge among all project partners and to ensure that: 1) the project's results effectively reach the end-users;
 2) the FREEWATplatform is widely tested and used.

Description of work and role of partners

WP8 - Dissemination and Exploitation and Communication [Months: 1-30]

SSSA, TEA SISTEMI SPA, CSIC, OSLANDIA, UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION -UNESCO, METCENAS OPS - METHODOLOGY CENTRE FOR ENVIRONMENT ASSESSMENT, ZETA AMALTEA, IEI, ERCIYES UNIVERSITESI, NTUA /AMDC , INHGA, UTARTU, TSNUK, Paragon Europe , UNIVERSITAET BREMEN, IGRAC, IST-SUPSI

Impact of FREEWAT will be maximised by a dedicated plan for dissemination and exploitation, and communication of project activities and results. The Dissemination and Exploitation and Communication plan will be carried out to receive feedbacks and to engage in dialogue with the relevant stakeholders involved in project activities. The final aim is to see FREEWAT platform widely applied all over Europe and beyond.

A strategic plan and targeted measures for communicating about (i) the action and (ii) its results to a multitude of audiences, including the media and the public and possibly engaging in a two-way exchange will be set.

Because of the importance of the activities of this WP, SSSA, coordinator of the proposal, will lead it and will appoint a "Dissemination and Innovation Manager". PRN (partner n.16), a project partner with strong capabilities in dissemination and exploitation issues, will collaborate with SSSA to strengthen the WP activities. All the Consortium members will have to perform dedicated dissemination activities at their country level. SSSA and PRN will be responsible at the whole consortium level. In the meantime, the other partners workload is related to the preparation of a national workshop - spreading activities at national level and collaboration to the web diffusion.

Moreover, concerning exploitation issues, it is worth to mention that within WP3 (Capacity building) there is already work foreseen to spread the results of the project, by means of dedicated training, and the use of the platform in each of countries involved in the proposal (including IST-SUPSI activities in Switzerland).

The following tasks are included in this work package:

Task 8.1: Dissemination and Exploitation Activities (Task Leader: PRN, all partners)

The implementation of the Dissemination and Exploitation activities foreseen in the proposal will be set in place in this task.

A reference document for all the partners (Dissemination and Exploitation Plan, month 2), drawn from the proposal and including individual partners' further suggestions, will be compiled by the Dissemination and Innovation Manager not later than two months after the project starts.

All partners will make use of their networks and contacts to spread information about the project according to that.

The Dissemination and Exploitation Plan will be updated over the duration of the project also to detail run activities, and whenever necessary. A specific contact list will be prepared including all relevant stakeholders from all different categories. PRN will be responsible to create a database of contacts to target the stakeholders which can be interested in the open source tool. Information and contacts will be provided by all the project partners.

The FREEWAT proposal follows a stepwise approach to ensuring maximal exploitation of project results.

These includes: 1) Analysis of complementary and competitive services, 2) Setting up of application scenarios, market and business models for individual exploitation and joint exploitation, 3) Validation of business models and application scenarios, 4) Organization, planning and execution of wide impact dissemination activities to create full awareness

on FREEWAT approach, activities, achievements and results, 5) Regular review, revision and refinement of partner-specific exploitation plans and joint/collaborative business plans in the light of interim project results.

A FREEWAT exploitation agreement will be shared among all the partners during the project duration. At the end of the project, all FREEWAT source codes (software programmes, tools, packages, etc.) and FREEWAT itself will follow the most used free and open source licence, such as GPL (General Public License: <https://www.gnu.org/copyleft/gpl.html>). The same license concerns the GIS platform QGIS (<http://www.qgis.org>).

Particular attention will be paid to professional networks such as LinkedIn: as well as setting a brand-new FREEWAT group, news and announcement will be sent to already existing large water related groups. By this, it is expected that project activities will reach about 10000 interested professionals (researchers, water professionals, technical personnel at authorities, etc) at once. This will start by month 3 and will continue for the all project duration and beyond.

Indicators to measure dissemination and exploitation activities have been highlighted in the proposal and will be summarized in a report.

Task 8.2: Communication activities (Task Leader: SSSA, all partners)

Similarly to Task 8.1, a reference document for all the partners (Communication Plan, drawn from the proposal and including individual partners' further suggestions) will be compiled by the Dissemination and Innovation Manager not later than two months after the project starts.

Periodic reports will include a publishable summary of such high quality that the EC will be able to publish it right away in the public domain.

Communication of project activities, workshops, and events will be disseminated also through the EU CORDIS news and CORDIS WIRE web sites.

Material to be prepared will include brochures, newsletters, articles, and audio-visual material that can be distributed in the most appropriate style.

Task 8.3: National workshops (Task Leader: PRN, all partners)

Each partner, IST-SUPSI included, will organize a workshop in his own country to raise further awareness about the project among stakeholders. The aim of this initiative is direct distribution and presentation of the benefits of the new tool amongst the stakeholders. This will also allow the dissemination material to be distributed to the relevant stakeholders who attend the workshops rather than sending out newsletters or brochures at random at a risk of disinterested individuals skimming through and putting them aside.

Participation per Partner

Partner number and short name	WP8 effort
1 - SSSA	6.00
2 - TEA SISTEMI SPA	0.40
4 - CSIC	0.30
5 - OSLANDIA	0.30
6 - UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION -UNESCO	0.50
8 - METCENAS OPS - METHODOLOGY CENTRE FOR ENVIRONMENT ASSESSMENT	0.70
9 - ZETA AMALTEA	0.50
10 - IEI	0.70
11 - ERCIYES UNIVERSITESI	1.00
12 - NTUA /AMDC	0.60
13 - INHGA	1.00
14 - UTARTU	0.60
15 - TSNUK	1.00

Partner number and short name	WP8 effort
16 - Paragon Europe	4.20
17 - UNIVERSITAET BREMEN	0.40
18 - IGRAC	0.30
19 - IST-SUPSI	0.50
Total	19.00

List of deliverables

Deliverable Number ¹⁴	Deliverable Title	Lead beneficiary	Type ¹⁵	Dissemination level ¹⁶	Due Date (in months) ¹⁷
D8.1	Open workshop during the three official project meetings	1 - SSSA	Other	Public	30
D8.2	Communication Materials	1 - SSSA	Other	Confidential, only for members of the consortium (including the Commission Services)	3
D8.3	FREEWAT exploitation agreement	16 - Paragon Europe	Report	Confidential, only for members of the consortium (including the Commission Services)	4
D8.4	Mid-term report with statistics for the indicators of success for Dissemination and Exploitation Activities	16 - Paragon Europe	Report	Confidential, only for members of the consortium (including the Commission Services)	18
D8.5	National workshop organized by each partner involved with case study	1 - SSSA	Other	Public	29
D8.6	Report on market and business model and application scenario	16 - Paragon Europe	Report	Public	30
D8.7	Acceptance for publication of at least seven scientific and technical peer-reviewed papers	1 - SSSA	Report	Public	30

List of deliverables

Deliverable Number ¹⁴	Deliverable Title	Lead beneficiary	Type ¹⁵	Dissemination level ¹⁶	Due Date (in months) ¹⁷
D8.8	Submission of at least twelve conference papers per year (minimum of thirty)	1 - SSSA	Report	Public	30
D8.9	Final report with statistics for the indicators of success for Dissemination and Exploitation Activities	1 - SSSA	Report	Confidential, only for members of the consortium (including the Commission Services)	30
D8.10	Final report on the Focus Groups integrating the participatory approach to technical modelling activities	16 - Paragon Europe	Report	Public	30
D8.11	Competing solution and services analysis document	16 - Paragon Europe	Report	Confidential, only for members of the consortium (including the Commission Services)	12
D8.12	Dissemination and Exploitation and Communication Plan	1 - SSSA	Report	Confidential, only for members of the consortium (including the Commission Services)	2

Description of deliverables

- D 8.1 Open workshop during the three official project meetings (Months 1, 15, 30)
D 8.2 Communication Materials (Month 3)
D 8.3 FREEWAT exploitation agreement (Month 4)
D 8.4 Mid-term report with statistics for the indicators of success for Dissemination and Exploitation Activities (Month 18)
D 8.5 National workshop organized by each partner involved with case study (Month 29)
D 8.6 Report on market and bussiness model and application scenario (Month 30)
D 8.7 Acceptance for publication of at least seven scientific and technical peer-reviewed papers (Month 30)
D 8.8 Submission of at least twelve conference papers per year (minimum of thirty) (Month 30)
D 8.9 Final report with statistics for the indicators of success for Dissemination and Exploitation Activities (Month 30)
D 8.10 Final report on the Focus Groups integrating the participatory approach to technical modelling activities (Month 30)
D 8.11 Competing solution and services analysis document (Month12)
D 8.12 Dissemination and Exploitation and Communication Plan (Month 2)
D8.1 : Open workshop during the three official project meetings [30]

During the three official project meetings (kick-off, -mid-term and final), each hosting partner will organize a workshop open to the public where the various issues dealt within the project will be presented. There will be then three open workshops.

D8.2 : Communication Materials [3]

Communication material will be provided by SSSA in digital form to all the partners since month 3. This material may take all the forms foreseen in Table 2.3 of the Proposal.

D8.3 : FREEWAT exploitation agreement [4]

An exploitation agreement on the use of the FREEWAT platform during the project duration will be signed among all the partners. At the end of the project, all FREEWAT source codes (software programmes, tools, packages, etc.) and FREEWAT itself will follow the most used free and open source licence, such as GPL (General Public License: <https://www.gnu.org/copyleft/gpl.html>). The same license concerns the GIS platform QGIS (<http://www.qgis.org>).

D8.4 : Mid-term report with statistics for the indicators of success for Dissemination and Exploitation Activities [18]

A mid-term report with statistics for the indicators of success for Dissemination and Exploitation Activities will be delivered at Month 18. Dissemination and exploitation activities will be measured by means of the following indicators: - number of stakeholders involved; - percentage of the various sector of stakeholders involved; - evidence of debates in the media; - number of people asking for feedback or more information; - numbers of users and developers enrolled in the community; - number of articles in the press in scientific journals; - number of participants in project events and seminars; - numbers of presentations produced; - numbers of survey of end-users likes and dislikes received; - trends in website, groups and user community visits and discussions posted.

D8.5 : National workshop organized by each partner involved with case study [29]

All the partners having performed a case study will be asked to hold a national workshop at their premises. Expected number of participant to each workshop is about 100 persons (based on previous experience of the project coordinator). They will be held between month 27 and 28.

D8.6 : Report on market and business model and application scenario [30]

This report will consist in presenting a market and business model for the exploitation of the FREEWAT platform as also derived from partners suggestions. Application scenarios will be presented to describe market uptake of the FREEWAT platform taking into account its open source and public domain nature.

D8.7 : Acceptance for publication of at least seven scientific and technical peer-reviewed papers [30]

This deliverable is about the acceptance for publication of at least one peer-reviewed article (end of first year), two peer-reviewed articles (end of second year), four peer-reviewed articles end of the project (with also the involvement of IST- SUPSI) describing to the scientific and technical community project progress and outcomes. A minimum of seven scientific papers is expected to be published. Target journals will be not only ISI ones, but also technical ones devoting to technological transfer. Open access solutions will be followed. The Coordinator will promote this kind of publications within the partnership.

D8.8 : Submission of at least twelve conference papers per year (minimum of thirty) [30]

This deliverable is about the submission of at least twelve conference papers per year (minimum of thirty), with also the involvement of IST- SUPSI, describing the scientific and technical community project progress and outcomes. Resources have been duly allocated within the partnership to take part in scientific, technical and dissemination events where project activities and results may be presented. Open access solutions will be followed. The Coordinator will promote this kind of publications within the partnership.

D8.9 : Final report with statistics for the indicators of success for Dissemination and Exploitation Activities [30]

A final report with statistics for the indicators of success for Dissemination and Exploitation Activities will be delivered at Month 30. Dissemination and exploitation activities will be measured by means of the following indicators: - number of stakeholders involved; - percentage of the various sector of stakeholders involved; - evidence of debates in the media; - number of people asking for feedback or more information; - numbers of users and developers enrolled in the community; - number of articles in the press in scientific journals; - number of participants in project events and seminars; - numbers of presentations produced; - numbers of survey of end-users likes and dislikes received; - trends in website, groups and user community visits and discussions posted.

D8.10 : Final report on the Focus Groups integrating the participatory approach to technical modelling activities [30]

A final report summarising the experiences on the integration of the participatory approach to the modelling technical activities will be drawn by PRN out of all the Minutes of the FGs prepared in Task 6.2. It will focus on discussing

the practical applications of ICT innovative tools to cope the water-related problems of the area of interest and their relationship with the WFD/GWD and water-related Directives.

D8.11 : Competing solution and services analysis document [12]

This deliverable consists in a report documenting competing solution and services available in the market. This document is the preliminary step toward to the preparation of the market and business model.

D8.12 : Dissemination and Exploitation and Communication Plan [2]

This deliverable consists in a reference document for all the partners (drawn from the proposal and including individual partners' further suggestions). It will be compiled by the Dissemination and Innovation Manager not later than two months after the project starts. All partners will make use of their networks and contacts to spread information about the project according to that.

Schedule of relevant Milestones

Milestone number ¹⁸	Milestone title	Lead beneficiary	Due Date (in months)	Means of verification
MS1	Kick off meeting	1 - SSSA	1	The kick-off meeting will be the event during which all the partners will meet, the project schedule and issues about project development will be discussed in detail.
MS2	Project web-site	1 - SSSA	2	This milestone is related to the set-up of the project web-site.
MS6	Mid-term project meeting	1 - SSSA	15	This meeting will gather all project partners to share issues on project evolution and discuss and address potential problems.
MS17	Dissemination and Exploitation Plan	16 - Paragon Europe	2	The Dissemination and Exploitation Plan is delivered to all project partners.
MS18	Communication Plan	1 - SSSA	2	The Communication Plan is delivered to all project partners.
MS19	Final meeting	1 - SSSA	30	The final project meeting is held.
MS20	List of Contacts	16 - Paragon Europe	3	A first database of contacts to target the stakeholders which can be interested in the open source and public domain FREEWAT platform is completed.
MS21	Dissemination and Innovation Manager appointed	1 - SSSA	1	SSSA appoints the Dissemination and Innovation Manager in agreement with PRN and

Schedule of relevant Milestones

Milestone number ¹⁸	Milestone title	Lead beneficiary	Due Date (in months)	Means of verification
				after consultation with the rest of the partnership.
MS22	Completion of competing solution and services analysis	16 - Paragon Europe	12	This milestone foresees the completion of competing solution and services analysis, preliminary task to the preparation of the market and business model.

1.3.4. WT4 List of milestones

Milestone number ¹⁸	Milestone title	WP number ⁹	Lead beneficiary	Due Date (in months) ¹⁷	Means of verification
MS1	Kick off meeting	WP1, WP2, WP3, WP4, WP5, WP6, WP7, WP8	1 - SSSA	1	The kick-off meeting will be the event during which all the partners will meet, the project schedule and issues about project development will be discussed in detail.
MS2	Project web-site	WP1, WP8	1 - SSSA	2	This milestone is related to the set-up of the project web-site.
MS3	Release of the FREEWAT beta v.1.0	WP2, WP3	2 - TEA SISTEMI SPA	10	This milestone consists in the release of the FREEWAT beta v.1.0 version to be used in the subsequent training the trainers (Task 3.2) activity.
MS4	Release of the FREEWAT platform v.0.1	WP2, WP3	2 - TEA SISTEMI SPA	16	This milestone consists in the release of the FREEWAT platform v.0.1 and it will allow subsequent activities foreseen in Task 3.2 and WP4 and WP5.
MS5	Completion of the "training the trainers" courses	WP3	4 - CSIC	16	The activities to train the trainers at their own premises using the FREEWAT platform beta version are completed. Partners will be then able to run activities foreseen in WP4 and WP5 as well as to run local courses.
MS6	Mid-term project meeting	WP1, WP2, WP3, WP4, WP5, WP6, WP7, WP8	1 - SSSA	15	This meeting will gather all project partners to share issues on project evolution and discuss and address potential problems.
MS7	FREEWAT v.1.0 and related User Manual release	WP2, WP3, WP4, WP5, WP6	2 - TEA SISTEMI SPA	28	This milestone set the public release of the FREEWAT platform along with the related User Manual.
MS8	Completion of capacity building at national level	WP3	9 - ZETA AMALTEA	26	Capacity building through courses at national level is completed.
MS9	Completion of data gathering and preparation for WFD and related	WP4	7 - RT	14	Data gathering and preparation for the use of the FREEWAT platform is completed by all the

Milestone number ¹⁸	Milestone title	WP number ⁹	Lead beneficiary	Due Date (in months) ¹⁷	Means of verification
	Directives case studies.				partners running case studies.
MS10	Completion of the application of the FREEWAT platform to all the case studies	WP4	17 - UNIVERSITAET BREMEN	25	The application of the FREEWAT platform is completed at all the case studies.
MS11	Completion of questionnaires distributed to all the case study partners	WP4	12 - NTUA / AMDC	25	Questionnaires distributed to all the case study partners are completed and delivered to the WP 4 Task 4.4 leader NTUA/AMDC.
MS12	Completion of data gathering and preparation for rural water management case studies	WP5	9 - ZETA AMALTEA	14	Data gathering and preparation for the use of the FREEWAT platform is completed by all the partners running case studies on rural water management.
MS13	Completion of the application of the FREEWAT platform to the rural water management case studies	WP5	1 - SSSA	25	The application of the FREEWAT platform is completed at all the case studies dealing with rural water management.
MS14	Completion of questionnaires distributed to the rural water management case study partners	WP5	6 - UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION -UNESCO	25	Questionnaires distributed to all the case study partners are completed and delivered to the WP 5 Task 5.4 leader UNESCO.
MS15	Completion of a comparative grid on the FREEWAT application to all the case studies	WP7	3 - TUDA	27	Results of the modelling efforts developed in each case study will be collected and summarized in a grid used as a base for the development of the guidelines.
MS16	Completion of the general section of the Guidance	WP7	3 - TUDA	28	The general section of Guidance is completed.
MS17	Dissemination and Exploitation Plan	WP8	16 - Paragon Europe	2	The Dissemination and Exploitation Plan is delivered to all project partners.
MS18	Communication Plan	WP8	1 - SSSA	2	The Communication Plan is delivered to all project partners.

Milestone number ¹⁸	Milestone title	WP number ⁹	Lead beneficiary	Due Date (in months) ¹⁷	Means of verification
MS19	Final meeting	WP1, WP2, WP3, WP4, WP5, WP6, WP7, WP8	1 - SSSA	30	The final project meeting is held.
MS20	List of Contacts	WP3, WP4, WP5, WP6, WP8	16 - Paragon Europe	3	A first database of contacts to target the stakeholders which can be interested in the open source and public domain FREEWAT platform is completed.
MS21	Dissemination and Innovation Manager appointed	WP1, WP8	1 - SSSA	1	SSSA appoints the Dissemination and Innovation Manager in agreement with PRN and after consultation with the rest of the partnership.
MS22	Completion of competing solution and services analysis	WP6, WP8	16 - Paragon Europe	12	This milestone foresees the completion of competing solution and services analysis, preliminary task to the preparation of the market and business model.
MS23	Minutes of each Focus group run at case study sites	WP4, WP5, WP6	16 - Paragon Europe	26	The delivery of each Minute is foreseen from Month 12 and then every two months until Months 26. Their completion is preliminary to the production of the Policy briefs. PRN is in charge of requiring each partner running a test site its preparation in due time.
MS24	Completion of the Guidelines for effective Focus Group running in the water sector	WP4, WP5, WP6	16 - Paragon Europe	9	This milestone will allow Focus Groups to start their activities.
MS25	Completion of the Evaluation grid for needs/tools	WP2, WP6	8 - METCENAS OPS - METHODOLOGY CENTRE FOR ENVIRONMENT ASSESSMENT		The completion of Task 6.1 constitutes a valuable input to the expansion of the FREEWAT platform

1.3.5. WT5 Critical Implementation risks and mitigation actions

Risk number	Description of risk	WP Number	Proposed risk-mitigation measures
R1	<p>Loss of key staff or recruitment problems. Lack of cooperation from project partners, or open conflicts with partners or between partners. Workplan significantly behind schedule.</p>	WP1	<p>Project participants can resort to a range of experienced staff. All partners are committed and there are good networks between many of the participating institution. The strong involvement of stakeholders is demonstrated with the consistent number of support letters received. To be resolved through Project Management procedures; if necessary extra technical meetings to resolve issues.</p>
R2	<p>Lack of cooperation between the partners involved in the software customization. Integration of different codes could imply the usage of output files from one code as input file for another: this matching could be not straightforward, due to different programming languages and/or data format. Delay with the delivery of the software to the case study partners.</p>	WP2	<p>The partners involved in software customization have generally a long history of successful cooperation. In case of unexpected problems, the Project Management will take care of resolving the issues and eventually will organize extra meetings. An additional process of data homogenization will be defined and implemented, also taking into account the platform independence capability (whenever possible). In this case, the case study partners will be provided at least with the information to start preparing input files for simulating their case study: this will guarantee that as soon as the software is delivered, the case study partners will be able to perform the simulations.</p>
R3	<p>Lack of interest from stakeholders (actors, users). Lack of interest on the offered training courses.</p>	WP3	<p>Actors and users are either part of the consortium or external supporters of the project (verified by letters of support). All partners will benefit from the training course and they will need the training material to develop the case</p>

Risk number	Description of risk	WP Number	Proposed risk-mitigation measures
			studies, therefore we do not expect lack of interest in the training classes offered.
R4	Problems with the development of the models with the FREEWAT platform. Delay with the case study models development.	WP4, WP5	The partners involved with software customization will be available and they will provide support for the development of the models in the different case studies. Extra support will be provided through eventually web classes offered on specific problems. A hotline will be set up to answer questions raised from the partners as quick as possible. Furthermore, a google group will represent a great solution for discussion among the partners involved with case studies development.
R5	Delay with the reports on the single case studies and with the questionnaire regarding the application of FREEWAT.	WP6, WP7	The leader of the WP will start drafting Policies and Guidelines using the information and reports already delivered and the experience of the delayed case studies will be included in a later step.
R6	Lack of cooperation from local project partners in organisation of the local training. Lack of interest on the offered workshops. Lack of lecturers for workshops. Lack of interest from stakeholders (actors, users).	WP3, WP8	The training will be eventually organized by another stakeholders and will be moved to a different location. Advertisement will be enhanced and/or application deadlines prolonged. Additional lecturers will be recruited from the partners' institutions; if necessary, external lectures will be hired. Actors and users are either part of the consortium or external supporters of the project (verified by letters of support); the international network of the project participants is excellent; interest will be raised through the planned workshops.

1.3.6. WT6 Summary of project effort in person-months

	WP1	WP2	WP3	WP4	WP5	WP6	WP7	WP8	Total Person/Months per Participant
1 - SSSA	13	2.50	3.50	0	5	1.50	0.20	6	31.70
2 - TEA SISTEMI SPA	0.70	10.80	1.80	0	0	0	0.50	0.40	14.20
3 - TUDA	0.50	10.20	2.30	0	0	0	2.30	0	15.30
4 - CSIC	0.50	14.20	3.80	0	0	0	1	0.30	19.80
5 - OSLANDIA	0.30	4	1	0	0	0	0	0.30	5.60
6 - UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION -UNESCO	0.70	0	0.40	0	2.30	1.10	0.20	0.50	5.20
· IGRAC	0	0	0	0	0	0	0	0	0
7 - RT	0.80	0	1.10	9	0	1.50	0.50	0	12.90
8 - METCENAS OPS - METHODOLOGY CENTRE FOR ENVIRONMENT ASSESSMENT	0.70	0	1.20	4.40	0	3	0.20	0.70	10.20
9 - ZETA AMALTEA	0.50	0	1.40	0	5	1.50	0.50	0.50	9.40
10 - IEI	0.70	0	1.80	5.80	0	1.50	0.20	0.70	10.70
11 - ERCIYES UNIVERSITESI	0.80	0	1.80	0	7	1.50	0.30	1	12.40
12 - NTUA /AMDC	0.60	0	2	7.50	0	1.50	0.50	0.60	12.70
13 - INHGA	1	0	3.50	12.40	0	2	0.50	1	20.40
14 - UTARTU	0.60	0	3.50	13	0	2	0.60	0.60	20.30
15 - TSNUK	1	0	3.50	0	12.30	2	0.60	1	20.40
16 - Paragon Europe	0.70	0	1.50	5	0	2.60	0.20	4.20	14.20
17 - UNIVERSITAET BREMEN	0.40	0	0.90	3.50	0	1.20	0.20	0.40	6.60
18 - IGRAC	0.20	0	0.80	0	2.70	0	0	0.30	4
19 - IST-SUPSI	0.50	8.50	2.50	4.50	0	1.50	0	0.50	18

	WP1	WP2	WP3	WP4	WP5	WP6	WP7	WP8	Total Person/Months per Participant
Total Person/Months	24.20	50.20	38.30	65.10	34.30	24.40	8.50	19	264

1.3.7. WT7 Tentative schedule of project reviews

Review number ¹⁹	Tentative timing	Planned venue of review	Comments, if any
RV1	21	t.b.c.	

1.4. Ethics Requirements

Ethics Issue Category	Ethics Requirement Description
HUMANS	- Details on the procedures and criteria that will be used to identify/recruit reserach participants must be provided.
HUMANS	- Detailed information must be provided on the informed consent procedures that will be implemented.
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HUMANS	- The European Commission's Guidance for participants in non-physical intervention research projects must be taken into account (http://ec.europa.eu/research/participants/portal/doc/call/h2020/h2020-msca-itn-2015/1620147-h2020_-_guidance_ethics_self_assess_en.pdf).
PROTECTION OF PERSONAL DATA	- Copies of ethical approvals for the collection of personal data by the competent University Data Protection officer/National Data Protection authority must be submitted to EASME.
PROTECTION OF PERSONAL DATA	- Detailed informatioin must be provided on the procedures that will be implemented for data collection, storage, potection, retention and destruction and the consortium should confirm that thy comply with national and EU legislation.
ENVIRONMENT PROTECTION QUESTION	- The applicant must provide further information about the possible harm to the environment caused by the research and state the measures that will be taken to mitigate the risks.
ENVIRONMENT PROTECTION QUESTION	- The applicant must ensure that appropriate health and safety procedures conforming to relevant local/national guidelines/legislation are followed for staff involved in this project.
PROTECTION OF PERSONAL DATA	- The applicants must outline in a report to EASME the following matters: - if any data will be collected, stored and processed; - if any personal data (as defined in the EU data protection laws) will be collected, stored and processed. If yes, the report should outline the following points: a) what data will be collected, stored and processed. b) the recruitment process, inclusion/exclusion criteria for all surveys c) detailed information on privacy/confidentiality and the procedures that will be implemented for data collection, storage, access, sharing policies, protection, retention and destruction (noting the advice available on the H2020 participants portal regarding data protection); d) information must be provided on how informed consent will be pursued; e) if application(s) need to be filed with a local/institutional ethics review body (if personal data is being colleted) and if yes, which bodies. Copies of all approvals must be sent to EASME.

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 can generally not be changed. 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.

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 into 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 written justification.

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. Abstract

8. Project Entry Month

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.

9. Work Package number

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

10. Lead beneficiary

This must be one of the beneficiaries in the grant (not a third party) - Number of the beneficiary leading the work in this work package

11. Person-months per work package

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

12. 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.

13. End month

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

14. Deliverable number

Deliverable numbers: D1 - Dn

15. Type

Please indicate the type of the deliverable using one of the following codes:

- R Document, report
- DEM Demonstrator, pilot, prototype
- DEC Websites, patent filings, videos, etc.
- OTHER

16. Dissemination level

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

- PU Public

CO Confidential, only for members of the consortium (including the Commission Services)
EU-RES Classified Information: RESTREINT UE (Commission Decision 2005/444/EC)
EU-CON Classified Information: CONFIDENTIEL UE (Commission Decision 2005/444/EC)
EU-SEC Classified Information: SECRET UE (Commission Decision 2005/444/EC)

17. 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.

18. Milestone number

Milestone number: MS1, MS2, ..., MSn

19. Review number

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

20. Installation Number

Number progressively the installations of a same infrastructure. An installation is a part of an infrastructure that could be used independently from the rest.

21. Installation country

Code of the country where the installation is located or IO if the access provider (the beneficiary or linked third party) is an international organization, an ERIC or a similar legal entity.

22. Type of access

VA if virtual access,
TA-uc if trans-national access with access costs declared on the basis of unit cost,
TA-ac if trans-national access with access costs declared as actual costs, and
TA-cb if trans-national access with access costs declared as a combination of actual costs and costs on the basis of unit cost.

23. Access costs

Cost of the access provided under the project. For virtual access fill only the second column. For trans-national access fill one of the two columns or both according to the way access costs are declared. Trans-national access costs on the basis of unit cost will result from the unit cost by the quantity of access to be provided.