



LIFE Integrated projects 2016

Stage 2 – FULL PROPOSAL

Technical application forms

Part B – technical summary and overall context of the project

SUMMARY DESCRIPTION OF THE PROJECT (English version)

1. Overall context/background/geographical scope

IP itself:

The Water Framework Directive (WFD) was issued 17 years ago, but its factual implementation is still hindered in many European countries (COM2015/120; COM2013/683). The main reason behind these difficulties is the embedded –overlooked - high physical and socio-economic multi-faceted complexity of river basins, often fragmented between many governing actors. Full implementation of the WFD (and of the River Basin Management Plans, RBMPs) indeed require full competence (and managing capability) of many complex interacting issues about the landscape, such as its multi-functionalities (agriculture/environment), its dynamic nature (many processes, including fate of pollutants, are dynamic); moreover, it requires actions (e.g. agriculture) at a very detailed local scale (many processes are site specific) but integrated over very large areas.

Most current approaches are simply not challenging this complexity, offering a simplistic, spatially aggregated view of the problem. With the WATSUP project we take a rather different perspective (a gentle project introduction is available at <https://vimeo.com/124506797> password: watsup2016) which combines the need of addressing large scale areas (sensu guideline) with very high spatial detail (Cadastral scale; e.g. 1:2000/1:4000) and multi-beneficial deliveries, as required by practical actions aiming to improve the water status.

The WATSUP project aims to be a major advancement towards the full implementation of the Po RBMP considering the evidence that the application of the 1st Po RBMP (2010) only partially delivers the targets foreseen by the WFD and the resulting very demanding obligations of 2nd (and expected 3rd) RBMP planning cycles. The main shortcomings (see the parag. 2.3 of “Relazione generale” at link : http://www.adbpo.it/PianoAcque2015/Elaborato_00_RelGen_3mar16/PdGPO2015_Elab_0_R elGen_3mar16.pdf) are well known: (i) eutrophication of surface waters due to the high concentration of nutrients; (ii) pollution of surface water and groundwater; (iii) water scarcity and droughts, related to an excessive use of freshwater resources, also in relation to climate change and population growth; (iv) hydromorphological alterations of river flows, also due to urbanization; (v) alteration of the water regime in mountain areas due to intense hydropower withdrawals; (vi) loss of biodiversity and degradation of ecosystem services of water bodies; (vii) heterogeneity in the interpretation of data systems fostering the need for an integrated system of data processing; (viii) lack of suitable economic analyses to support the decisions; (ix) lack of an integrated vision for the management of the multiple pressures and demands, triggered by the lack of an effective coordination between the institutions playing a role in Po RBMP implementation. In the 2nd cycle of the RBMP planning all shortcomings refer to KTM (Key Types Measures) identified in the WFD Reporting Guidance 2016.

All the above RBMP shortcomings along with the RBMP Po reviewing process (WFD; art.13) are addressed by the use of an innovative Geospatial Decision Support System for the best adoption of a large set of executive actions aiming to address identified priority criticalities (see table below) including agricultural pollution of surface water and groundwater, water saving and pricing in agriculture, loss of biodiversity and degradation of ecosystem services and hydromorphological alterations. Most of these issues will be addressed by specific activities involving negotiated participation of stakeholders (mainly through River Contracts). The WATSUP project will apply at two different spatial extents: (i) through IP resources it will deliver results over significant Po sub-catchments (the basin size sum is about 5,100 km²), while (ii) through both IP and especially Complementary Actions funds it will deliver results over the entire Po catchment representing a data scarce scenario. The considered sub-catchments are “Carignano” (Piemonte), “Olona settentrionale” (Lombardia) and “Tribbia” (Emilia Romagna) river sub-basins (see map at B2b session), these areas are wide enough to be representative of the entire Po basin and, at the same time, are tailored to be affordable within the Project budget. Autorità di Bacino

del Fiume Po (AdbPo) – the coordinating beneficiary - is the body responsible for the implementation of the RBMP of the Po river (in agreement with the application of the new Law 28/12/2015, n. 221 (“Collegato ambientale”). WATSUP meets the LIFE-IP requirements especially in terms of (i) its high-quality multi-purpose delivery mechanisms towards effective and full implementation of RBMP/WFD over a large territorial scale; (ii) its capacity to promote coordination and mobilisation of other funding; (iii) the active involvement of stakeholders; (iv) the design of a specific Geospatial Infrastructure enabling to catalyse a process of complementary interests/commitments/ funding. Moreover WATSUP has a very strong replicability and transferability character towards other European areas and also elsewhere in the world.

Complementary actions:

WATSUP will deliver results at the scale of the entire Po basin (86.800 km²), mainly thanks to Complementary Actions (CA) of Piemonte and Lombardia regions described below. The general background behind the CA refers to:

- addressing the specific problems encountered in the RBMP implementation by exporting good practices (aiming at the best implementation of RBMP) formulated within the IP;
- running selected tools of the GeoSpatial Decision Support System, suitably modified to account for the lower availability of information.

Complementary funding (Piemonte and Lombardia) will be mainly available through (i) Rural Development Program (2014-2021) and FEAMP 2014-2020 funds for inland water, (ii) public funds (ATO) to strength treatment of municipal wastewater, (iii) ERDF funds in the form of Interreg Europe Projects; (iv) national funds (FSC 2014-2020) for soil protection and flood management; (v) ERDF, (vi) Funds for replacement of obsolete wells; (vii) private funds from Cariplo for ecological network, natural capital and resilient community

2. Project objectives:

IP itself:

The overall objective of the LIFE+ WATSUP project is the use of an innovative Geospatial Decision Support System (Geo-Spatial Cyber-Infrastructure named W-GCI) aiming at the best application of a large set **practical actions and measures towards** full Po-basin RBMP implementation. Mostly interesting WATSUP, thanks to W-GCI - will also (i) contribute to fulfil other EU Directives (e.g. Floods Directive, Habitat Directives, Climate Change Adapt. Strategy, etc.), (ii) indirectly demonstrate to European Commission the way to go for the future of WFD implementation: a powerful and cost-effective approach to achieve best WFD implementation at the entire EU level and, for specific tool, worldwide.

More specifically, the main objectives are:

- **overcome identified constrains** (see B6) **aiming towards good water status** (see B2c) (i) in the Po river body before 2027 and in an much more integrated scenario (Elaborato12;Allegato12.2 - http://www.adbpo.it/PianoAcque2015/Elaborato_12_RepDatiCarte_3mar16/PdGPO2015_All12_2_Elab_12_DBase_3mar16/) and (ii) in Olona/Trebbia/Carignano by the end of the WATSUP project .
- **inform decision makers on the likely environmental impacts of site-specific concrete measures**, thus maximising environmental outcomes within available budget.;
- **inform decision makers on the likely economic impacts of measures**;
- **provide an integrated common knowledge base** on the likely impacts of each measure, thus facilitating planning authorities interaction (Regions, Ministries, etc.);
- **provide a freely accessible web platform for participative river basin management and planning** integrating “top-down” and “bottom-up” contributions. RBMP actors and stakeholders will be empowered evaluating –thanks to W-GCI - expected impact of proposed measures, so that an informed discussion and negotiation can take place.
- **provide multi-purpose deliveries** (e.g. WFD, agriculture, forestry, VAS, VIA) thus mobilizing supplementary commitments/processes/funding for RBMP/WFD implementation.
- **provide** – thanks to its (i) physically-based modelling approach, (ii) ecosystem-based approach and (iii) the use of open source facilities – **the largest feasible replicability and transferability of the approach** during/after LIFE-IP implementation.
- **provide ex-post evaluation of compliance** and its check over agriculture system.

Most importantly, on the practical side, the W-GCI system will allow one to define **where and how** specific actions should be taken and to verify their impact. examples include: -) reducing agricultural-driven pressure on surface/groundwater waters, -) effects of land use/management change, -) reduction of nutrient flow to surface waters, -) planning flood risk mitigation; -) support biodiversity improvements and natural water retention measures. More specific objectives of the project are reported in the table below. Key IP objectives (and associated shortcomings identified in the 2nd RBMP planning cycle) are ranked in the table hereinafter as i) Main, ii) Secondary and iii) Auxiliary objectives.

Key IP-objectives impacting on the implementation of WFD and other related EU Directives /Regs and on specific RBMP shortcomings (in brackets bold)	
General:	- To ameliorate the implementation, the impact and the delivery of actual RBMP, applying a large set of practical measures informed by a smart innovative support system (W-GCI) including i) a high-quality multi-purpose delivery mechanism (environment, climate, landscape), ii) long term sustainability, iii) replicability and transferability, iv) capacity building for competent authorities - Overcome identified constraints to achieve good water status in the Po river basin before 2027 and better and in the <u>Carignano, Olona</u> and Trebbia by the end of WATSUP.
Main Objectives	1-Improving ecosystem services and at the same time delivers for the DWD, ND, FD and N2000 Directives including resilience to future climate change. (Shortc. iii, v)
	2-Reduce existing hydromorphological pressures /improving biodiversity and amenity value. (Shortc. iv, v)
	3-Planning and implementing targeted land management/use change aiming to provide water quality/quantity and biodiversity improvements, and recreational benefits (Shortc. i, ii, v)
	4-Making water use more efficient and sustainable, also in the face of droughts and water scarcity conditions (Shortc. iii)
Secondary Objectives	5- Apply an Economic analysis and judge the most cost-effective combination of measures in respect of water uses – Economic valuing of ecosystem services (Shortc. vii)
	6-Reinforcing Nitrates and Pesticide Directives implementation including adoption of the best management practices (Shortc. i, ii)
	7-Adopting best management practices to lower potential leaching of pollutants (Shortc. i, ii)
	8- Considering land management/use change in the face of projection from floods
	9-Developing robust knowledge to take informed decisions about smart monitoring programs and comprehensive water status assessment (Shortc. viii)
	10-Evaluating the impact of urban wastewater over the IP river basin (Shortc. ii)
	11-Aligning actors involved in the RBMP (e.g. ministries, agencies, stakeholders, NGOs) to positively interact for delivering/revising measures using an agreed approach (Shortc. viii)
	12-Improving co-operation with the farming community and public participation in the implementation and revision of RBMP (Shortc. i, viii)
Auxiliary Objectives	13-Stating, at the local scale, the soil threats as requested by Soil Thematic Strategy and adopting best management practices
	14-Supporting farmers to enter into the system of conditionality (Cross-Compliance) which include greening and WFD issues and for the designation of origin of specific agrifood/land use
	15-Developing best practices to achieve good forest maintenance
	16-Supporting the development of economic activities dealing with landscape (ecotourism, etc.) and increase awareness about water and landscape issues
	17--Supporting towards Strategic Environmental Assessment and Environmental Impact Assessment Directives
	18--Raising Awareness about Natura 2000 sites, Special Areas of Conservation (SACs) and Special Protection Areas (SPAs)

The feasibility of such powerful system achieving so many objectives is facilitated by the fact that three of the WATSUP partners have already successfully delivered – through the LIFE+project SOILCONSWEB – a similar fully operational system (5 areas of 200 km²) in the field of soil conservation. In addition, the partnership is strongly complementary and it will bring into the project its recognized international reputation in hydrology (UNITN, POLITO), hydropedology (CNR), S-DSS (CRISP), open source WEBGIS world leadership (Geosolutions), water related S-DSS (Ariospace). The CREA is the Focal Point for cost estimation for irrigation and water use in Italy. Acteon has a well-known reputation for the critical aspects of WFD dissemination and participatory planning. The coherency with RBMP, is ensured by the AdbPo coordination. The tightest strong link with Complementary Funds is guaranteed by Piemonte, Lombardia and Emilia Romagna Regions who have also already proved to offer a blueprint for how to integrate EU, national and local priorities. The demonstration potential and transferability at the Italian and European scale are ensured by Ministry of Environment (partner) and JRC-water unit (as stakeholder).

Complementary actions:

Many of the objectives already listed for the IP also apply to the complementary actions. Additional specific CA key objectives - referring to the entire Po basin - can be grouped in

two broad categories: (i) **extend measures** tested and developed within the IP sub-basins Carignano, Olona, Trebbia to the entire Po basin and also (ii) **extend good practices** tested within the IP sub-basins Carignano, Olona, Trebbia to the entire Po basin. These objectives - delivering towards WFD good status - are detailed in the table below. Funding for complementary actions will derive from the Rural Development Program (2014-2020), from ERDF and from regional funds.

EU Dir/Reg.	Key "Complementary Actions" Objectives
	Implementation of a large set of practical actions, measures and good practice aiming to:
Dir: 2000/60/EC	<ul style="list-style-type: none"> - Improve ecosystem services and at the same time delivers for the WFD, DWD, ND, N2000 (Shortc. iii, v) - Redress existing hydro-morphological pressures and improve biodiversity (Shortc. iv, v) - Make water use more efficient in the face of water scarcity conditions (Shortc. iii) - Reinforce Nitrates Directive implementation (Shortc. i, ii) - Reinforce sustainable pesticides use (Shortc. i, ii) - Take informed decisions about comprehensive water status assessment - Improve co-operation with the farming community about water/landscape management - Improve public participation in the implementation of RBMP - Improve available tools to take informed decisions about water withdrawal permits
Dir: 2007/60/EC	<ul style="list-style-type: none"> - Land management/use change providing flood protection (win-win measures WFD and FD) - Improve available tools for flood frequency curves estimation to take informed decisions about flooding
Dir: 91/271/EEC	Reinforce the implementation of the Directive for the reduce of impact on discharge of urban wastewater.
M: 2006/231	Determine soil threats as requested by STS and adoption of best management practices

3. Actions and means involved:

IP itself:

PREPARATORY ACTIONS [Actions A]

A1: Tuning of the IP strategy: analysis of the revised RBMP with fine-tuning of the IP project. Preparative actions to the following concrete actions including technical planning, permit

procedures, stakeholders consultations, setting up of monitoring systems, etc.

A2: Collection of available geospatial primary data (e.g. land use, hydrometeorology, etc.) and monitoring data, including technical (e.g. irrigation network, etc.) and economic data.

CONCRETE ACTIONS [Actions C]

Concrete actions - the core of the project - involve three set of actions: Cis, Cas and Cep.

Cis - (Concrete actions dealing with the actual build-up and implementation of the spatial decision support System based on W-GCI)

The proposed decision supporting tool (W-GCI) (i) includes and suitably combines many different high quality and dynamic layers of information; (ii) has at its core an ecosystem-based approach, centred on the quantification of ecosystem services; (iii) has powerful engines and processing tools, such as dynamic geospatial and hydrologic models running in (quasi) real-time and activated by remote queries; (iv) has a simple, user-friendly and transparent interface to the end-users (dashboards); and (v) ensures a scientific/technical/economic feasibility of the system by adopting low-cost massive parallel processing, internet accessibility, and open source WEB-GIS codes.

To build the W-GCI, 7 Actions are foreseen all strictly under the control (Cis2 action) by the AdbPo coordinating beneficiary. These actions can be grouped into 3 main groups:

i) - Building the Spatial Inventory Database suitable for the implementation of the W-GCI (Cis1). This Action is essential to get a reliable and fully integrated georeferenced database – a key component of the W-GCI tool, being the fuel of the system.

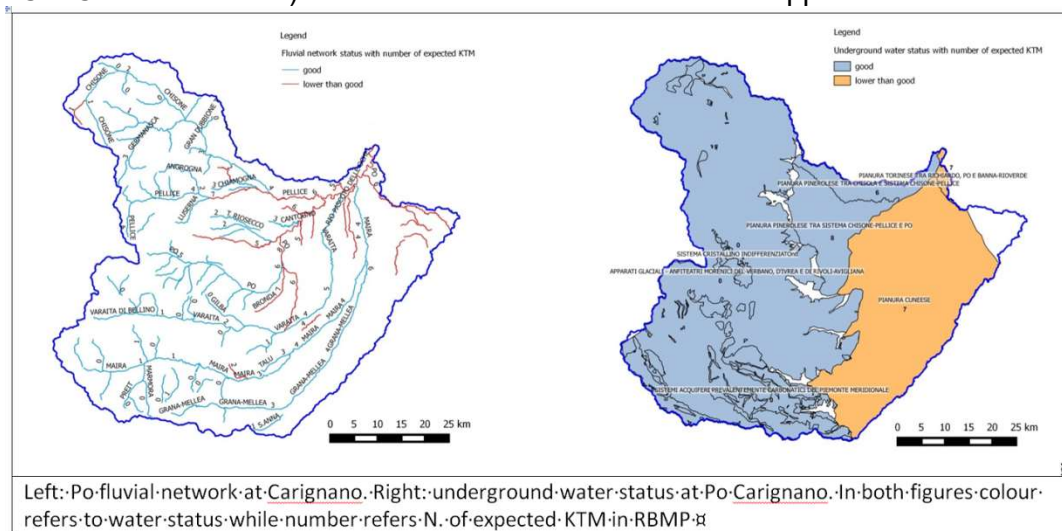
ii) - Development of modelling engines and their harmonization (Cis3 to Cis6). Modelling engines are designed to address RBMP shortcomings. The set of Cis actions is the essential engine of the system enabling to produce high quality multi-purpose deliveries towards WFD. Specific modelling engines include: water balance, crop growth, fate of solutes and pollutants, ecosystem services, water resources, pollution of surface and subsurface waters, floods, climate change scenarios, land degradation, economic modelling and tools for allow the replicability of the system.

iii) - Construction (Cis7) of the web-based decision supporting Geospatial CyberInfrastructure (W-GCI) on the base of previous Cis actions. Here a set of analytical

tools for solving various WFD/RBMP related problems will be made available through a freely accessible dashboard. This Action is the bodywork of the system. In a modern vision, the build-up of the W-CGI system (Cis actions) must be considered already a “real-world” and “hands-on” action to restore good water status since the tool directly guides all following practical measures to ameliorate water quality/quantity. Cis actions are strictly connected to a better implementation of KTM and related shortcomings (identified gaps RBMP) as shown below.

Connection between Cis actions and KTM (gaps 2 nd cycle of the RBMP) at entire Po-Basin	
KTM code and brief description	Cis actions to better achieve KTM
All KTM listed below require also:	Cis1, Cis2, Cis6, Cis8
KTM1. Construction or modernization of sewage treatment plants	Cis3
KTM2. Reduce nutrient pollution from agricultural sources	Cis3, Cis4, Cis5
KTM3. Reduce pesticide pollution from agricultural sources	Cis3, Cis4, Cis5
KTM6. Improvement of hydro-morphological conditions of water bodies	Cis3
KTM7. Improving the flow regime and / or definition of the ecological flow	Cis3
KTM8. Measures to increase water efficiency in irrigation	Cis3, Cis4, Cis5
KTM11. Water pricing policy for the cost recovery in agricultural use	Cis3, Cis4, Cis5
KTM14. Research and improvement of knowledge in order to reduce uncertainty	All Cis
Replicability	Cis7

We provide below an example for the case of Po- Carignano (a wider description is given in form C – Cis set of action) with foreseen KTM measures to be applied.



Cas - Concrete Actions dealing with the practical use of the W-GCI (resulting from Cis actions) by WFD actors to fulfil their duties towards RBMP implementation. These Actions include the “How” and “Where” practical actions (the following Cep actions) should be applied: Cas9: Use WATSUP system by Po River Authority for supporting the Po RBMP upgrading and for selected deliveries (e.g. best practices, specific WEBGIS tool) for whole Po basin.

Cas10: Use of the W-GCI system to support decision making by regions Piemonte, Lombardia, Emilia Romagna (stakeholder). This includes identify actions dealing with direct Execution (Cep) activities

(e.g. how/where: environmental protection and prevention measures, land use change).

Cas11: Evaluating replicability of WATSUP system for other Italian and European basins made by the Italian ministry of environment (MATMM) with many other partners and stakeholders.

Cep - Concrete Actions referring to direct Execution measures: Cis and Cas actions will lead to Cep executive actions to implement the RBMP in practice. There are four Cep actions, each of this four Cep actions will be implemented by a specific WFD actor.

Some Cep are directly executable on the base of well-known criticalities while other (e.g. agriculture related) are made possible thanks to specific outcomes from W-GCI system. Maps with implementation areas are available at forms B2b and C (Cep12,13,14,15). In the case of Trebbia and Olona basins, the implementation of practical measures (Cep actions)

are strongly requested and favoured by the direct involvement (also in the current forms C project writing) in WATSUP of river contract communities of the two basins. Furthermore an ex-ante assessment of Cep action financial feasibility will be carried out (Cis5).

	Main-CEP-Actions ^α	Impact-on- [¶] objectives ^α
Cep 13 (Piemonte), Cep 14 (Lombardia), Cep 15 (Emilia-Romagna)	<p>Practical-actions-on-agriculture[¶] Directly-executable-on-the-base-of-well-known-criticalities (some of the obtained results will validate the W-GCI system through the smart monitoring action)[¶] - Selection and implementation of 5 Buffer zones chosen in the Po river plain near the town of <u>Villafranca</u> and of the <u>Pellice</u> creek confluence.[¶] - Selection of 5 representative farms where to implement best practices to improve water use efficiency (e.g. replacement of obsolete wells, improve efficiency of distribution systems, selection of irrigated crops to better face climate change, improve water-saving awareness, etc.)[¶] Informed-by-the-W-GCI[¶] - Identification of new areas for buffer zones activation.[¶] - Test of best practices (directly) executed without the application of the W-GCI system.[¶] - Practical actions to reduce pesticides/nutrient in groundwater: pull actions (e.g., compensation payments) for land use/management change in selected areas.[¶] - Pull actions to improve water use efficiency in agriculture (e.g. replacement of obsolete wells, improve the efficiency of the pressurised distribution systems, adaptation of irrigated crops to climate change, re-use of unconventional water sources, water-saving awareness, etc.)[¶] - Groundwater recharge in the Trebbia area for increasing water availability during the summer to be used for irrigation and increase the environmental flow.^α</p>	OBJ-2/3/4/6/7/12 ^α
	<p>Practical-action-for-ameliorating-surface-water-ecosystems[¶] Directly-executable-on-the-base-of-well-known-criticalities (some of the obtained results will validate the W-GCI system through the smart monitoring action)[¶] - Set-up and implementation of (both existing and new) vegetation management programs and wetland creation/restoration in 3 sites of the river Po and the <u>Pellice</u> creek along with <u>Olona</u> river and <u>Luser</u> tributary of the <u>Seveso</u>.[¶] - Production and dissemination of Guidelines for riparian vegetation management.[¶] - Actions on river re-qualification ad set-up by the River Contract "Alto Po".[¶] - Improvement of water sanitation infrastructures (e.g. by-pass river flow channels/areas).[¶] - establishment of Rain Garden and infiltration areas in urban settings of <u>Lura</u> and <u>Seveso</u> valley[¶] - Establish and apply eco-flow indexes in protected areas[¶] - Improvement of water sanitation infrastructures mainly to by-pass river flow channels/areas.[¶] Informed-by-the-W-GCI[¶] - Validation and test of activities "directly-executed without the W-GCI system" application.[¶] - Improvement of water sanitation infrastructures[¶] - Support municipalities in identifying sites for Sustainable Management of Urban Drainage System (SUDS) - Establish and apply eco-flow index in protected areas.[¶] - Contributions towards implementation of the recovery of cost of water services[¶] - Pull actions (e.g. compensation payments for the extension and management of buffer strips).[¶] - Practical actions for improving natural water retention and reduction of flood risk: push actions (e.g. wetland creation/restoration, vegetation management, etc.).[¶] - Practical Pilot actions to restore river continuum: e.g. install fish passes/green infrastructures.[¶] - Identification of areas where mitigate the morphological impact on water status.[¶] - Ameliorating WFD governance by supporting and further implementing existing (and newly formed) river contracts* (<u>contratti di fiume</u>) (e.g. modifying action plans).[¶] - Contributing to the environmental governance of the <u>Monviso</u> Biosphere Reserve by suggesting ecological actions to be implemented in their action plan.^α</p>	OBJ-1/2/3/5/6/8/9/10/11/14/15/16/17/18 ^α
Cep 12 ^α	<p>Practical actions for ameliorating participatory planning[¶] Participatory planning, by the different stakeholders, on specific measures and dissemination of good practice and specifically including River contracts. Steering committee (Basin Authority, Regione Piemonte, Regione Lombardia, Acteon, main selected stakeholders) for guiding participatory process.^α</p>	OBJ- [¶] 6/7/11/12 ^α

MONITORING OF THE IMPACT OF THE PROJECT ACTIONS [Actions D]

D1: Assessment of water and environmental status to achieve the expected "good" water status required by WFD. This will be developed by both standard monitoring performed by Regional Agencies deputed to environmental monitoring and (ii) a new smart monitoring of the impact of Cas/Cep actions. The monitoring employs a synthetic set of indicators, e.g. quality/quantity, environmental status. These indicators will be selected to analyse the status before (baseline) and after any adopted measures. Examples of useful indicators are available from the RBMP: (http://www.adbpo.it/download/PdGPo_VAS_PianoDefMonitoraggio_Allegato2/).

D2: This action (LIFE-IP requirement) refers to the assessment of ecosystem functions restoration. This action will take the form of an evaluation based on indicators for ecosystem services based on the IQM (Morphological Quality Index), the official system for evaluation of morphological status in WFD implementation in Italy.

D3: Systematic assessment of the socio-economic impacts of the Actions - once the evaluation in physical and monetary terms and the scenario analysis have taken place.

COMMUNICATION AND DISSEMINATION [Actions E]

Communication and Dissemination activities will aim at achieving two main goals: i) constituting capacity building, evaluation and legacy strategies (e.g. skills, funding) aiming at disseminating/ communicating/establishing an active interaction with targeted stakeholders in order to enable the proper use of the developed W-GCI System.

This is essential for a successful replication and transferability of the IP results, and ii) raising awareness for specific target audience on the importance of WFD, RBMP and sustainable land planning and management.

E1: A detailed communication plan will be developed at the beginning of the project // E2: Establishing an interface between science and policy-making to ensure that the final W-GCI tools (i) reflect the need of policy makers (e.g. policy-relevant indicators) and (ii) become an integral part of the policy-making process after the end of the project // E3: Technical dissemination & capacity building. Activities aimed at disseminating the W-GCI tools and lessons learnt to potential users beyond the project community // E4: Under this action, the project team will deliver specific communication products directed to a broader audience (logo, brochures, leaflets, DVDs, newsletter, etc.) // E5: Notice boards // E6: Project website // E7: Layman's report // E8: Networking with other LIFE and/or non-LIFE projects.

PROJECT MANAGEMENT & PROJECT PROGRESS MONITORING [Actions F]

An Advisory Board will support AdBPO during the project. The Board will meet at least once per year for evaluating/monitoring the core project advancements. The Board composition (made by 5 external experts) will be defined at the beginning of the project activities. A full-time Project Manager will be appointed at the beginning of the project. He/She will be supported during the implementation phase by a Deputy Project Manager appointed by the University of Naples and CNR (to bring into the project the expertise gained from the SOILCONSWEB LIFE+ project).

F1. Project management (administrative, technical and financial aspects). The project management action also includes the following activities: (i) planning and organizing overall project activities (administrative, technical and financial); (ii) monitoring of the main project actions; (iii) organization of partnership meetings; (iv) directing project resources (budget, people, etc.) and activities; (v) performing financial analysis (both at the interim and final stage of the project); (vi) preparing documentation and reports to be supplied to the Commission. F2. Training, workshops and meetings for the WATSUP staff: The action is similar to E2 but it is designed for the WATSUP staff // F3. Compilation of information needed to complete indicator to be submitted with the obligatory reports // F4. External Audit // F5: After-LIFE plan.

Complementary actions: [named Actions ECA]:

Main ECA-CEP Actions (good practices) applied at the Po-basin		Impact on objectives
ECA-Cep-13, 14	Practical actions on agriculture (e.g. RPD-2014-2021 measures 1,2,4,8,10,11,16,19) <ul style="list-style-type: none"> - Pull actions compensation payments for buffer strips in selected areas - Practical action to reduce pesticides and nutrient in groundwater: pull actions (e.g. compensation payments) for land use and/or land management change in selected areas - Adaptation of irrigated crops to climate change: Production of a database with optimal irrigation water requirements and pull actions to improve water user efficiency - Pull action replacement of obsolete wells 	OBJ-1/3/4/6/7/12/13/14/15
	Practical action for ameliorating surface water ecosystems (e.g. measures from ATO-sewage and wastewater treatment; Cariplo-Fondazione: ecological network; natural capital; resilient community) <ul style="list-style-type: none"> - Improvement of water sanitation infrastructures - Practical action to ameliorating hydro-morphological status: pilot actions, e.g. wetland creation/restoration, vegetation management, etc. 	OBJ-1/2/3/8/10/11

4. Expected results (main outputs and achievements, qualitative and quantitative):

Linked to Actions of LIFE IP (short and long term): The large set of practical measures - made possible thanks to the large use of W-GCI – will provide concrete results towards better WFD implementation along with other EU regulations and directives. A detailed description of the main expected results is given in the table reported below:

TABLE OF EXPECTED RESULTS (priority ranking) IMPACTING ON WFD AND CONNECTED EU REGULATION/DIRECTIVE

Priority	Expected results: All reported results shall support the targeted implementation of measures that will deliver progress towards achievement of WFD good status objectives and better implementation, impact, delivery of RBMP	WATSUP objectives
Main results	2000/60/EC - Water Framework Directive a. → Quantification of ecosystem services including their economic value and deliveries for DWD, ND, N2000 both in current conditions and under scenarios of climate change. This will also include selection, mapping, classification, spatial reporting and economical value of ecosystem services of all land units in the river basin. Identification of areas most vulnerable to climate change.	OBJ-1-OBJ-3- OBJ-5
	b. → Quantification through spatial reports and mapping of impact of multibeneficial measures to be adopted to increase water retention/storage capacity in urban/rural areas, and enhance infiltration	OBJ-2-OBJ-3- OBJ-8
	c. → Quantification through spatial reports and mapping of the impact of multibeneficial measures to be adopted to remove pollutants through natural/natural-like processes, and redress existing hydromorphological pressures	
	d. → Quantific. through reports and maps of impact multibeneficial measures to be adopted to improve biodiversity and amenity value	
	e. → Selection, mapping, classification, spatial reporting of land units whose change in land use/management (irrigation) can ameliorate catchment WFD performance over water quality/quantity. As above in climate change scenario. Adoption best managem. practices	OBJ-4-OBJ-5
	f. → Determination of compensation payments for each individual land cadastral parcel for the above land use/management change	
	g. → Scenarios analysis of water scarcity and its impact on irrigation practices also in terms of resilience of different areas of river basin	OBJ-4
	91/676/EEC - Nitrate Directive h. → Mapping and classification of land units having different vulnerability towards nitrate pollution (including climate change scenarios). Reports on best management practices, for each different and relevant land unit aiming to reduce the risk of nitrate pollution	OBJ-6
	128/2009/EC - Pesticide Directive i. → Mapping and classification of land units having different vulnerability towards pesticides pollution (including climate change scenarios). Reports on best management practices, for each different and relevant land unit aiming to reduce the risk of pesticide pollution	
	86/276/EC - Soil protection and Sewage Sludge Directive j. → Mapping, classification of land units attitude towards sewage sludge application /Best practice sewage application in each land unit	OBJ-3-OBJ-7
2006/118/EC - Groundwater Directive k. → Adopting best management practices to lower potential leaching of pollutants towards groundwater/Mapping groundwater protection	OBJ6-OBJ7	
Secondary results	2007/60/EC - Flood Directive l. → Planning and implementing targeted land management and land use change over a large area to provide flood protection	OBJ-8
	Reg. (EU) N. 1303/2013; 1782/03: Support to ameliorate the System of conditionality (RDP)/Cross-Compliance m. → Spatial reports on the best management practices combining agricultural production and environmental protection and better institutional check by AGEA	OBJ-12, - OBJ13, BJ14
	n. → 91/271/EEC - Urban Wastewater Directive /Quantification of the impact of urban wastewater over the IP river basin	OBJ-10
	2000/60/EC - Water Framework Directive o. → Robust integrated spatial database/knowledge (including land functioning) and evaluation of ecosystem services and comprehensive water status. Development of smart monitoring programs	OBJ-9
	p. → A dashboard to align RBMP actors (e.g. ministries, stakeholders) for delivering/revise measures using one agreed approach	OBJ-11
	q. → Improved co-operation with farming community and public participation for better implementation of RBMP by providing free use of agriculture related W-GCI tools and specific dashboard enabling bottom-up contribution by end-users and stakeholders	OBJ-12
Auxiliary Results	r. → A platform supporting (i) development of economic activities dealing with landscape (e.g. supporting natural heritage tourism - COM-2010/352), and indirectly (ii) schools by letting them access the landscape awareness tools	OBJ-16
	s. → COM-2006/231 - Soil Thematic Strategy Communication /State & map of soil threats and adoption of best management practices	OBJ-13
	Reg. 1783/05-510/06 - 1898/06 - Designation of Origin Regulation t. → Mapping/reports/best management practices combining agriculture, environmental protection and designation of origin (e.g., wine)	OBJ-14
	u. → Reg. 1698/05-1974/06 - Rural development/forestry regulation /Spatial report of the best management practices/ good maintenance/ recovery	OBJ-15
	2001/42/EC and 85/337/EEC - Strategic Environ. Assessment Directive - SEA / Environ. Impact Assessment Directive - EIA v. → Supporting the evaluation of Environmental Impact Assessment concerning urban plans and urban projects	OBJ8, - OBJ11, BJ17
	92/43/EEC - Habitat Directive w. → Raising Awareness about designed Natura 2000 sites, Special Areas of Conservation (SACs) and Special Protection Areas (SPAs)	OBJ-1- OBJ16-18

Linked to complementary actions (short and long term):

The expected main result of these actions - at the end of the project in the after-life time - is the reaching of the "good" status in the entire Po basin overcoming current difficulties. The specific expected results reported below are made possible thanks to the W-GCI platform which will lead the large bulk of expected CA measures, coordinated by ECA-CEP A action.

Specific expected results from ECA-CEP Actions applied to the Po basin		
ECA-Cep1 13 and 14a	On agriculture: • Reduction of pesticides and nutrients in groundwater • Water saving and increase of water use efficiency in agriculture	OBJ-3/4/6/7/12
	On the environment: • Ameliorating surface water quality and improvement of water sanitation infrastructures • Increasing hydro-morphological continuity • Ameliorate (i) sewage and wastewater treatment, (ii) ecological network, (iii) natural capital, resilient community	OBJ-3/10 OBJ-2/16

5. Expected contribution of the project to the implementation of the target plan/strategy

LIFE IP:

The project aims towards full RBMP implementation for the improved conservation and management of surface water resources and groundwater, and indirectly and most importantly, for achieving better land management. The project, through Cas, Cep and ECA-Cep actions, will contribute to the achievement of good water status.

But the basic question is the why we expect that WATSUP contribute to full RBMP implementation before and better than the current foreseen deadline of 2027.

To answer this question we must recall well-known difficulties in the proper WFD implementation (more detailed in section B2c): (i) in most water bodies there are many different pressures but it is not easy to understand and assign the proper cause-effect to these pressures; (ii) many environmental measures (RBMP implementation) creates conflicts between productive sectors; (iii) in the real world, the "polluter pays" principle is difficult to be applied because economic crisis and the very high costs of interventions.

Furthermore, the analysis of pressures and the current state of water in the Po basin indicate high morphological and hydrological impacts on surface waters: the level is "Enough"/"Poor" for the index of fish fauna and "Poor" for indices of morphological and hydrological alteration. Surface Groundwater data show deterioration (poor state) in quality from diffuse pollution (especially from agriculture). Overall, there is an unsatisfying water status in approximately one fourth of the water bodies. In such scenario we believe that WATSUP approach – thanks to its integrated participative and optimised approach of complex choices (e.g. how/where to apply IP and CA measures) will produce a large number of optimised actions to achieve a good water status in Po-basin before 2027 also considering identified constraints (see B6 and http://www.adbpo.it/PianoAcque2015/Elaborato_00_ReIGEn_3mar16/PdGPO2015_Elab_0_R_elGen_3mar16.pdf).

WATSUP activities will allow AdBPO to overcome these difficulties, thus speeding up the achievement of the WFD goals. Cep actions will enable to optimise (where and how) practical actions achieving best cost-benefit ratio. Cis and Cas actions - when fully operational - will in fact allow one to set-up a distributed water and nutrient balance providing: i) baseline high-resolution hydrological information, necessary to better understand the causes of the alterations; ii) a set of tools to control the effects of local and diffuse measures on the long-term configuration of waterways and water quality indices, iii) tools to permanently contribute to the execution of the what-if exercise, used to better serve information to decision-makers and to best involve stakeholders in the co-planning process. The results obtained in real-time will inform planning decisions related to the reviewing of the Po RBMP, evaluating the effect of KTM measures provided in the second planning cycle and supporting the third planning cycle. (See RBMP 2015 http://pianoacque.adbpo.it/piano-di-gestione-2015/ELABORATI_n.7_e_n.12).

Complementary actions:

Current regional planning related to (i) the agricultural sector (EAFRD), (ii) the strengthening of water treatment system, and (iii) the public participation, using participatory platforms already available, will be integrated with WATSUP (thanks to the large number of concrete actions). This will indeed strengthen the results achieved by the

WATSUP project, both in the IP basin and at the regional level. The complementary actions will allow the better and full RBMP implementation over the whole Po catchment.

6. Main stakeholders involved in the project:

MAIN PUBLIC AND PRIVATE STAKEHOLDERS DIRECTLY INVOLVED	
Name	Role and justification for their involvement
Municipalities, Local Authorities and Provinces	At the local level, they implement water management policies, and they have the competence about problems/difficulties (e.g. social) of their specific areas
Legambiente	Environmental association with a strong impact of the territory
CAP Holding	They are the company in charge of water treatment/distribution management in Milano, Monza Brianza, Pavia, Varese Como. CAP is interested in better river management
River contracts of Trebbia and Olona	They will actively contribute to the project in the two river basin (covered by letter of support by Emilia Romagna)
Association of water treatment and water treatment operators	Those are companies in charge of water treatment management at local scale
Utilitalia /National association reclamation bodies/ National ANBI and regional offices	All those are important association already contributing with RBMP-Po. They show interest in being involved in WATSUP
Natural Park Monviso Authority, Protected areas of the Po and Collina Torinese Authority, Natural Park of the Po and Orba Authority	Po River is a regional natural park ruled by three Authority. They are responsible of Natura network 2000 local sites.
Ambito Territoriale Ottimale (A.T.O.) n. 3 "Torinese" e n. 4 "Cuneese"	Body dealing with adjustment and programming of integrated water services at supra-municipality level
Farmers associations Coldiretti; Confagricoltura, CIA	Association of farmers – they will be involved in many concrete actions (CEP, CAS) – provide the interface with farmers
Environmental associations of citizens	No-profit national Environmental Association – Provide the interface with public opinion for environmental awareness and wildlife conservation
Irrigation Unions (Consorzi Irrigui)	Responsible for irrigation canals management–Provide interface with farmers
Touring Club Italia	Landscape awareness tools
Joint Research Centre (ISPRA)	European replicability and transferability

7. Long term sustainability (including capacity building)

The long-term sustainability of the WATSUP project will be guaranteed by a significant early-stage investment toward the creation of capacity building (E4 and F2) inside a large project community including: (i) WATSUP competent authorities, (ii) project stakeholders and (iii) a project community external to WATSUP.

This large community will have a specific role in the development and testing phases of the W-GCI. In this respect, the WATSUP project will undertake a participatory process based on i) the identification and continuous consultation with the community; ii) the creation of a participative platform to ensure the formation and maintenance of a project memory; iii) the adoption of a community governance model to provide clear guidance and customized structures open to the contribution from community members. The maintenance and integration of the project outcomes (in terms of W-GCI) during and after the implementation of the IP will be guaranteed by the large use of open source WEB-GIS facilities. The expected large community of W-GCI users, which will make the system operational for many different topics related to WFD but also including environmental awareness, will also ensure the long-term sustainability.

Replicability and transferability of the project results and actions will be ensured by the (built-) capacity of the community to function as an autonomous deliverer of the project products and by specific actions (Cis7, Cas11, E4).

8. a) Is your project significantly climate related? Yes No

b) Is your project significantly biodiversity-related? Yes No

If you consider your project to be significantly climate or biodiversity-related (you marked 'yes'), please explain why:

The project is related to climate change because some actions concern initiatives and measures (Cis3/4, Cep12/13/14/15) that can be used to reduce the vulnerability of natural and human systems against actual or expected climate change effects, such as actions on water saving and natural water retention measures; the project is related to biodiversity because some actions (Cis4, Cep12/13/14/15) concern initiatives and measures that can contribute to the objectives of the EU Biodiversity Strategy to 2020, and improve the habitats and the biodiversity in the natural zones, in particular in the pilot basin.

GENERAL DESCRIPTION OF THE AREA(s) TARGETED BY THE PROJECT

Name(s)/Definition of the project area(s):

The project areas where the WATSUP system will be applied refer to two scales:

- Po at "Carignano" (Piemonte), "Olona settentrionale" (Lombardia) and "Tebbia" (Emilia Romagna) river sub-basins basin;
- entire Po Basin (then the entire Piemonte, Lombardia, Emilia Romagna regions).

Comments:

The above two scales of application and different spatial extents are made possible due to the high degree of flexibility in the application of the computational core of the WATSUP system, which will allow adaptation of both the modelling engine and the DSS to provide different kind of outcomes at the different scales of interest.

More specifically, the Po sub-basins have the following extensions, Carignano: 3,580 km², Northern Olona: 437 km² and Tebbia 1074 km² but also rather different environmental and socioeconomic problems. The entire river Po basin is about 86.800 km², and it is the largest basin in Italy with the largest range of criticalities in WFD implementation (e.g. surface groundwater, urban water from highly urbanised areas).

In terms of water status we report the followings:

Po-Carignano: Ecological status: 57 good/18 not good; Chemical status:74 good/1 not good

Po-Olona: Ecological status: 0 good/21 not good; Chemical status:74 good/1 not good

Po-Tebbia: Ecological status: 19 good/4 not good; Chemical status:25 good

All locations of the areas of interest are reported in the map below.

The choice of the above areas is strategic and it allows different levels of implementation: IP resources will deliver results directly at the Po at Carignano, Olona and Tebbia scale; while both IP and Complementary Actions funds will deliver results at the entire Piemonte, Lombardia, Emilia Romagna regions. Then the project will be used to support the application of the WFD and the implementation of the RBMP at the whole Po river basin.

The sub-basins of Carignano, Northern Olona and Tebbia are representative enough of the entire Po basin with respect with (i) morphological point of view (mountain, hills and plain areas), (ii) the anthropic pressure (e.g. soil sealing at Olona), (iii) the river quality status (with rather different criticalities), the contrasting demands for water requirements (e.g. irrigation against natural fluvial park at Tebbia), and different sources of pollution (from agriculture, urban areas, etc).

The 3 sub-basin are also tailored to be affordable within the Project budget as additional surveys (already foreseen to run the high-resolution analyses) to investigate specific processes can be performed with a sustainable cost management.

More detailed brief description of Po Basin and Carignano, Olona, Tebbia sub-basins and its main pressures are given below:

Po:

The Po River is the largest Italian river, both for length, 652 km and extension: the maximum is 10,300 cubic meters per second was observed at Pontelagoscuero (reached in the event in full in November 1951).

The Po, which originates from Monviso, Piemonte, along its course receive contributions by 141 tributaries.

The Po river basin is the largest river basin in Italy. Its area covers about 74,000 square kilometers, of which about 71,000 are located in Italian territory, a quarter of the entire national territory. The rest is located mostly in Switzerland (the basin of the river Toce) and a small part in France.

The area affects about 3,200 municipalities, three main regions: Piemonte, Lombardia, and Emilia-Romagna but also subordinately other 5 regions Valle d'Aosta, Veneto, Liguria, Toscana, and the Autonomous Province of Trento.

The population living in the basin is approximately 16 million inhabitants.

Considering the density of the territory and productive activities, the infrastructure and the degree of utilization of water resources, the Po Basin is a reality exceptionally varied, a focal point of the national economy.

In fact, 40 per cent of the gross domestic product originates from this area; 37 percent of the domestic industry, which supports 46 percent of the jobs; 55 percent of livestock in only five provinces; 35 percent of agricultural production. The electricity consumption is equal to 48 percent of national consumption.

Carignano:

The main significant pressures in the Po Carignano river basin are listed below:

- Point (Urban waste water, IED plants, Non IED plants, Waste disposal sites)
- Diffuse (Urban run off, Agricultural, Transport)
- Abstraction/Flow Diversion (Agriculture, Industry, Fish farms, Hydropower)
- Physical alteration of channel/bed/riparian area/shore of water body
- Hydrological alteration
- Introduced species and diseases

In this river basin there are 131 Municipalities.

In 2011 the population living amounts to approximately 462.000.

In 2011 the number of local unity of manufacturing firms is around 2.000 and the number of workers in these firms is around 4.400.

In 2010 the number of commercial farms amounts to approximately 14.900 and the number of the zootechnical farms to around 5.800.

Alto Olona

The main significant pressures in the northern Olona river basin are listed below:

- Point (Urban waste water, Storm Overflows, IED plants, Non IED plants);
- Diffuse (Urban run off, Agricultural, Discharges_not connected to sewerage network);
- Hydromorphological alteration (Physical alteration of channel/bed/riparian area/shore of water body, Physical loss of whole or part of the water body).

In this river basin there are 106 Municipalities.

In 2011 the population living amounts to approximately 1.143.000.

In 2011 the number of local unity of manufacturing firms is around 11.500 and the number of workers in these firms is around 120.000.

In 2010 the number of commercial farms amounts to approximately 1.700 and the number of the zootechnical farms to around 900.Olona:

Trebbia

The main significant pressures in the Trebbia river basin are listed below:

- Point (Urban waste water, IED plants)
- Diffuse (Agricultural)
- Abstraction/Flow Diversion (Agriculture, Hydropower)
- Dams, barriers and locks – other
- Hydrological alteration
- Introduced species and diseases

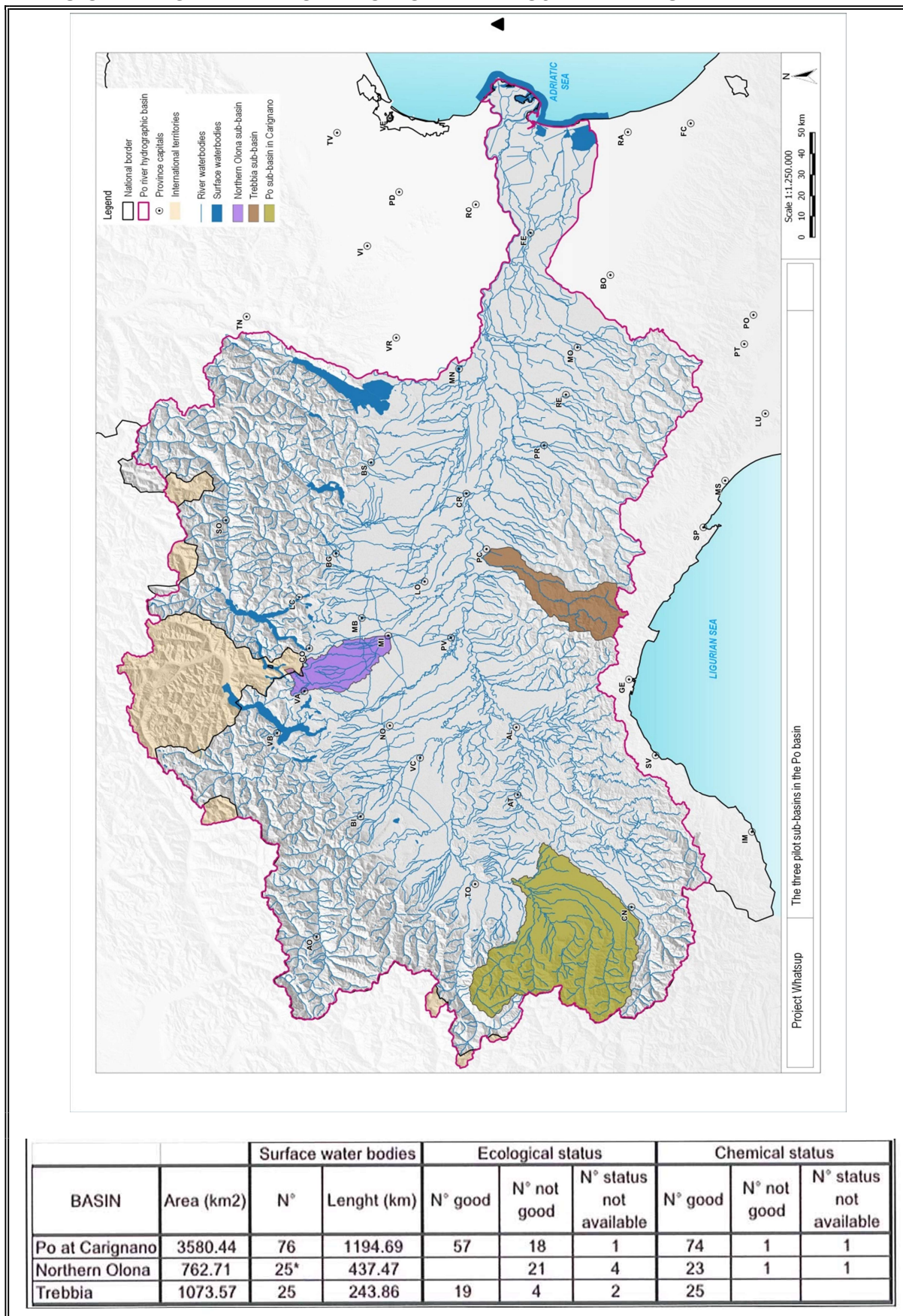
In this river basin there are 27 Municipalities.

In 2011 the population living amounts to approximately 144.000.

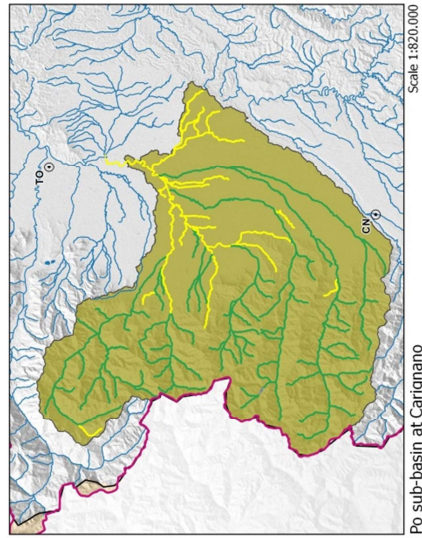
In 2011 the number of local unity of manufacturing firms is around 1.200 and the number of workers in these firms is around 10.500.

In 2010 the number of commercial farms amounts to approximately 1.600 and the number of the zootechnical farms to around 500.

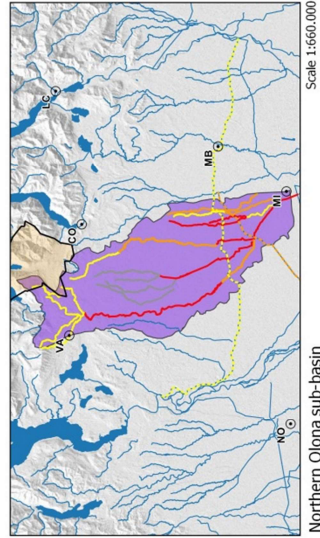
MAPS OF THE GENERAL LOCATION OF THE PROJECT AREAS



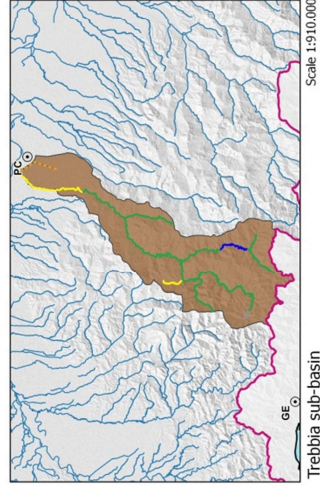
Map of areas of intervention including their water status



Po sub-basin at Carignano
Scale 1:820,000



Northern Olona sub-basin
Scale 1:660,000



Trebbia sub-basin
Scale 1:910,000

- Legend**
- National border
 - Po river hydrographic basin
 - Province capitals
 - International territories
 - River waterbodies
 - Surface waterbodies
- Ecological Status of river waterbodies**
- Good for artificial RW and HMWB
 - Bad for artificial RW and HMWB
 - Poor for artificial RW and HMWB
 - High for artificial RW
 - Moderate for artificial RW and HMWB
 - NC for artificial RW and HMWB
 - High for natural RW
 - Good for natural RW
 - Moderate for natural RW
 - Poor for natural RW
 - NC for natural RW
 - Bad for natural RW
- Ecological status of lake waterbodies**
- NC for HMWB



Whatsup Project

Pilot sub-basins: ecological status of surface waterbodies

DESCRIPTION OF THE STRATEGY FOR THE IMPLEMENTATION OF THE OVERALL PLAN

Short term (at least first 2.5 years): //Long term (beyond 2.5 years):

It is known that only 50% of European water bodies has reached good status in 2015. The same applies to Italy and to the Po river basin. For this reason in 2015, the achievement of "good" water status has been postponed to 2021 and to 2027 for many RBMP.

The strategy we have adopted including planned investments in the project contribute to accelerate the environmental improvement of water bodies, allowing it to anticipate the achievement of quality targets, even before the deadline currently foreseen in RBMP-Po2015.

In fact, the overall WATSUP strategy towards the full RBMP implementation is based on the implementation of many practical actions based on both previous knowledge and instructed by an innovative Spatial Decision Support System (on a GeoSpatial CyberInfrastructure).

The requested background to understand this strategy is rooted in the following well-known difficulties in the proper WFD implementation and how WATSUP address these difficulties:

Problem (i): in most water bodies there are many different pressures that decline the - otherwise "good" - water status. But in most cases, it is not always easy to understand and assign the proper cause-effect to these pressures; in fact often this understanding is complex (integrated environmental analysis) and simply not available to WFD actors.

Answer (i): in such framework, WATSUP - providing a powerful integrated and reliable modeling - in combination with more traditional monitoring activities enable a much more focused and dynamic understanding of cause-effect of each water-related pressure.

Problem (ii): the choice of environmental measures to be applied towards RBMP implementation often creates conflicts between productive sectors who feel "threatened" by the water policy; in particular, the agriculture and hydropower production (renewable resource) sectors. Moreover these sectors receive special attention by EU and they are supported by Community policies.

Answer (ii): a decision support tool is essential to favour an integrated vision between the different EU policies and to identify measures (structural and regulations) effective and acceptable by the stakeholders.

Problem (iii): The "polluter pays" principle - which is the financing basis of EU environmental policies is not immediately applicable for two main reasons:

the prolonged economic crisis that coincided with the first planning cycle has reduced both public resources and the "willingness to pay" of citizens towards environmental policies.

The "not good" status of water bodies often depends on many years of missed interventions that have in turn produced an "environmental debt" made by previous generations that cannot be solved in just few years. This is because the very high costs of interventions and also for the very long timing required by natural processes for water remediation.

Answer (iii): the in a system affected by so many constrains and very limited economic resources and is imperative to have a cost-effectiveness analysis system that supports decisions. This is the why WATSUP is a powerful answer to WFD implementation difficulties.

More specifically, there is an entire set of fundamental actions, including: Cis actions to implement a feasible and usable Spatial Decision Support System; Cas actions to apply this system to resolve RBMP problems by WFD Directive competent authorities and to analyse and rank in terms of relevance (how many/how/where) the measures that should be adopted to improve the water status; Cep actions to apply these measures to the Po river basin; and D actions to monitor the achieved improvement in environmental conditions (water quality/quantity). All these will be carried out by using IP funds. Complementary actions are used to further empower Cep actions by funding a very large number of applicants who can adopt the proposed measures (e.g. land use change, buffer strips),

thus making the factual improvement of the catchment water status achievable in a widespread area.

In terms of spatial extent, WATSUP will deliver the maximum quality of outputs and the maximum impact towards full RBMP implementation at the Po-Carignano, Po- Olona and Po-Trebbia sub-basins (summing about 5100km²). WATSUP will also deliver - at a lower intensity – at the scale of the entire Po basin (about 86.800 km²) in a data scarcity scenario. The upscale to a larger region will be the basis for ensuring the full replicability of the proposed approach.

The ample breadth of topics embedded in RBMP full implementation and treated within the project demands for a robust project partnership involving administrative entities involved in RBMP, research units, transnational partners and SMEs. The scientific/technical/economic feasibility of the system is facilitated by the fact that three of the groups involved in this proposal have already successfully delivered – through the LIFE+project SOILCONSWEB – a similar fully operational system (developed on 5 different areas of about 200 km² each) – with freely available approaches - operating on the web in the field of soil conservation.

In addition, the proposed partnership will bring into the project its recognized international reputation in hydrology, hydrogeology and S-DSS. The coherency with RBMP, is ensured by the coordinating beneficiary Po River District Authority and Piemonte, Lombardia and Emilia Romagna regions who have already proved to offer a blueprint for how to integrate EU, national and local priorities. The demonstration potential and transferability at the Italian and European scale are ensured by the presence and expected active collaboration in the consortium of the JRC-water unit (as stakeholder), and the Ministry of Environment partner. Replicability and transferability of the approach is also guaranteed by the specific project approach strongly focused on the use of open source WEB-GIS and by a specific action (Cis-7 and Cas11) aimed at setting the bases for applying the system in other basins. All this goes far beyond the simple transfer of knowledge.

The WATSUP project will deliver an ensemble of actions specifically designed to address the main shortcomings – explicitly recognized for full RBMP implementation by the Po River Basin Authority report (<http://pianoacque.adbpo.it/piano-di-gestione-2015/> pp.6-10).

In fact, the combination of Cis/Cas/Cep actions - along with complementary actions - are expected to positively impact over (i) eutrophication of surface waters due to the high concentrations of nutrients; (ii) pollution of surface water and groundwater; (iii) water scarcity and droughts linked to excessive use of freshwater resources and in relation to climate change; (iv) hydromorphological alterations of river flows also due to urbanization; (v) loss of biodiversity and degradation of ecosystem services of water bodies; (vi) heterogeneity in the interpretation of data systems; (vii) lack of a suitable economic analysis; (viii) lack of an integrated vision for the management of the multiple pressures and demands on the water system. In the 2nd cycle of the RBMP planning these shortcomings refer to KTMs (Key Types Measures) identified in the WFD Reporting Guidance 2016 and in further detail Po Basin individual measures (<http://pianoacque.adbpo.it/piano-di-gestione-2015/> pp.23-33).

Moreover, the project will also deliver results in terms of the Po RBMP reviewing process in compliance with the WFD (art.13).

In the short term perspective, we plan to deliver towards the above RBMP shortcomings as below (please refer to the table of expected results reported in form B1):

-End of phase 1 (end of year-1 under data scarcity scenario): results *a,g,h,k,j,m,p,r,t,x* impacting over shortcomings (ii), (v), (vi), (viii) listed above; these will be further processed in phase 2 and 3.

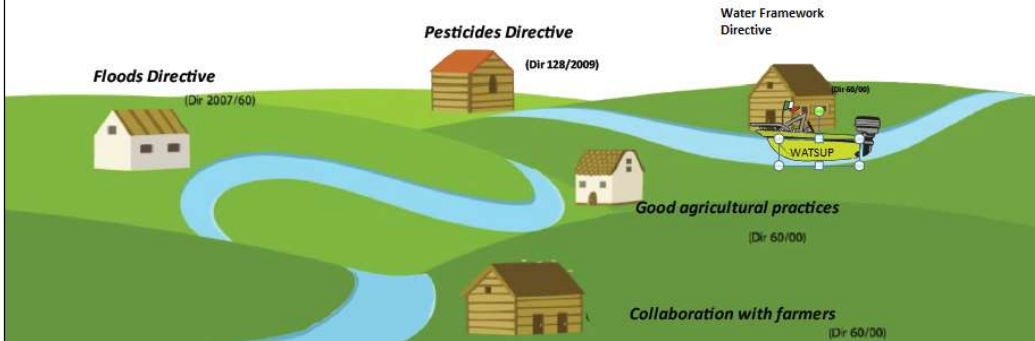
- End of phase 2 (end of year-3 under full data scenario): all expected results from a to x impacting over all shortcomings but without having yet performed executive actions.

Long Term (phase 3 and 4): all expected results from a to x to overcome current RBMP shortcomings by full application of executive actions.

One key feature of WATSUP strategy for the implementation of the RBMP plan is based in its embedded high quality multi-purpose delivery mechanism that make it possible to achieve results in other policy areas with limited efforts.

This concept is clearly depicted in the figure below.

Nitrates Directive (Dir. 91/676)
 Groundwater Directive (Dir. 2014/80 / EU - 2006/118 / EC)
 Cross - Compliance, conditionality (Reg. (EC) 1782/03, 1783/059)
 Urban water treatment Directive (UWWT Dir. 91/271)
 Thematic Strategy for Soil Protection (COM 2006/231)
 Designation of Origin (Reg. 1783/05 - 510/06 - 1898/06)
 Forest management (Reg. 1698/05 1974/6)
 Sewage Sludge (86/276 / EC)
 Strategic Environmental Assessment Directive (2001/42 / EC)
 Directive on Environmental Impact Assessment and updates (85/337 / EEC)
 Habitats Directive (92/43 / EEC)



Here WATSUP project is represented by a speedboat, which has been built to reach the full WFD and RBMP implementation. With the very same virtual boat – without further investments – it is possible to reach many other directives/regulation (houses in the landscape and list above).

We believe that this multi-purpose approach will be able to catalyse a process and mobilise further commitments that will lead, in due time, to the full implementation.

In order to properly realize this powerful approach, it is indeed required to incorporate in the project high personnel expenditures. This is because to build the complex key components of the WATSUP “motor boat” involves several experts and professionals with high daily rates.

The coordinating beneficiary AdbPo, which is also the public body responsible for implementing the RBMP, will produce an After-LIFE Plan and activities and will take care the long term management and integration of the W-GCI through the expansion of the system capabilities. This will be feasible due to both (i) the expected large community of system users and the participatory character of the W-GCI as planning tool, (ii) the specific technicalities including best cost(data)/effective modelling approaches, low-cost massive processing, internet accessibility, and open source WEB-GIS codes.

Multidisciplinary and multifunctionality are always quoted in many conferences /documents /project /etc. But operational multidisciplinary is a different matter. To our experience, operational multidisciplinary indeed requires high skill, high expertise, lot of work. All these typically require high budget.

EU ADDED VALUE OF THE PROJECT AND ITS ACTIONS

Extent and quality of the contribution to the objectives of LIFE

WATSUP contributes towards the full implementation of WFD/RBMP by (i) developing, testing and implementing an innovative Decision Support System (W-GCI) and by doing this (ii) planning and implementing the factual execution of a large set of actions such as those improving (a) hydromorphology (e.g. wetland creation/restoration), (b) fish fauna (e.g. establish and apply eco-flow indexes in protected areas), riparian habitats (e.g. construction of guidelines for riparian vegetation management) and nature conservation (e.g. support and enforcing action plan of the Monviso Biosphere Reserve and Actions aimed at ameliorating the river environment scheduled in the Action Plan river contract of Olona, Trebbia and Alto Po and for the protected areas along the Po river). All the system is designed to comply with RBMP, WFD and other related EU directives, regulations and communications dealing with water and land management.

The WATSUP project is thus expected to give important contributions to the application of a large set of European environmental legislations with special reference to (ranked by priority):

EU Directive/ Regulations impacted by WATSUP	Main	2000/60/EC - Water Framework Directive
		91/676/EEC -Nitrate Directive
		128/2009/EC-Pesticide Directive
		Directive 86/276/EC- Soil protection and Sewage Sludge Directive
		2006/118/EC - Groundwater Directive
	Sec-ondary	Dir 2007/60/EC - Flood Directive
		Reg. (EU) N. 1303/2013; 1782/03: CAP/System of conditionality (RDP,...)
		Dir 91/271/EEC - Urban Wastewater Directive
	Auxiliary	COM 2006/231 - Soil Thematic Strategy Communication
		Reg. 1783/05 -510/06 - 1898/06 – Agriculture - Designation of Origin Regulation
		Reg.1698/05 1974/06 - Rural development/forestry regulation
		2001/42/EC and 85/337/EEC - Strategic Environmental Assessment Directive-SEA /Environmental Impact Assessment Directive – EIA
		92/43/EEC- Habitat Directive

In fact, we believe that providing an operational answer (by the W-GCI system) to many of the problems embedded behind the full WFD/RBMP implementation will enable, with little additional efforts, to deliver high-quality results towards few other EU Directives. We will also provide a framework towards the integration of the EU and national policies using one agreed approach.

The project fulfils the basic EU idea on sustainable landscape management and to be obtained through (i) the principle of sustainable development, which is at the core of Community policy and (ii) by using an integrated (and trans-disciplinary) approach.

The large area of application and the efforts toward replicability (e.g. potential use of the system over other Italian basin to be tested in CAS 11, will contribute to show that new planning and management opportunities may be available also in other European areas to achieve full WFD implementation.

But the question that arise is *how can we quantify targets regarding the implementation of practical measures ?*

We plan to evaluate the impact of WATSUP practical actions with the same Expected indicators in the SEA Monitoring Plan Accompanying the Po-RBMP of 2015. More specifically, in the SEA Monitoring plan, there is specific board (made by officials of the interested administrations and Environmental Agencies) which will follows the RBMP evolution through the analysis of a large set of indicators, grouped in two categories:

- context indicators, which describe the state of the environment and its evolution
- process indicators, which assess RBMP progress and the degree of integration between Sector and Environmental Policies. The list of indicators is contained at

<file:///C:/Users/Admin/Downloads/VASPdGPo2015 art 17 b DichiarazioneSintesi 17mag 16.pdf>

Applying indicators approved in the SEA process, the SEA monitoring board will be in charge of analysing the results obtained by the IP LIFE practical actions objectively, for instance comparing the outcomes obtained in the Carignano, Olona, Trebbia IP-basin with all other sub-basins occurring in the PO- Basin

Extent and quality of the mobilisation of other funds

The development of the W-GCI platform will improve the impact and outreach of other funds available through the Rural Development Program (2014-2020) and other public funds (DGR 18-317 of 15/09/2014) aiming to strengthen the capacity of treatment of municipal wastewater (Framework Programme between Ministry of Environment, Ministry of Economic Development and Piemonte, Lombardia, Emilia Romagna Regions), FESR e regional funds but also private funding from Fondazione Cariplo. In fact these funds will be better allocated considering the opportunity to simulate in advance the effects of these measurements and then enabling a better plan of these complementary actions.

Considering both (i) the need of of a coordinating mechanism to harmonise funding from all complementary measures and (ii) that the final allocation of the EARFD funds is highly dependent on stakeholder commitment, WATSUP will ensure a coordinating supplementary funding mechanism and an advanced communication strategy towards stakeholders. More specifically, as part of the CAS 10, the Regional Environmental Authority (established by Law 11 agosto 2014, n.116) will collaborate to ensure – through its institutional duties – a coordinating mechanism between WATSUP and sustainable development Community Programs, development Fund and Cohesion but also to setup a communication strategy.

Moreover the designed Cep 16 and ECA-Cep 16 actions (participatory planning) will ensure the involvement of stakeholders to increase the effectiveness of the mobilization of additional funds.

Quality of multi-purpose mechanism, synergies and integration

The multi-purpose, synergic, and integrated approach lies at the core of the WATSUP system. Moreover most of the modelling work and its outcome has at its core an integrated ecosystem approach (e.g. physical based soil-plant-atmosphere models). Due to this evidence, WATSUP hat at its core has a strong powerful engine for multi-purpose deliveries.

The W-GCI is thought for being used by a large community of stakeholders and end-users having very different interests. The strong involvement of well-established river contracts community (e.g. Trebbia and Olona) will solve most of typical barriers (willingness of key actors, lack of interest, active obstruction, lack of economic incentives, etc) for the implementation of practical measures.

In the table below we report some examples of obtained results versus users:

TABLE OF EXPECTED RESULTS VS USER COMMUNITY		Users of WATSUP proj.	
		WATSUP beneficiaries	Other users
Main results	2000/60/EC - <i>Water Framework Directive</i>	WATSUP beneficiaries	
	x. Quantification of ecosystem services and deliveries for DWD, ND, N2000 both in current conditions and under scenarios of change. Quantification impact of multibeneficial measures		-
	y. Determination of compensation payments for each individual land cadastral parcel for the above land use/land management change		FARPEA
	z. Scenarios analysis of water scarcity and its impact on irrigation practices. Resilience of the different areas of the river basin.		Irrigation District
	91/676/EEC - <i>Nitrate Directive</i>		Farmers and farmers associations
	bb. Mapping and classification of land units having different vulnerability towards nitrate pollution (including climate change scenarios). Best management practices for each different aiming to reduce the risk of nitrate pollution.		
	128/2009/EC- <i>Pesticide Directive</i>		
	cc. Mapping and classification of land units having different vulnerability towards pesticides pollution (including climate change scenarios). Best management practices, for each different and relevant land unit.		
	<i>Directive 86/276/EC- Soil protection and Sewage Sludge Directive</i>		
	dd. Mapping, classification of land units attitude towards sewage sludge application /Best practice sewage application		
2006/118/EC - <i>Groundwater Directive</i>	Municipalities		
ee. Adopting best management practices to lower leaching of pollutants /Mapping groundwater protection			
Secondary results	Dir 2007/60/EC - Flood Directive		Municipalities
	ff. Planning and implementing targeted land management and land use change that provides flood protection.		Farmers associations
	Reg. (EU) N. 1303/2013; 1782/03: System of conditionality (RDP,...)		Municipalities
	gg. Best management practices combining agricultural production and environmental protection.		
	hh. Dir 91/271/EEC - Urban Wastewater Directive /Quantification of the impact of urban wastewater over the IP river basin.		NA
	ii. Dir 2000/60/EC Water Framework Directive		NA
	Robust integrated spatial database/knowledge (including land functioning) and evaluation of ecosystem services and comprehensive water status. Development of smart monitoring programs optimizing spatial-temporal variability.		General public and farmers
	jj. A dashboard (framework) to align RBMP actors (e.g. ministries, stakeholders) for delivering/revise measures using one agreed approach.		General public, schools
	kk. Improved co-operation with farming community and public participation for better implementation of RBMP by providing free use of agriculture related W-GCI tools and specific dashboard enabling bottom-up contribution by end-users and stakeholders.		Environm. assoc.
	ll. A platform supporting (i) development of economic activities dealing with landscape (e.g. supporting natural heritage tourism - COM 2010/352), and indirectly (ii) schools by let them access to landscape awareness tools.		Farmers
Auxiliary Results	mm. COM 2006/231 - Soil Thematic Strategy Communication //State &map of soil threats/Best management practices.		Forestry
	Reg. 1783/05 -510/06 - 1898/06 - Designation of Origin Regulation		Urban planners
	nn. Mapping/ best management practices combining agriculture, environmental protection and designation of origin (e.g.wine).		Natural parks and environmental associations
	oo. Reg.1698/05 1974/06 - Rural development/forestry regulation /Best management practices/ good maintenance/ recovery		
	2001/42/EC and 85/337/EEC - Strategic Environmental Assessment Directive- SEA /Environmental Impact Assessment Directive – EIA Supporting the evaluation of Environmental Impact Assessment concerning urban plans and urban projects		
	92/43/EEC- Habitat Directive		
pp. Raising Awareness about Natura 2000 sites, Special Areas of Conservation (SACs) and Special Protection Areas (SPAs)			

But all above is made possible defining:

(i) a coordination mechanism between Actions and Complementary Actions/extra IP funding.

In WATSUP we have designed a special action (ECA-A) with a specific board (made by AdbPO, regional Authorities which manage Complementary Funds and the Regional Environmental Authority). For instance this board will regularly (yearly) produces a concise report on the status of the applicability, constraints and other issues related to the Complementary funds use.

(ii) a clear framework for the integration of EU and national policies during RBMP implementation.

Her we must recall that AdbPo (Po river basin authority) is the connecting body between ministries and regions, which have direct competence on water planning (DIR 2000/60) and flood risk (DIR 2007/60). AdbPo is component of EAFRD funds Partnership Committee assisting the Ministry of Agriculture and regions for programming funds allocated to the thematic objectives of the RDP related to the use of the water resource and environmental sustainability.

In such framework it is expected that the higher knowledge made possible by WATSUP and the availability of a shared instrument decision support for many WFD actors and stakeholders, will strengthen AdbPo role as a facilitator of integration of European policies at national and regional level. It is also expected that this - in turn - will increase the level of integration between water and sectorial (soil protection, agriculture, fisheries, protected areas, urban planning, energy, inland) environmental policies, orienting sectorial policies towards targets and actions consistent with the water management plan.

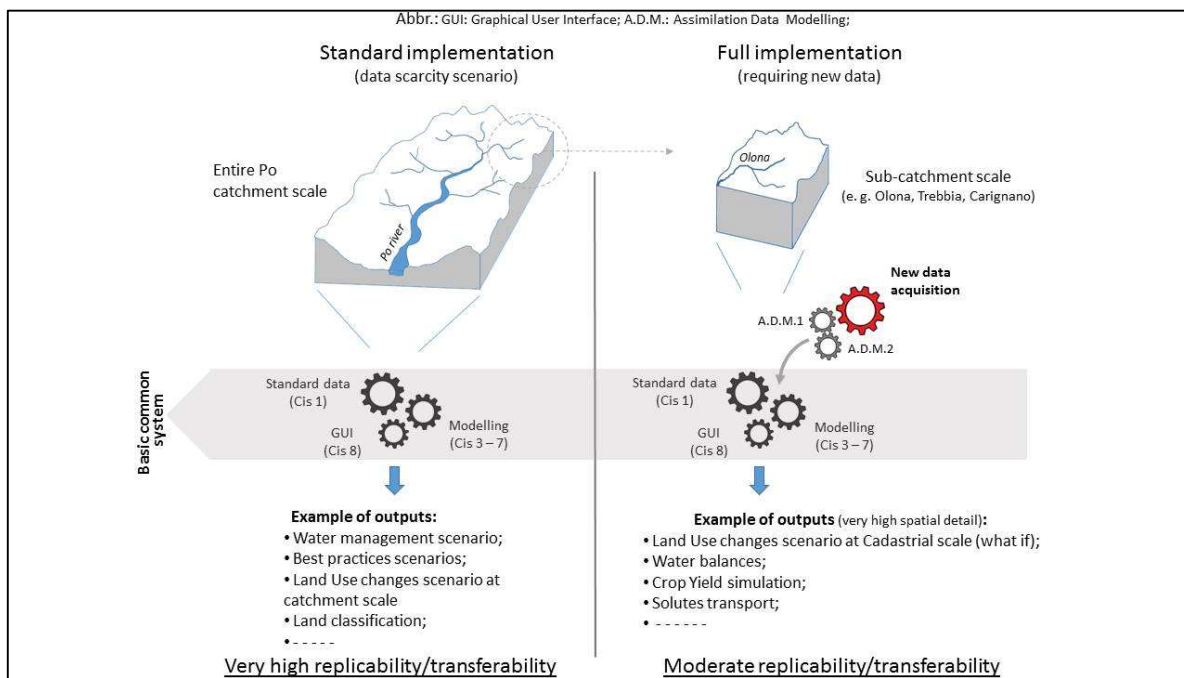
Replicability and transferability

Replicability and transferability are one of the strength of WATSUP project. All Cis/Cas actions have been planned to have methods, approaches, and techniques that can be put into place and replied in other areas of EU countries or elsewhere in the world.

More specifically, the highest replicability/transferability concerns the “standard implementation scenario” reported in the figure below where the “basic common system can be freely applied elsewhere. While full implementation (e.g. where/how to implement a

specific measure) requires better data (red gear in figure below) such as good soil data (Cis1). But - even in this case –methods employed to assimilate new data (the 2 grey gears of assimilation data modelling) have been designed, keeping in mind replicability issues (e.g., remotely sensed data and new soil data can be assimilate in crop models). Then, for instance, if a specific region produce by its own new soil data, our system can directly assimilate/implement/apply these data in the modelling platform.

A further technical demonstration of this specific replicability/transferability character is also provided in WATSUP by the use of generalised modelling procedures and open source approach.



Transnational, green procurement, uptake of research results:

The WATSUP platform has an intrinsic potential towards transnational cooperation. This is because the logic behind the W-GCI platform stems from the combination of (i) use of generalised modelling engines and (ii) large use of open source codes, which can be easily exported to other countries (tested by JRC stakeholder).

According to green procurement, having WATSUP project embedded both the ecosystem and the monetary evaluation of the environmental impacts of practical measures, it will surely include also procedures in compliance with the rules of Green Procurement by public (GPP) and private bodies.

Leaders of the actions which will include procurements will refer to the environmental minimum criteria (CAM) provided by the Italian Ministry for the Environment (art. 34, Dlgs 50/2016), which requires to define into all calls for tenders at least the technical specifications and the compliance verification carried out on products to be acquired. The table below summarizes the criteria on which the selection in tenders will be based:

Procurement objectives	Criteria to be used	Technical specifications required	Award criteria to be used	Verification required
IT devices (e.g. workstations, servers, laptop, etc.)	Most economically advantageous tender; Proof of technical suitability; References;	Low power consumption, upgradeable components, no mercury in LCD monitors, low noise emission, recyclability	Price: 50% Technical merit: 30% Environmental performance (environmentally friendly packaging, recyclability): 20%	Presence of European labels and logos certifying the conformity (eg. Energy star, ISO type I, EU-ecolabel, UNI EN ISO 17025)
Laboratory and field devices (i.e. acquisition system for hydraulic properties measurements, reagents, balances for field measurements, stations for monitoring environmental variables, proximal sensing devices, etc)	Most economically advantageous tender; Proof of technical suitability; References;	Low power consumption, upgradeable components, no mercury in LCD monitors, low noise emission, recyclability, low weight, long warranty	Price: 40% Technical merit: 40% Environmental performance (environmentally friendly packaging, recyclability, easy disassembling): 20%	Presence of European labels and logos certifying the conformity (eg. Energy star, ISO type I, EU-ecolabel, UNI EN ISO 17025, REACH). Certified tests for harmfulness
Office materials (i.e. paper, toner, inkjet cartridges, etc.)	Most economically advantageous tender; Proof of technical suitability; References;	Paper: with at least 70% recovered fibres, Elementary or Totally Chlorine free; Ink cartridges and toners: recycled shell, required compatibility, compliance with the maximum allowed limits for hazardous substances and heavy metals content	Price: 40% Technical merit: 30% Environmental performance: 30%	Presence of European labels and logos certifying the conformity (eg. EU-ecolabel, Der Blaue Engel, FSC Recycled, UNI EN ISO 14021, EPD declaration)

In terms of uptake of research results, WATSUP employs many approaches/methods/codes already developed (see for example Cis3 and Cis4) under the research results obtained by SOILCONSWEB (LIFE08 ENV/IT/000408), SOILPRO (LIFE08 ENV/IT/00428) and ECOREMED (LIFE11 ENV/IT/00275) LIFE+ projects.

Uptake of high specific feature are also foreseen from the following project:

-GELSO Project - Gestione Locale per la SOstenibilità ambientale (ISPRA);
<http://www.sinanet.isprambiente.it/it/gelso>

-Life+ BIOCLC Project (LIFE12 ENV/IT/120); <http://www.bioclocproject.eu>; Climate Change ER - LOGO

-Life+ Climate Change E-R Project (LIFE12 ENV/IT/404);

-Life+ AgriClimateChange (LIFE09 ENV/ES/000441); <http://www.agriclimatechange.eu/>

-Life+ FACTOR20 (LIFE08/ENV/IT/000430); <http://www.factor20.it/>

- FP7 QUESSA;

http://cordis.europa.eu/search/index.cfm?fuseaction=proj.document&PJ_RCN=13191271;

Life+VOICE(LIFE06ENV/IT/000257);<http://crear.bluefactor.it/index.php?module=CMpro&func=listpages&subid=2&expsubid=2>

- Life+ SOIL4WINE Project (LIFE15/ENV/IT/000641);

http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=search.dspPage&n_proj_id=5780. The studied site includes some areas of the Trebbia basin.

- FIUMI Project; <http://hydroinformatics.polimi.it/?q=node/95>

- Milan rural Metropolis Project;

http://www.rurbance.eu/media/publication/Borasio_Prusicki_2014_-_Milan_Rural_Metropolis_-_Scienze_del_Territorio_-_ENG.pdf

- Life+ ReQpro Project (LIFE11 ENV/IT/000156);

http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=search.dspPage&n_proj_id=4196.

To ensure uptake of knowledge (see action E8) from the above project experiences, will be planned several Knowledge Transfer Meetings (1 to 2 days meetings for each project) involving the projects leaders. During the meetings they will be taken agreements for any subsequent exchange of information.

BEST PRACTICE / INNOVATION / DEMONSTRATION CHARACTER OF THE PROJECT**BEST PRACTICE:**

Since WATSUP resolves environmental problems at a rather large scale, most of the expected results will likely originate best practices. At the same time, WATSUP also has a demonstrative/innovative/pilot nature: in fact – according to our view - it provides the best solution to the complex problem of full WFD/RBMP implementation that has not been fully resolved so far.

More specifically, WATSUP has several "Best practice elements" inserted as expected results. We provide below a list of expected best practice elements ranked by directives:

Best practice i) 2000/60/EC - Water Framework Directive and 91/676/EEC - Nitrate Directive. Best management practices aiming to reduce the risk of nitrate pollution.

Best practice ii) 128/2009/EC-Pesticide Directive: Best management practices for each different and relevant land unit.

Best practice iii) Directive 86/276/EC- Soil protection and Sewage Sludge Directive: Best practice sewage application

Best practice iv) 2006/118/EC - Groundwater Directive: Adopting Best management practices to lower leaching of pollutants /Mapping groundwater protection

Best practice v) Reg. (EU) N. 1303/2013; 1782/03: System of conditionality (RDP,...): Best management practices combining agricultural production and environmental protection.

Best practice vi) COM 2006/231 - Soil Thematic Strategy Best management practices to lower soil threats.

Best practice vii) Reg.1698/05 1974/06 - Rural development/forestry regulation /Best management practices/ good maintenance/ recovery

All these best practices are appropriate, cost-effective and using state-of-the-art techniques, methods and approaches.

To make this issue clearer we provide an example of W.GCI operations for nitrates.

1. The first step for the user is the selection of the area of interest. This can be done in different ways: entering cadastral ID number, drawing the farm, etc.

2. Successively, the W.GCI loads the data of the selected area from its internal data-base (soil and climate data for the last 3 years) and it provides a cartographic representation (maps).

3. The third step is the choice of the agricultural crop and management characteristics. In this phase the user can choose alternative scenarios to evaluate the impact of user's variables choice on the nitrate pollution.

4. Models run in real time and after the elaboration time the following products are delivered:

- Probability of potential nitrate pollution risk
- Comparison between actual potential risk and future potential risk At this point the user can change the variable's value and investigate a new scenario.

For instance, in the case of animal sludge application, farmers can assess through the web the W-GCI system – which in real time will consider the type of soils, the daily climate of the past 3 years (up to the day before) and the land use (inserted by the farmer) – and it will deliver the information whether a given day is fine for sewage sludge application.

DEMONSTRATION:

The web based spatial decision support system (W-GCI), to be developed in the project, even retaining much innovation features, has an important demonstration character.

Demonstration elements of WATSUP include putting into practice, testing, evaluating and disseminating actions, methodologies or approaches that are new or unknown in the context of WFD and that can be applied elsewhere in similar circumstances;

The demonstration character is also ensured by its use in a full scale application in the 3 sub-basin summing a total area of about 5100 km² for the full implementation and in an area of 86.800 km² in scarcity data scenario. The demonstration character is reinforced by

a set of activities (training, workshops, Presentation of the W-GCI tools at Cis WG about program of measures (PoM meeting) described in CEP13,14 AND E actions.

PILOT (INNOVATION):

WATSUP also has some "Pilot elements": in fact, it applies the Geospatial Cyberinfrastructure approach over WFD, which has not been applied or tested before, or elsewhere, and that offers potential environmental advantages compared to current best practice.

DSS devoted to WFD have been developed in the past (Mulino, 2007) and in the USA a similar approach has been proposed for the National Water Information System (Goodal, 2008); however, these approaches are very much focused at the aggregated level (catchment) not enabling one to address local actions (e.g. where and how local changes in land use can ameliorate catchment water quality/quantity). As a consequence, these systems have not always impacted - as hoped - on operational reality.

In our case, the use of a Geospatial Cyberinfrastructure opens an entire arena of new opportunities towards WFD full implementation, while the scientific/technical/economic feasibility of the system will not be endangered. Here we recall that three of the groups involved in this proposal have already successfully delivered – through the LIFE+project SOILCONSWEB – a similar fully operational system operating on the web in the field of soil conservation.

EFFORTS FOR REDUCING THE PROJECT'S "CARBON FOOTPRINT"

Low "carbon footprint" is an intrinsic background objective at several stage of the project which is based on sustainable use of natural resources and best practices:

- management programs and wetland creation or restoration will increase the absorption of CO₂
- improvement in water quality entails a corresponding reduction in the energy consumed by water-treatment plants, thus significantly reducing the human carbon footprint at the catchment scale.
- saving water which is improperly used in agriculture can provide additional resources for hydropower production, thus contributing to convert the energy production sources from non-renewable (fossil fuels) to renewable (water).

The project will deliver riparian vegetation management programs and wetland creation or restoration in 3 sites of the river Po and Pellice creek and Olona river (Action Cep 12,13,14,15).

The IP will create an operational approach to vegetation that will be extended – in the long term) to all Po basin, this will multiply the effect of absorption of CO₂. The reforestation and forest management actions will respect the sustainable management criteria (use of native plants, use of natural fertilizers, limited use of fossil fuels in manufacturing ...). At the end of the project, on the base of the new planted areas created or improved, it will be estimated the potential impact (direct and indirect) of the project on CO₂ reduction in the Po Basin level.

In general terms, during the project, further efforts will be made to limit as much as possible CO₂ emissions resulting from carrying out the activities of the different project actions, such as reducing:

- movements of persons and products,
- energy consumption
- use of commonly used products like paper and waste

Moreover, good practices will be put into place, such as reducing movement to only when it is absolutely necessary, sharing and exchanging information, press releases and other news to keep partners updated via video-conferencing or e-mail, reducing to a minimum

the products to be used as publicity, being, instead, downloadable, also in pdf from the project's website.

More into details, during the lifetime of the project, meetings among partners and technical meetings will be carried out through video or phone conferences as much as possible, with huge savings on time, materials, travel cost and CO₂ emissions.

The project will adopt a sustainable mobility policy, the required long-distance travel will be made – when possible - focusing on the use of train rather than plane. A car will be limited to interventions in the area where localization and schedules do not allow the use of public transport and will be given to the use of hybrid cars and low CO₂ emissions.

Respecting the principles of dematerialization, all project outputs which are not linked to the dissemination activities will be released on USB keys, avoiding the use of paper and inks.

Conferences will be organized reducing at the minimum their carbon footprint: brochures, boards and other documents will be printed on ecological paper (i.e. recycled), and only in the strictly necessary number of copies. Conference and meeting buffets will be organized by limiting the disposable products and they will include local and organic food.

Everybody (partners and subcontractors) who is involved in the proposed project will be foster to take care of:

- reducing the use of paper, printing only what is necessary, photocopying documents double-sided and reducing the ink quantity through selecting the draft mode.
- reusing paper, collecting scrap paper and using the clean sides for draft printouts, internal correspondence and fax transmission sheets.

STAKEHOLDERS INVOLVED IN THE PROJECT

With RBMP made according to WFD it is obligatory to involve stakeholders throughout the construction, adoption and approval of the plans.

Therefore, the coordinator AdbPo has built a consolidated network of stakeholders that must be considered "permanent" and then this network will collaborate also to WATSUP.

The main stakeholders being:

- associations of national and regional farmers

Coldiretti

Confagricoltura

CIIA

- Association of water treatment and water treatment operators

- Utilitalia

National association reclamation bodies

National ANBI and regional offices

Moreover, AdB is:

- member of the cabin of all active River Contracts in the Po basin

And participates in the National Coordination Tables on River Contracts

- member of the water resource use observatory in the Po basin

Participate in the National Observatory

- component of the table for assistance to the MIPPAF Management Authority for EAFRD funds for irrigation investments (PSR Nazionale)

In more detail, all stakeholders will collaborate to the success of the project interacting actively to set actions A, Cas, Cep, D, E.

They will produce an important input to the project experiencing the use of the W-GCI system for their own need and providing feedbacks that can be of great validity in the implementation of the system. Stakeholder are also assumed to help in the verification stages and in indicating problems and inconveniences during the practical use of the system.

- Municipalities and Provinces: These actors still have responsibility in terms of control of the environmental quality at the local level. They actually implement some of the water management policies, e.g. in controlling and admitting water rights (Provinces). Municipalities are sometimes aggregated in cluster, according to a recent legislative innovation in Italy. Provinces, along with municipalities and other stakeholder, are associated in some River Contracts. Both aggregation can provide informed reactions to the use of the W-GCI system and can organize and suggest information initiative towards the public.

River Contract of Trebbia: It has the active participation of over 20 institutions and associations. This River Agreement is an instrument for the implementation of the European Parliament and Council Directive of 23 October 2000 and the River Po River Basin Management Plan approved by resolution CI.1 / 2010.

The Olona-Bozzente-Lura River Agreement is the first agreement signed in the Lombardy Region on July 22, 2004, in the form of a Territorial Development Framework Agreement.

An intense work on the local community's involvement has allowed over the years to carry out about 100 projects. : It has the active participation of over 15 institutions/associations.

CAP holding is in charge of drinkable water management of all municipalities in the province of Milano, and most of municipalities in province of Monza, Brianza, Pavia, Varese, Como.

LEGAMBIENTE is a very important environmental association strongly committed towards water and landscape. This association is already involved in river contracts.

- "Unioni Montane". They are old associations of Municipalities in the mountain areas, which provide public services. Normally these services are not related to water, but the "Unioni Montane" has the potential to endorse the practical use of the W-GCI in the mountain territory even outside the test area.

- B.I.M. Bacini Imbriferi Montani are associations of Municipalities at the level of sub-basin which basically manage resources deriving from hydropower. Having in charge the management of financial resources dedicated to programs of amelioration of the functionality of mountain sub-basins in regard to erosion of slopes and flood control. This use of WATSUP is expected in terms of a more effective use of the available resources.

- Natural Park Monviso Authority, Protected areas of the Po and Collina Torinese Authority, Natural Park of the Po and Orba Authority. Po River is a regional natural park ruled by three Authority. They are responsible for Natura network 2000 local sites. The former two areas fall into the UNESCO World Heritage List, and will carefully consider to present their participation to the stakeholder list to the UNESCO panel. Their function within WATSUP is mainly intended for supervision of a correct selection of the control that the project achieves on the natural and living environment within the areas under their control

- Ambito Territoriale Ottimale (A.T.O.) n. 3 "Torinese" e n. 4 "Cuneese": Body dealing with adjustment and programming of integrated water services at the supra-municipality level. These institutions are in charge of supervising projects for improvement of the water quality treatment on a wide scale (the Province areas), in that the projects must fulfil a series of long-term objectives. As far as the planning and management of urban stormwater and functionality of sewage treatment plants is concerned, these bodies will take advantage of the capability of the W-GCI system to demonstrate the improvement of water quality parameter consequent to improved urban pollution management.

- Agenzia Interregionale per il Po (A.I.PO) is an interregional agency in charge of the implementation of Dir 2007/60/CE objectives along the main reaches of the PO river. The agency is particularly involved in the hydraulic control of floods in levees-controlled river reaches, and –in that- is in the forefront of the assessment of measures directed to provide more space to the river.

- Farmers associations (Confagricoltura; Coldiretti, CIA): Association of farmers. It is understandable how important is the involvement of these associations in many concrete actions (Cep, Cas), as they will provide the necessary interface with farmers that is required to carry the WATSUP message to the vast public of actors of the agricultural policies. Associations will be involved in particular in the actions of demonstration and dissemination, and are expected to provide important focus on the farmers attitudes and sensitivities.

- Environmental associations of citizens: No-profit national Environmental Association - Interface with public opinion useful for environmental awareness and wildlife conservation. These associations will be involved in the actions of demonstration and dissemination, with the aim of providing viewpoints of the citizens not directly involved in the implementation of policies but providing opinion to the improvement of the quality of the environment.

- Irrigation Unions (Consorti Irrigui): Responsible for irrigation canals management. These are associations of farmers with operative functions, which will be involved in some implementation steps as they can provide technical information about the actual management of irrigation, relevance of water scarcity periods in the declining of production and, therefore, helping the project to connect the water cycle reproduction to the actual possibility of using available water. The common interest in the project is in vehiculating to farmers the notion of technical improvement that they can reach in water management in agreement with the detailed information gained from the W-GCI.

- Touring Club Italia will collaborate for interacting with landscape management, as the Club has a long history and reputation in the understanding of the impact of man-induced changes on the Italian Landscape. They are also intended to help disseminating, on the editorial channels they owe, the increase of awareness that the citizen will reach on the evolution of the landscape with tools like WATSUP.

- Joint Research Centre (ISPRA) will also participate, having expressed informal interest to evaluate WATSUP replicability in other European regions. JRC is the center of control of all the european-wide databases and is particularly keen to see to which extent the WATSUP project can impact different areas of Europe, as this is one of their mission in many areas related to the implementation of European Directives. JRC partnership is

therefore crucial for a technical interaction in all the actions related to envisaging the detail of information available in other european areas both in terms of climate and of land properties, as they create and manage soil property maps covering all Europe.

The strong capacity building elements of WATSUP in the interaction with stakeholders will allow an efficient and well-co-ordinated implementation of WATSUP and then RBMP.

This will be guaranteed by a significant early-stage investment toward the creation of capacity building (F2 and E4 actions) inside a large project community including project stakeholders and a project community external to WATSUP.

This large community will have a specific role in the development and testing phases of the W-GCI.

EXPECTED CONSTRAINTS AND RISKS RELATED TO THE PROJECT IMPLEMENTATION AND MITIGATION STRATEGY

IP itself

Background:

It is well known that one of the major problem implementing practical action is the required relevant authorizations along with many practical difficulties related to local socio-economic settings. In order to overcome these difficulties we have chosen to apply WATSUP in implementing sites where there is already a strong collaborating and diffuse network: namely in areas where important consolidated river contracts are already active and where their Action Programs have been already approved. In the case of Olona, the river contract has the formal value of being part of the Regional Program Agreement of Lombardia Region.

All above will enable to identify actions widely shared on local and regional scale and that – in some cases - have already been assessed in terms of technical feasibility and administrative.

MAJOR ADMINISTRATIVE CONSTRAINS

Public Regional bodies and AdBPo have major difficulties in both spending funds and producing suitable tenders for specialised monitoring activities. Then considering WATSUP partnership and the evidence that administration from research bodies have more flexible rules it was decided to ask to research bodies CNR and CRISP to charge their budget to contribute to partially overcome this problem.

MAJOR GENERAL CONSTRAINS

The major constraints and risks related to the IP are listed hereinafter:

1. Timing of the project could be not totally aligned to planning time since the WATSUP system could be fully available only after the 2021 RBMP update has been set. This constrain can be solved considering that the Common Implementation Strategy (CIS) has already started the discussion on WFD adaptation, scheduled for 2019. First available reports clarifies that it is expected only WFD amendment (no WFD modification) that will not question "quality objectives" theme laid down by WFD-Article 4. Then WATSUP will take into account – timely and thanks to its modularity and flexibility - any indications that may be produced by CIS so that it can also be used to support RBMP after the third planning cycle which will end in 2027. Moreover, WATSUP will deliver sequential operational version of the system already at year 1 and 3 from start of the project. This will further ensure WATSUP-CIS alignments.

2. In Italy the "institutional fragmentation" is a critical aspect of WFD Governance and it is well known by the European Commission (e.g. EU PILOT 6011/14/ENVI). This can create problems in practical implementation of some concrete actions (e.g. nitrate pollution is a typical conflicting issue between agricultural and environmental bodies). We shall mitigate this problem since i) our LIFE IP project has at its core (W-GCI) an integrated and coordinated approach to the Po RBMP implementation, and ii) a board with ministry will be setup in order to better coordinate and overcome conflicting issues.

3. Critical aspects concerning the administrative project management could emerge from the difficulty of integrating the Regional strategies with the activities of the local authorities. The problem is related to the time required by municipalities and local authorities to implement the measures of the project within local strategic plans. These issues will be monitored and adequately managed by (i) directly involving municipalities and local authorities as stakeholders of the project, (ii) performing an efficient transfer of knowledge, and (iii) developing the dashboard of the WATSUP system as easily usable by a wide range of users.

4. The ample depth and breadth of topics treated within the project demand to question the technical, economic and scientific feasibility of the project. However the project

structure is not endangered because i) Regione Piemonte, Regione Lombardia and Regione Emilia Romagna and Po River District Authority will exploit their long-lasting experience in planning activities and coordinating actions, with specific reference to water-related activities; ii) three of the partners involved in this proposal have already successfully delivered – through the LIFE+ project SOILCONSWEB – a similar fully operational system operating in the field of soil conservation; iii) an international technical and scientific reputation for the most critical aspects of hydrology (i.e. climate, pollutants, watershed hydrology, etc.), agriculture and forestry, soil and geology, economy, S-DSS, computing and web-interfaces is secured by the project partnership; iv) Acteon for its large experience in communication on WFD; v) Ministry of Environment for its competence in transferability actions;

5. To prevent influences on land market and subsequent disputes, attention will be given to show the results in terms of their “potentialities” (e.g. area vulnerable, advantages of land use change, etc.), also indicating uncertainty of the model outcomes. A participatory approach toward the implementation of the executive measures will always be pursued.

6. Specific constraints may derive from the use and publication of environmental data. In this respect the data layers that will be used will not contain information subject to the Italian existing legislation (D.Lgs n. 196 - 30.06.2003 and successive modifications) as they will refer only to data regularly issued by the local authorities directly involved in their collection.

7. The capacity of the project to produce positive results will be tested through the continuous- time monitoring through indicators (D actions). In some cases, the response of the environment to the measures/actions can be rather slow, hindering the possibility to effectively monitor the improvements. We will thus pay specific attention to select fast-response indicators (smart monitoring, Action D2), which can give early indications on the environmental status of a river basin. Furthermore, the long time span of the project (9 years) will help to better connect monitoring activities with improvements of measures.

8. New risks represented by EIA/SEA assessments over new measures (not yet foreseen but which may have to be implemented to ameliorate RBMP) can be strongly mitigated by the fact that W-GCI has specific tools to support EIA/SEA assessments (expected result: w).

Complementary actions

Major risks reside in the intrinsic uncertainty related to fund strategic assignment. Despite a preliminary allocation of resources has been planned and will be implemented on congruent topics and areas, it is hard to predict if the end-users will successfully apply to these measures. A user support desk will be created to deliver targeted information and to support project stakeholders during the application phases to the complementary fund calls. Moreover, risk can be strongly mitigated by the involvement of the Regional Environmental Authorities

**CONTINUATION / VALORISATION AND LONG TERM SUSTAINIBILITY
AFTER THE END OF THE PROJECT**

- How will you ensure the long term implementation of the plan and beyond?

WATSUP has an embedded long term value due to its approach, with particular reference to the following issues:

- The system adopts best cost(data)/effective modelling approaches, low-cost massive processing, internet accessibility, and open source WEB-GIS codes.
- The maintenance and integration of the project outcomes - after the implementation of the IP - will be guaranteed by the large use of open source WEB-GIS facilities. In fact new models and new needs can be rather easily implemented.
- The long term implementation will also be ensured by the expected large community of W-GCI users which will make the system operational for many different topics related to WFD but also including environmental awareness.

The Cyclical nature of water planning, through the RBMP required by WFD ensures a periodic update of state and pressure analysis, as well as the programs of measures, both at the level of the Po Basin and at the level of sub-basins. In the third and fourth phases of WATSUP it is expected that competent authorities use the W-GCI system developed phases 1 and 2 in order to set the second planning cycle of RBMP and the milestones are tuned according to the timing preparation and adoption of the same.

We plan that the method made available by WATSUP, which will be used for the third planning cycle during the duration of the project and for testing the efficiency of new measures.

The existing River Contracts of Olona, Trebbia, Pellice River and Alto Po River will ensure by their Action Plans the implementation of further concrete actions performed by the W-GCI system; probably, through the E Actions it will be possible to enlarge the territories included in the river Contracts and to give birth to new River Contracts in the sub Basins interested.

- Which actions will have to be carried out or continued after the end of the project?

The maintenance of the W-GCI will be continued by AdbPo which is both WATSUP coordinator and the public body responsible for implementing the RBMP.

AdbPo also plans that– after the end of the project - will further expand the W-GCI capabilities.

More specifically, the following actions are foreseen to continue after the end of the project:

A.1 Tuning of the IP strategy (WFD last updates) + Analysis of the revised RBMP. This action will enable to continue to use the W-GCI system for the Po River District Authority institutional WFD duties along with those of Piemonte, Lombardia and Emilia Romagna Regions.

E.3 Using the W-GCI as a participatory planning tool

E.4 Technical dissemination and capacity building

E.5 Dissemination of project activities and results to the broader public

- How will this be achieved? What resources will be necessary to carry out these actions and how will those capacities be ensured?

This can be achieved through ordinary funds and resources (mainly human) and the specific work of the AdbPo and Piemonte, Lombardia, Emilia Romagna Regions. They include the following departments DG Environment and DG Agriculture. These sections have a sum of more than 900 employed and an annual budget of few M€

Follows some clarification concerning the ability of AdbPo and Piemonte, Lombardia, Emilia Romagna Regions DG Environment and DG Agriculture to carry out the technical maintenance of the W-GCI after the project.

In all 3 administrative regions DG Environment is implemented in particular through the Services of Water Protection and Integrated Water Services, Environmental Assessments (e.g. <http://www.regione.piemonte.it/governo/org/A16.htm>). These services aim to WFD implementation and all the related Directives, and during the project they will use the W-GCI tool as a regular working method. The LIFE IP Project has the specific action F2 which aims to train adequately the internal human resources to the utilisation of the W-GCI tool, that will remain a regular way of working after 2025 as well.

In the last years Piemonte, Lombardia, Emilia Romagna Regions with respect to their departments DG Environment (A16000) and "DG Agriculture (A17000) have strengthened their activities regarding (i) Water Framework Directive, (ii) rural development and preservation of the environment and education.

The hierarchical organisation of DG Agriculture of Piemonte, Lombardia, Emilia Romagna Regions A17000 (e.g. <http://www.regione.piemonte.it/governo/org/A17.htm>) consists of many specific sectors, in particular the most interested for the future utilisation of the system are: Planning, Implementation and Coordination of Rural Development; Livestock Production; Sustainable Agriculture and Irrigation Infrastructures.

Between the employed working in these services, there are website and computing experts (they some about 50 people) and professionals in the area of decision making supporting both WFD issues and farmers. At least 30 of these experts will participate to our training courses where they will have a strong "hands on" experience on our W-GCI tool. By the end of our project 10, 15 of these experts will be able to manage the W-GCI tool by themselves.

The specific competences include the followings: activity of agricultural information and advising; search and experimentation; agrarian statistics; studies and surveying; vigilance and phytosanitary control of the agrarian and forest cultivations and crops; genetic improvement of the zootechnical patrimony; valorisation of the agricultural production, experts in the Regional Plan of Advising to fertilization for agricultural company, Regional Plan of Integrated Phytopathology management, Regional Plan of Advising to the Irrigation.

- Will the staff recruited/trained during the project continue to work on the implementation of the plan?

The staff trained during WATSUP project (in action F2) will continue to be actively involved in the future implementation of the plan/strategy.

- How, where and by whom will the equipment acquired be used after the end of the project? (if relevant)

Server for databases and W-GCI development (CRISP, Cis1): it will remain in use after the end of the project. Some procedures, on request and with a formal agreement, will run on this server after the WATSUP end.

Server for the production stage of high performance computing (CNR, Cis6): it will remain in use after the end of the project. Some procedures, on request and with a formal agreement, will run on this server after the WATSUP end.

Workstations for the coordinator (AdbPo, A1). It will remain to the main actor responsible of the implementation of the RBMP.

2 server / workstations GIS for climatic data (AdbPo, Cis1 and Cis3) will remain to the main actor responsible of the monitoring of the effects of WATSUP on the river status.

3 agrometeorological stations (CNR, D1) will be given, following a formal request and agreement, to the Piemonte, Lombardia, Emilia Romagna Regions partner in order to enter in their meteorological monitoring system.

- To what extent will the results and lessons of the project be actively disseminated after the end of the project to those persons and/or organisations that could best make use of them (please identify these persons/organisations)?

Local stakeholders actively using the WS.DSS system, conference, open days, training course are the best guarantee for an active dissemination of the project results.

They shall include: Municipalities and Provinces, APA Holding, LEGAMBIENTE, River contracts community, Unioni Montane, B.I.M. Bacini Imbriferi Montani, Natural Regional Parks Po River Authorities, Ambito Territoriale Ottimale (A.T.O.) n. 3 Torinese e n. 4 Cuneese, Farmers associations (Confagricoltura; Coldiretti, CIA), Environmental associations of citizens (e.g. slowfood), Irrigation Unions (Consorti Irrigui), Touring Club Italia.

AS LAST FINAL POINT OF FORM B, WATSUP PARTNERS HAS ADDED HERE SOME CONCRETE ACTIVITIES ABOUT THE HOW THE GENDER ISSUE WILL BE HANDLED IN WATSUP (partnership and use of the platform)

In the WATSUP consortium, we have 3 female leaders of partners CREA, MATTM and Acteon. This mirrors the scarcity of leading female in leading position in Italian public bodies and also between EU scientists (She Figures 2015, EC). In order to foster gender balance in the research team, WATSUP intends to support junior female in the groups assigning – when it is possible by the specific rule of recruitment – a performance reserve in calls for the award of scholarships, research grant, etc. The objective is to assign a quote between 50 and 66% of such contracts to female. Moreover, WATSUP will meet gender balance in the decision-making bodies of the management structure. Finally, to promote the gender balance each time a user interacts with the WATSUP tool and get registered, the system will profile him in terms of sex and age, as well we interact with public in our dissemination and training, we record feed-back and reactions by sex and age, etc.