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Executive Summary

The present document is a deliverable of the ISS-EWATUS project, funded by the European Commission's Directorate-General for Communications Networks, Content & Technology (DG CONNECT), under its 7th EU Framework Programme for Research and Technological Development (FP7).

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1. Introduction

ISS-EWATUS is an innovative integrated decision support system (DSS) enabling efficient management of water resources. It consists of the following modules.

The household DSS promotes efficient water usage among residential consumers. The DSS allows users to view their household water consumption, broken down by the appliance, across the past 24 hours or on a daily, weekly or monthly basis. Users can set themselves a target for reducing their overall water consumption. The mobile application provides them with feedback on their progress towards this goal. The DSS component is a messaging function which provides personalised information on saving water around the home. In addition, tips are generated in response to the household recent, as well as predicted, water consumption. A water diary function is provided to encourage households to come together and identify water consumption associated with individual household members. An additional function uses information on the user's showering, laundry habits and household appliance efficiency to highlight where the consumer's water use practices do not align with their level of environmental concern. The graphical format of the DSS display has been designed to appeal to children as well as adults.

The second module of ISS-EWATUS is the urban DSS. The main function of it is to regulate and optimise water pressure in the water distribution network. It minimises leaks and optimises pumping efficiency. Additionally, the DSS provides a compact yet understandable manner in which proprietary hardware and software are able to communicate and also provides a common ground for analysing data through the spatio-temporal model, the shared data repository. Furthermore, the urban DSS provides innovative observation and monitoring functionalities. The dynamic nature of the system allows expert users to initiate and integrate specific management interventions. The DSS remains open and modular and allows the incorporation of new data and/or functionalities, making it flexible for future updates. It presents information in both conceptual and numerical manner, embodying the current understanding of the water sector. The DSS receives essential feedback that links the latest sensor observations with the next decision-making steps, building on the close collaboration between the DSS developers and decision-makers, in order to correctly capture their experience and decision-making process.

The social-media platform (SMP) is the third part of ISS-EWATUS. It is able to support the promotion of water efficiency in a holistic approach. This includes its impact at local, national and international levels across Europe and its target audiences of water stakeholders at different levels of individuals, households, water managers, researchers and policy makers. The SMP aims to ease the communication and creation of relationships between stakeholders and to produce a sustainable impact for the communities involved. Apart from supporting mainstream social networking activities such as sharing, communications, being friends, asking and answering, providing a forum for discussion, the SMP allows users to share water tips and photos under different environmental conditions, and the shared content can be pinned on a global map. Gamification enables the whole SMP to be used as a platform with gaming elements, which involve game tasks, competitions and rewards. The game tasks can be any user tasks on the social networks or any water use related offline activities such as recording water use activities. Each of these user tasks can be rewarded upon their accomplishment. Managers, NGO sponsors, and policy makers are able to design these user tasks and to award points or prizes to users.

The latest release of the SMP can be accessed on two platforms:

- Web: www.watersocial.org
- Mobile: https://play.google.com/store/apps/details?id=com.ega

The last module of ISS-EWATUS is the adaptive water pricing system developed to assess the implications of current and optimal water pricing policies. The adaptive pricing module is based on models for which the input is based on consumer behaviour data. It generates predictions of water consumption in terms of changing the water tariffs (pricing schemes) and compares them with a baseline scenario. The adaptive pricing module is aimed towards strategic level decision-makers to assess the impact of different pricing schemes. The dynamic pricing module is based on mathematical models that are able to distinguish consumer behaviour during normal seasons and tourist seasons. Based on the price demand elasticity, the model is able to predict future water consumption for different pricing schemes. This is relevant for computing other economic indicators that are needed to assess pricing schemes. The developed software also provides an optimisation module in which pricing schemes are evaluated and ranked according to two criteria: 1) the revenues generated from the new pricing scheme, 2) the savings in water consumption associated with the new pricing scheme. The module displays the characteristics of optimal pricing schemes supporting decision-makers in setting the tariffs.

The reduction of water and energy usage and the reduction of seasonal peaks of water and energy distribution loads are the overall quantitative measures that have been used for the validation and evaluation of the entire common impact of the above-described solutions. The same measures can be also used separately to evaluate every single outcome of the project (see Table 1 below).
Thanks to the ISS-EWATUS installations at urban and household levels, the cumulative water and energy savings over the specified, longer period of time such as months or years have been relatively easily measured. The evaluation of the reduction of peaks in water and energy distribution loads had to be performed by more sophisticated analyses which are presented in the Deliverable 7.2 - Report of the validation and evaluation.

In Deliverable 7.2, the selected KPIs are representative of all main aspects of the objectives related to the saved water (both due to leakage and the reduction of consumption due to pressure reduction), the saved energy, the saved money for the utilities and the resilience of the network.

Table 1: Evaluation of the expected impacts.

ISS-EWATUS System	IMPACTS/OBJECTIVES	Methods of measurement (KPIs)
Decision support system for the efficient water usage at households (WP3)	**H1** – the increase of the awareness of water consumption	**KPI_H1_WP3_1** 1. Change score: awareness of own household consumption. 2. Change score: awareness of the environmental impact associated with water consumption.
	H2 – the reduction of water consumption	**KPI_H2_WP3_1** Data of water consumption were gathered and summarized for each household before and after our intervention strategies were implemented. The difference shows the DSS efficiency .
	H3 – the inducement and the reinforcement of water saving behaviour of consumers	**KPI_H3_WP3_1** Change score: water saving behaviour and attitude.
		KPI_H3_WP3_2 The overall water use reduction for water diary users
	U2 - the reduction of peaks in water and energy distribution	**KPI_U2_WP3_1** The reduction of water consumption at households. Aggregation of KPI_H2_WP3_1 See: KPI_H2_WP3_1 See: KPI_H2_WP3_1
Decision support system for efficient water management at the municipal water company (WP4)	**H2** – the reduction of water consumption	**KPI_H2_WP4_1** An estimate of the difference in water consumption, depending on the applied water pressure.
	U1 – the reduction of leakages at municipal level	**KPI_U1_WP4_1** Decrease in leaks. Leakage in the water distribution system has been calculated for two cases: for the case when pressure optimisation was not applied (the initial status – baseline scenario) and for the case of using the pressure optimisation feature of the DSS at the urban level for both demonstration sites. The difference in leakages resulting from water pressure distribution before and after the application of the DSS was used as the main indicator of leakage reduction.
		KPI_U1_WP4_2 Decrease of leaks per network length. Leakage calculated as the indicator KPI_U1_WP4_1 was used to identify the network sections most prone to leaks.
		KPI_U1_WP4_3 Economic impacts resulting from reduction of leaks—i.e. the decrease in Non-Revenue Water. Savings have been estimated by the water utility as a percentage of water saved.

	U2 - the reduction of peaks in water and energy distribution	**KPI_U2_WP4_1** Reduction of pressure at night. Pressure in the WDS at night will be calculated for the optimised PRV operation and compared to the pressure observed without the application of the DSS.
		KPI_U2_WP4_2 Reduction of pressure fluctuations in the critical points. Pressure in critical points will be calculated for the optimised PRV operation and compared to the observed pressure in 2015 when the DSS was not applied.
		KPI_U2_WP4_3 Energy savings(how much) by the scheduling (quantity and timing) of pumping. For the demonstration site in Skiathos (Greece), the amount of water pumped to the WSD without the application of the DSS will be compared with the amount of water which includes the decrease in leaks resulting from pressure optimisation.
		KPI_U2_WP4_4 Number of land zones where the pre-set maximum pressure is exceeded. Detection of vulnerable spots in the WDS.
Social-media platform: enabling and promoting water-saving behaviour (WP5)	**H1** – the increase of the awareness of water consumption	**KPI_H1_WP5_1** Total topics created within a period of time.
		KPI_H1_WP5_2 Total replies to topics within a period of time.
		KPI_H1_WP5_3 Total number of water body photos and water-related tips or information shared within a period of time.
		KPI_H1_WP5_4 Total number of tweets disseminated on the watersocial.org website and produced by Twitter users within a period of time.
	H2 – the reduction of water consumption	**KPI_H2_WP5_1** Total new friendships made by members within a period of time.
		KPI_H2_WP5_2 Total new users within a period of time
		KPI_H2_WP5_3 Total number of likes on topics, questions, replies and answers.
	U2 - the reduction of peaks in water and energy distribution	**KPI_U2_WP5_1** Number of posts (both published and planned) involving the social media platform.

Development and simulation of adaptive water price systems (WP6)	**H1** – the increase of the awareness of water consumption	**KPI_H1_WP6_1** Pricing scheme and water consumption. Total number of "likes" for this idea on social-media platform.
	H2 – the reduction of water consumption	**KPI_H2_WP6_1** Pricing scheme and water consumption. Data on water consumption with corresponding pricing schemes is presented
	H3 – the inducement and the reinforcement of water saving behaviour of consumers	**KPI_H3_WP6_1** Pricing scheme and water consumption Number of tariff changes implemented by the water operator
	U1 – leakage reduction at municipal level	**KPI_U1_WP6_**1 Simulation of additional incomes caused by different pricing schemes as a source for improving pipeline maintenance.

2 Impacts listed in the "Objective ICT-2013.6.3 - ICT for water resources management"

The activities undertaken by ISS-EWATUS complement each other and provide a valuable outcome for different groups of ISS-EWATUS users: households, managers of city water companies, software engineers, environmental engineers, local and national policy makers, organisations that support the rational use of water in Europe and scientists in both ICT and the water domain. Several impact-driven actions were conducted during the whole project life cycle at each phase of the ISS-EWATUS realisation.

2.1 Impact 1: Increased user awareness and modified behaviour concerning the use of water

Important elements of ISS-EWATUS for ensuring the increase of water consumption awareness are the decision support system for the efficient water usage at households and the social-media platform.

The decision support system for the efficient water usage at households was implemented within WP3. At the very beginning, sensors were attached to water appliances (such as kitchen taps and washing machines) in 40 homes in two places, in Sosnowiec (Poland) and Skiathos (Greece). The installed home Wi-Fi system sends data collected by these sensors to a remote server which records the water flow rate and water temperature associated with each appliance [1]. Each family was equipped with a tablet having the pre-installed DSS application. This application provided access to the feedback on the household water use. Furthermore, other mobile devices or computers already possessed by users could be used. The application allowed users to observe their household water consumption in the shape of different reports and charts. Along with the engineering part, the social studies measuring the impact and behavioural changes of users were conducted [4, 5]. In this paper, two DSS components related to provoking a change of water consumer behaviour are presented: tips service and water diary. The tips service and water diary are the embedded modules of the DSS and are intended to be used on mobile devices. As in the case of watersocial.org, the validation has confirmed that the DSS at household level has increased household members' awareness and changed their behaviour towards water consumption. It should be emphasized that during the meetings with representatives of municipal water companies, the system of adaptation of water prices met with great interest and positive reception.

In recent years, social networks have become one of the major media to create social groups and communities. The users of these groups are individuals who often share the same interests. WaterSocial.org is an advanced gamified social media platform specially designed for promoting efficient water use. This platform is unique in its vision to harness gamification and social media to reinforce water saving behaviours. The platform is based on the activities for users, their interactions with other users and an overall gamification layer, which rewards them in their activities and interactions. Members can monitor their progress within the WaterSocial community through the leader board. The values of KPI received during the validation phase have been very impressive and considerable. They are given in the Deliverable 7.2 and indicate that people join the water user society and are open to exchange their experiences, ideas and good practices in more effective water consumption.

Additionally, Impact 1 has been ensured by many public presentations of the ISS-EWATUS outcomes. Details are given in the dissemination reports D8.2, 8.3, 8.4 and on the project website issewatus.eu.

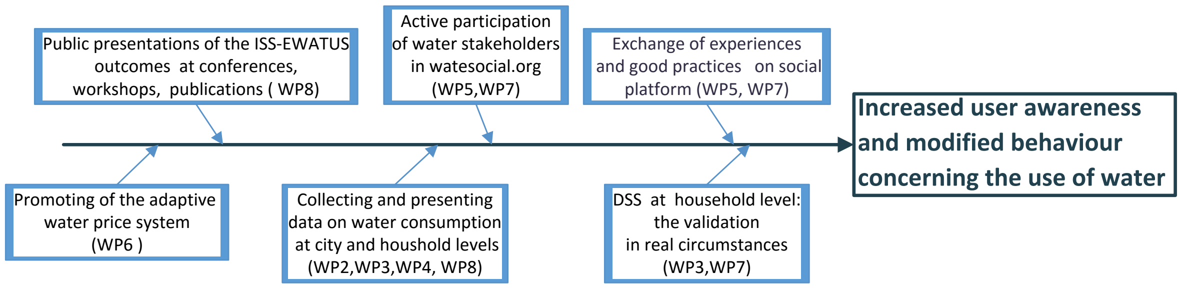

Figure 1: Increased user awareness and modified behaviour concerning water use

2.2 Impact 2: Quantifiable and significant reduction of water consumption

The reduction of water consumption has been obtained by numerous actions implemented by ISS-EWATUS.:

1. Leakage reduction for the optimized pressure regulation operation of the water distribution system.
2. Reduction of «vulnerable spots».
3. Reduction of pressure at nights.
4. Decrease of pressure fluctuations in trimesters.
5. Saved water in households thanks to the awareness of water consumption.
6. Reduction of water consumption by the day-to-day usage of the water diary.

The details on the achieved reduction of water consumption are provided in the deliverable D7.2 Report on validation and evaluation.

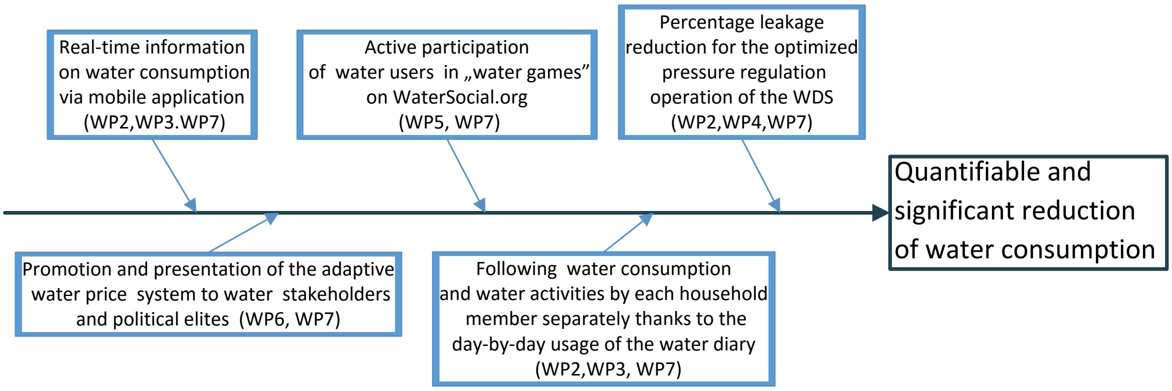

Figure 2: Quantifiable and significant reduction of water consumption

2.3 Impact 3: Peak period reduction of water and energy distribution loads

The ISS-EWATUS solution acknowledges the thorough link between water consumption and energy consumption as far as the needs of satisfying urban water demand are concerned. It is well known that through the Water Distribution Networks, parallel to water, there is a flow of energy which is consumed for pumping, transferring and treating the water. Thus, reduction of water consumption would result in reducing energy consumption as well. ISS-EWATUS aims at reducing water consumption through an integrated approach. It integrates different modules which realize Decision Support to pressure control management of the WDN, to revenue management through adaptive pricing, and to building customer awareness. The three modules, among other ISS-EWATUS subroutines, can reduce significantly water and energy loads confronting the main causes of waste.

The pressure control management ISS-EWATUS module integrates detailed monitoring of the network variables (pressure and flow) with use of wireless sensors, a spatio-temporal water demand forecasting algorithm, a disaggregation algorithm which interpolates the critical variables throughout time and space, a spatio-temporal leakage algorithm, and a pressure control management algorithm which is translated into PRV settings. The pressure control management module provides for avoiding an excess of pressure in the WDN, by implementing the match of offer and demand. Pressure reduction reduces water consumption in multiple ways. Firstly, it reduces background losses, burst leakages and the possibility of additional bursts. Secondly, it reduces the pressure-driven household water demand, which means the water consumed because of high pressure at the household faucet. Both reductions have been quantified with use of proper KPIs and are proven to be quite significant.

The building awareness module of ISS-EWATUS is implemented through different approaches. The development of a water-thematic social media platform aims at empowering users' knowledge and sensitivity about the importance of saving water and the ways to achieve that. Another approach aims at dealing with water consumers in an individualized manner. Flow sensors monitoring household water consumption inform consumers about their consuming behaviour. This way, consumers can distinguish and amend any personal behavioral patterns that lead to waste of water. The awareness module is aiming at reducing the water consumption of users.

The adaptive pricing module studies the reduction of water consumption using adaptive pricing. It provides economic incentives for customers to be involved in their water usage. Moreover, adaptive pricing also increases the value of personalized use of information so that customers are not only involved but also educated. The module implements mathematical algorithms and simulations to project the expected water reduction and its associated revenues for a given population for different scenarios that are made up of complex pricing policies. This allows policy makers to target for a desired water reduction and a desired increase in revenues to be reinvested in the WDN.

The promised reduction of such an integrated approach can be quite critical, especially through peak periods. The example of Skiathos case study is a representative example of how important water demand reduction can be in peak periods, keeping in mind that the island suffers from severe water scarcity during its tourist season. Additionally, in the same case study, the aquifer is severely degraded due to over-pumping, causing in turn the qualitative degradation of water due to sea intrusion. It can be understood that water demand reduction can have an impact on water quality as well.

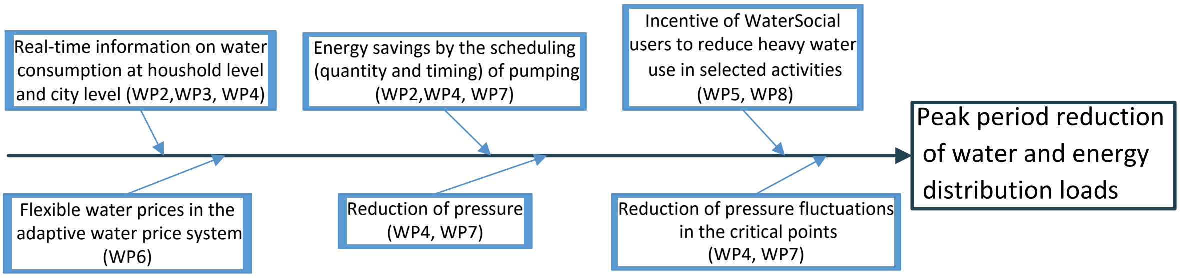

Figure 3: Peak-period reduction of water and energy distribution loads

2.4 Impact 4: Improved resource efficiency and business operations of water utilities due to ICT

The reliability and robustness of the technologies are crucial to the success of many business operations. The data gathered by the ISS-EWATUS project facilitates the construction of credible models to control and predict water consumption at urban and household levels. It ensures more effective management of urban water supply networks and domestic water installations. Additionally, the spatial-temporal data can be used for the business intelligence tools. It gives managers the possibility of using intelligent dashboards for water resource management.

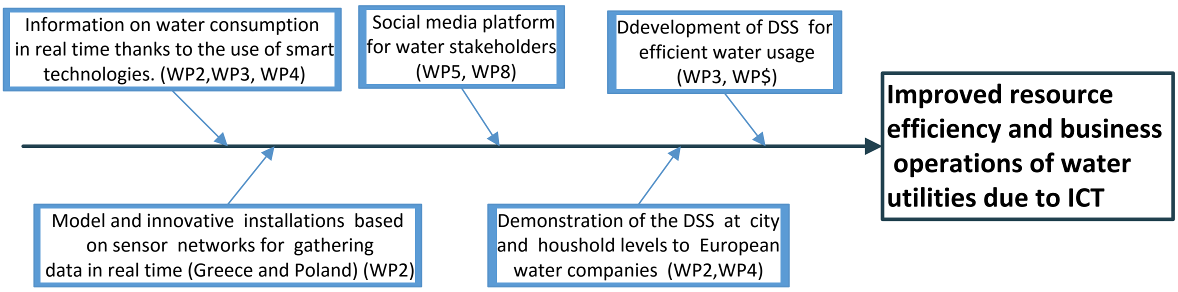

Figure 4: Improved resource efficiency and business operations of water utilities due to ICT

2.5 Impact 5: Increased rate of ICT innovation in water management companies

Two institutions, the members of the ISS-EWATUS consortium, are water companies located in Poland and Greece, countries with diverse geographic, climatic, economic and social circumstances. The solutions proposed by ISS-EWATUS meet expectations and requirements for a wide variety of EU regions. Implemented innovative solutions of the ISS-EWATUS project were presented during several meetings including two final events. There were dozens of participants being representatives of water municipal companies (see Table 2). They expressed interest in potential implementations of the ISS-EWATUS outcomes.

Event	Total number of participants	Number of participants from water companies	Number of water companies
Final event. Skiathos, 1-2 September, 2016	100	28	12
Final event Katowice, 30-31 January, 2017	80	45	22
Seminar – Katowice, 16th of March 2017	22	18	4

Table 2. Participation of water companies in the presentations of the ISS-EWATUS outcomes

The results of the DSS validation at the urban level (the product dedicated to water municipal companies) have showed the innovation of the proposed solutions. It should be emphasised that the implementation of the DSS will cause a significant decrease in water demand and water leakages. Furthermore, the system of adaptive pricing policy is the first one which presents this issue in such a user-friendly way. We hope that municipal water companies will take advantage of the outcomes of the ISS-EWATUS project.

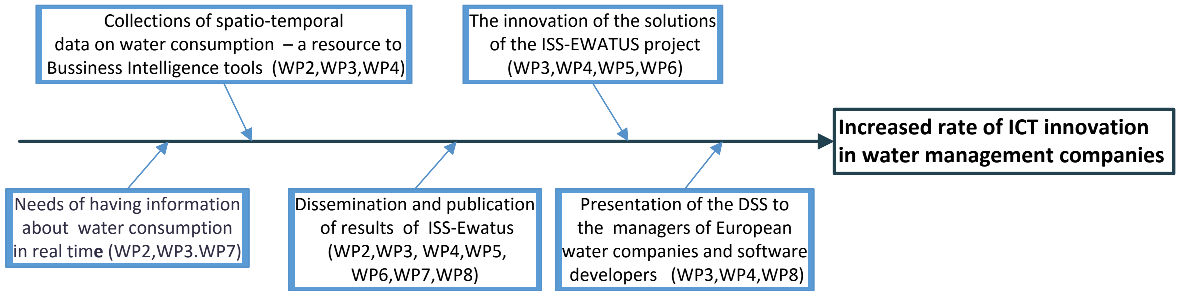

Figure 5: Increased rate of ICT innovation in water management companies

2.6 Impact 6: Number of publications jointly authored by researchers from ICT and the water domain

The project team includes specialists and researchers of water domain (IETU, CERTH, RPWIK, DEYASK) and computer science experts (US, LU, BU, VA, DOTSOFT). The cooperation of the ISS-EWATUS consortium members has resulted in a total of 36 research papers and 76 conference presentations. Ten of them are authored jointly by the researchers from ICT and the water domain. Here is the list of these publications.

[1] Kofinas, D., Mellios, N., Laspidou, C.: Spatial and temporal disaggregation of water demand and leakage of the water distribution network in Skiathos, Greece. In: Proceedings of the 2nd International Electronic Conference on Sensors and Applications. pp. 1--6 (2015)

[2] Kofinas, D., Mellios, N., Papageorgiou, E., Laspidou, C.: Urban water demand forecasting for the island of skiathos. Procedia Engineering 89, 1023 -- 1030 (2014)

[3] Kokkinos, K., Papageorgiou, E.I., Poczeta, K., Papadopoulos, L., Laspidou, C.: Soft Computing Approaches for Urban Water Demand Forecasting, pp. 357--367. Springer International Publishing (2016)

[4] Magiera, E., Froelich, W., Jach, T., Kurcius, ., Berbeka, K., Bhulai, S., Kokkinos, K., Papageorgiou, E., Laspidou, C., Yang, L., Perren, K., Yang, S.H., Capiluppi, A., S.El-Jamal, Wang, Z.: Iss-ewatus as an example of integrated system for efficient water management. In: Proceedings of the conference Computing and Control for Water Industry (CCWI), Amsterdam. pp. 1--10 (2016)

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[6] Nardo, A.D., Alcocer-Yamanaka, V.H., Altucci, C., Battaglia, R., Bernini, R., Bodini, S., Bortone, I., Bourguett-Ortiz, V.J., Cammissa, A., Capasso, S., Cascetta, F., Cocco, M., Dâ€™acunto, M., Ventura,

B.D., Martino, F.D., Mauro, A.D., Natale, M.D., Doveri, M., Mansouri, B.E., Funari, R., Gesuele, F., Greco, R., Iovino, P., Koenig, R., Korakis, T., Laspidou, C.S., Lupi, L., Maietta, M., Musmarra, D., Paleari, O., Santonastaso, G.F., Savic, D., Scozzari, A., Soldovieri, F., Smorra, F., Tuccinardi, F.P., Tzatchkov, V.G., Vamvakeridou-Lyroudia, L.S., Velotta, R., Venticinque, S., Vetrano, B.: New perspectives for smart water network monitoring, partitioning and protection with innovative on-line measuring sensors. In: E-proceedings of the 36th IAHR World Congress, 28 June â€" 3 July, 2015, The Hague, the Netherlands. pp. 1--10 (2015)

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[8] Ulańczyk, R., Pecka, T., Skotak, K., Samborska, K., Klis′, C., Suschka, J., Laspidou, C., Kokkinos, K., Froelich, W., Bragiel, T., A.Batóg, Selvik, J.R.: Systemy wspomagania dla gospodarki wodno-ściekowej w obliczu zmian klimatu i innych zmian w środowisku (in Polish). In: XIV Konferencja Gospodarka wodno-Ściekowa na terenach niezurbanizowanych, Kielce, Poland (2016)

[9] Ulańczyk, R., Pecka, T., Skotak, K., Samborska, K., Suschka, J., Laspidou, C., Kokkinos, K., Froelich, W., T, T.B., Batóg, A.: Systemy wspomagania dla gospodarki wodno-ściekowej (in Polish). Wodociagi i Kanalizacja 1(155), 30--33 (2017)

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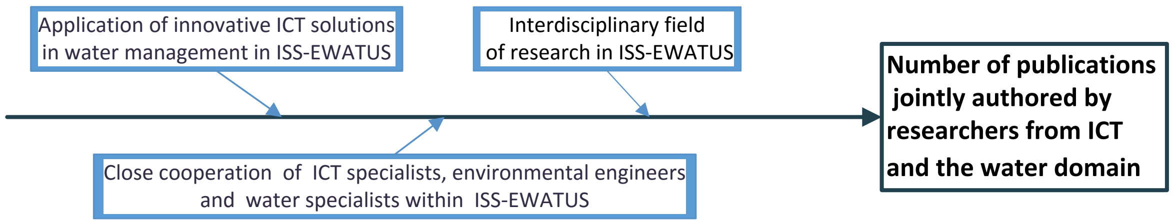

Figure 6: Number of publications jointly authored by researchers from ICT and the water domain

3 Other impacts of ISS-EWATUS

Numerous other impacts of the ISS-EWATUS project can be noted. They cover, e.g.: saved energy, lower number of pipe bursts, saved money.

The urban DSS significantly decreases water loses, peaks of pressure and, consequently, economic loses and the risk of failures in water distribution systems (e.g. pipe bursts). For the case study of Skiathos, it is estimated that pressure optimization decreases water and economic losses by 10-18 % depending on the season of the year (the largest savings in summer). The pressure fluctuations were estimated to be 11 % lower, reducing considerably the risk of pipe bursts in Skiathos, where the pressure distribution is very diversified across the city. In the case of the city of Sosnowiec, a decrease in leakage due to the DSS-based pressure optimization can exceed 20 % and is constant during a year. The results of the above-mentioned comparisons are described in details in the D7.2.

The KPIs allowed to assess the value of energy savings. Specifically, for the Skiathos case study, the saved tap water ranges from 0.19 to 1.02 m^3 per hour, the percentage leakage reduction ranges from 9.7 to 18.1 %, the leakage reduction in m^3/network ranges from 0.63 to 1.44, the reduction of vulnerable spots ranges from 63 to 72, the reduction of pressure at night ranges from 10.1 to 18.5 %, the decrease in pressure fluctuations ranges from 0 to 28%, the energy savings range from 5259 to 10300 kWh and the decrease in NRW ranges from 1210 to 1392 euros.

In the case of the DSS at household level, the validation shows that the reduction of water consumption can be reached at the level of 3-5%. The deliverable D7.2 contains a full description of the validation process and analysis of the obtained KPIs.

According to [3], reductions in water consumption may be highly variable, from 5 to almost 20 % in certain cases. More positive effects appear to be related to the intensity of campaigns or when awareness campaigns are implemented together with other measures such as pricing. A similar approach is presented in [2].

In our case, we achieved a reduction inwater consumption (up to 20%) in households if we combined different measures of the ISS-EWATUS solution, according to the KPIs report. Specifically:

a) reduction due to building awareness (household DSS)

b) reduction due to pressure reduction (pressure-driven demand reduction)

c) reduction due to pricing policy (elasticity curves)

Economic impact of ISS-EWATUS

The ISS-EWATUS project introduces a number of savings. The implemented, integrated DSS enables the following:

- Minimization of economic losses caused by water leakages in the water delivery system – this in turn improves the business operations of water utility companies through the implementation of ICT solutions.
- Optimisation and reduction of energy consumption in the management of water resources at municipal level.
- Improvement of the socio-economic balance between demand and resources by creating a stable and efficient demand/supply relation.
- Possibility for participant partners to develop or improve technological products for the water management and related markets, thus making them more competitive at EU level.
- Reduction of monthly water bills at household level due to the new information tools that allow families to know, control and reduce their household water consumption levels (savings depend on a combination of smart meters and high efficiency water appliances).
- The possibility of offering demand/supply pricing models tailored to both the end-users' and stakeholders' needs.

Technological impact of ISS-EWATUS

The ISS-EWATUS project provides improved resource efficiency of water utilities due to the use of ICT tools. The water management companies that are part of the consortium confirm this by offering a clear comparison of the situation before and after their implementation. On the one hand, they implemented technological ICT solutions into their operating network and improved the supply and water transport chain (detection, control and reduction of leakages throughout the piping system) and, on the other hand, they improved their business operations due to the avoidance of these losses.

Environmental impact of ISS-EWATUS

The implementation of a suitable and automated water management network and its integration as a DSS module enable a more rational response to water supply demands both at household and municipal levels.

There is a strong belief that the ISS-EWATUS optimized water usage allows more water resources to be available to supply more users and, at the same time, generates alternatives to natural resources (recovery of aquifers, waste water treatment and reuse, desalination) and develops more sustainable technologies in terms of energy consumption (given the constraint of available energy resources).

Impact on society

Thanks to the implemented website and the social platform of water stakeholders, a new area of sharing good practice and solutions in different European countries has been organised. The platform will be maintained after the project has ended, given the interest of all the stakeholders involved. It will be invaluable for keeping communication and progress up to date. In addition, the ISS-EWATUS website is linked to regional, national, and European water platforms and websites (for

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example Polish Platform of Eco innovations, Silesian Water Cluster, the European Water Platform, EUWI - the European Water Initiative, WISE - the Water Information System for Europe).

Transnational impact on the project partners

The main transnational impact of the project is the conclusion of the study in terms of transversal issues, particularly regulations aimed at compliance with the Water Framework Directive. Although there have been several EU initiatives to promote savings both in water and energy, the legislation remains a cornerstone in the implementation of technological solutions.

The project offered the possibility of scientific and technological relations with companies in other countries, supporting the development and the production of competitive products as well as access to the water management market.

The transnational impact of the project can be summarised with the following results:

- Development of new technologies to meet the current needs and gaining knowledge of the potential EU market of water management,
- Gaining knowledge on the adaptation of the DSS to specific water management problems in different scenarios,
- Gaining knowledge of EU policies in water management and their framework for the deployment of new technologies,
- Establishment of partnerships for the exploitation of the project results and opening new markets for intelligent added-value products.

Conclusions

On the basis of the performed validation and evaluation of the project outcomes, we claim that the impact of ISS-EWATUS is satisfactory. The objectives specified in the description of work have been reached. The evidence of this claim is provided in a quantitative way in the deliverable D7.2 Report on validation and evaluation.

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