



Sustainable Water Integrated Management and Horizon 2020 Support Mechanism

This Project is funded by the European Union

Concept Note

Regional activity ST- 2 Visit to different types of State-of-the-Art Sludge Management Systems

combined with

**P2P-2: Sludge Management, focusing on possibilities and conditions for
utilization/different applications**

Athens, 25-27 June 2018

SWIM and Horizon2020 Support Mechanism

with the support of the Athens Water Supply and Sewerage Company (EYDAP)



1 INTRODUCTION: THE SWIM-H2020 SM

The SWIM and H2020 SM is a Regional Technical Support Program, funded by the European Commission, Directorate General (DG) NEAR (Neighborhood and Enlargement Negotiations), that includes the following Partner Countries (PCs): Algeria, Egypt, Israel, Jordan, Lebanon, Libya, Morocco, Palestine, [Syria] and Tunisia. However, in order to ensure the coherence and effectiveness of Union financing or to foster regional co-operation, eligibility of specific actions will be extended to the Western Balkan countries (Albania, Bosnia Herzegovina and Montenegro), Turkey and Mauritania. The Program is funded by the European Neighborhood Instrument (ENI) South/Environment. It ensures the continuation of EU's regional support to ENP South countries in the fields of water management, marine pollution prevention and adds value to other important EU-funded regional programs in related fields, in particular the SWITCH-Med program, and the Clima South program, as well as to projects under the EU bilateral programming, where environment and water are identified as priority sectors for the EU co-operation. It complements and provides operational partnerships and links with the projects labelled by the Union for the Mediterranean, project preparation facilities in particular MESHIP phase II and with the next phase of the ENPI-SEIS project on environmental information systems, whereas its work plan will be coherent with, and supportive of, the Barcelona Convention and its Mediterranean Action Plan.

The overall objective of the Program is to contribute to reduced marine pollution and a more sustainable use of scarce water resources. The Technical Assistance services are grouped in 6 work packages: WP1. Expert facility, WP2. Peer-to-peer experience sharing and dialogue, WP3. Training activities, WP4. Communication and visibility, WP5. Capitalizing the lessons learnt, good practices and success stories and WP6. Support activities.

2 BACKGROUND

2.1 INTRODUCTION

The selection of the Project themes and activities was made according to the Work Programme of Horizon2020 (2015-2020), developed during phase I of the project Horizon 2020 CB/MEP, the ToRs for SWIM-H2020 SM issued by the European Commission and the views expressed by the countries and stakeholders during the fact finding missions (inception phase). The Project Workplan was approved at a first step by the EUDs and the Commission and endorsed at a second step during the Steering Committee meeting held in Brussels (27-28 September 2016). Any adaptations in the meantime were approved/confirmed at the second Steering Committee meeting held at the Dead Sea (31 January 2018).



A total of 15 (fifteen) regional on-site training activities and 6 (six) study tours with participants from most/all PCs were incorporated in the Project Work Plan.

This activity is implemented under the H2020 Component and the “Solid Waste Management” theme and clustered in the Project Work Plan under WP3: Training Activity, ST-2: Study Tour to visit state-of-the-art Sludge Management Systems. It is also combined with the Peer-to-Peer activity (P2P-2) on “Sludge Management, focusing on possibilities and conditions for utilization/different applications” under WP2.

This Study Tour on sludge management is intended to inform about the state of the art technology, organization and practices of handling sewage sludge from sewage treatment plants of major cities, with emphasis on recovery of energy by producing alternative fuels and/or recovery of nutrients.

The study tour will allow the participants to visit the sludge management units of the Metropolitan area of Athens, located on the Island of Psytallia, off the Piraeus shore, in Greece. The processes involved consist of thickening of primary and activated sludge, thermal hydrolysis of activated sludge, anaerobic digestion and dewatering of sludge. The trainees will also visit a pilot plant which has been developed for the separate treatment of the sludge reject water produced from the dewatering of digested sludge. It consists of a sequencing batch reactor (SBR) which removed nitrogen via nitrite and accumulated phosphorus in sludge. The trainees will also be able to see how the aforementioned units are integrated within the overall waste water treatment facilities.

Finally, the experience gained from another plant of the smaller city of Larissa (165.000 inhabitants), where the treated sludge is directed to agriculture, will be shared by the responsible engineers.

2.2 TARGET GROUP

The main target group includes 24-27 representatives of competent authorities and implementers who are involved in different aspects of sewage sludge management in the partner countries. Three representatives are targeted to be invited from each partner country as per the following types of participants:

- from the National Ministry responsible for sludge management.
- from a local or regional public authority, the association of cities or equivalent, responsible for on-site sanitation and management of sludge.
- sanitary engineers or other representative(s) from companies involved in sewage sludge management and/or civil society organisations working in the same field.

Three trainees from regional/sub-regional organisations working on the subject matter or relevant projects are also considered among the target group.

The background level of the participants is expected to be intermediate to high.



3 OBJECTIVES AND EXPECTED RESULTS

3.1 OBJECTIVES

The overall aim of the visit in the framework of the regional activities on Solid Waste Management is to bring together key stakeholders from the participating countries with selected experts and provide a high-level study visit focusing on sludge management from sewage treatment plants, which will include training/brief workshops, (pre-)exercises and discussions.

The specific objectives of the study visit are to:

- Introduce to the participants an integrated approach to the sustainable management of sewage sludge considering the EU standards and different types of best practices;
- Visit a fully operational state-of-the-art sludge management facility and a pilot facility applied for the management of sludge reject water which is often a problem in WWTPs;
- Provide the participants with a complete/comprehensive introduction of the sludge management systems as applied in Athens. It is noteworthy that the plant to be visited is the only one of its kind in the region, and one of the few worldwide (a similar one is in New York, USA) that produces alternative fuel from the sludge;
- Enable, encourage, and facilitate dialogue and exchange of experiences between public authorities and other key stakeholders from the partner countries with those from Greece (and the utilities/sanitation company);
- Enable presentation by the participants of the situation in their countries and promote sharing of experiences among the trainers on sludge management practices; facilitate exchanges and the development of synergies and complementary activities within the Mediterranean;
- Launch a peer-to-peer process for experience sharing at regional level and knowledge transfer (south-to-south, north-to-south) around sludge management.

3.2 APPROACH TO MEET OBJECTIVES

In order to achieve the study tour objectives, a highly dynamic, comprehensive, interactive, facilitated and participatory approach will be adopted, in delivering the following:

- Presentation of appropriate legislative frameworks dealing with innovative management of sludge from sewage treatment plants at EU and national level (the case of Athens/Greece).
- Presentation of recent developments and innovative approaches on sewage sludge management (various case studies and presentations by experts and PCs).
- Field visit to state-of-the-art sludge management and reject water treatment facilities.
- Interactive workshop session to discuss the SWIM-H2020 SM partner countries' main problems and issues faced, questions and technical and other problems encountered in order to identify common themes; launch of peer-to-peer process/focus and identify potential synergies.



3.3 EXPECTED OUTCOMES

- Key stakeholders of the partner countries are introduced: to the EU, Greek and other legislative frameworks related to sewage sludge management (focus on innovation aspects).
- Recent developments and innovative approaches on management of sludge from sewage treatment plants are entrenched, including technical specifications/standards to allow treated sludge to be used addressing any potential risks and dangers.
- A peer-to-peer process for experience sharing at the regional level and knowledge transfer (south-to-south, north-to-south) around sustainable management of sludge is launched, and priority themes/areas defined.
- A continuing regional dialogue on sludge management issues is initiated between decision makers, sanitary engineers and other experts, establishing the basis for the development of synergetic activities and regional cooperation.

3.4 LAUNCHING THE PEER-TO-PEER EXCHANGE

This Study Tour (ST-2) will launch a second activity, a Peer-to-Peer exchange (P2P-2) on Sludge Management, focusing on possibilities and conditions for utilization/different applications.

This Peer-to-Peer activity is an effective way to establish networks of peers of different stakeholders in the region, mobilise knowledge in the field of Solid Waste and learn from other parties' experiences and best practices in topics related to sludge management, enabling structured collaboration between countries/experts. It aims at building on the international and regional successful experience and address the challenges faced by Mediterranean countries and possibly scale up and replicate innovative solutions in this field. It offers virtual connections between participants within the region and will highlight the sludge management success stories of partner and/or EU countries.

A session of the Study Visit will be dedicated to the design, focus and modalities of the Peer-to-Peer activity. The SWIM-H2020 SM team will coordinate the start-up of the activities, and will support/monitor/follow-up till the end of 2018. The following tentative schedule is proposed:

Step 1: The Peers will be appointed by the countries prior to ST-2 and will be attending ST-2.

Step 2: During the study tour (ST-2) in Greece a brainstorming session will identify and agree on the focus and modalities of the Peer-to-Peer activity;

Step 3 (1-2 months): Prepare and circulate a short concept note on P2P-2 including a tentative schedule, methodology, expected outputs/achievements from the process, etc.

Step 4 (4 months): Implementation of P2P-2 over a 4-month period;

Step 5 (1 month): Final Report on P2P-2 (indicatively to be ready in January 2019).



4 LOCATION, TIME AND LOGISTICS

4.1 LOCATION

The training part of the Study visit will take place in the South part of Athens, while the plants that will be visited are on the small island of Psytallia, near Piraeus, Greece.

The sludge management from the sewage treatment plant of the Athens Metropolitan Area (~ 4 million inhabitants) was for many years a major environmental and socioeconomic problem. Now, the state-of-the-art sludge treatment plant operating in Psytallia, produces alternative fuel used in industries with excellent results. The participants of the study visit will be able to profit from the experience of the major waste water company of Greece, in dealing with sewage treatment and the produced sludge, the innovative pilot projects of reclaiming nutrients (phosphorus and nitrogen) and the process of producing pellets of alternative solid fuel for industries (cement factories, etc.).

4.2 IMPLEMENTATION DATES

The field visit will be organised over three consecutive days, with travels on the day before and after (5 days in total) **scheduled from 25 to 27 June 2018.**

4.3 LOGISTICS

SWIM-H2020 SM will arrange all logistics for the field visit including travel, local transportation, accommodation and catering. Interpretation of English/French will be available (partially whisper translation).



PROVISIONAL AGENDA

SWIM-H2020 SM Study Tour:

Visit to State-of-the-Art Sludge Management Systems

25-27 June 2018, Athens, Greece

DAY 1:			
Monday 25 June		Venue: Amarilia Hotel, 13 Agiou Nikolaou st., 16671 Vouliagmeni, Athens	
Time	Session	Work programme	Trainers/Speakers
9.30-10.00	Registration of participants		
10.00-11.00	Welcome speech	<ul style="list-style-type: none"> • Welcoming remarks • Brief overview of SWIM-H2020 Support Mechanism • Agenda overview • Tour de Table 	Prof. Michael Scoullou, Team Leader, SWIM-H2020 SM
11.00-11.30	H2020 SM Peer-to-Peer Launching	Peer-to-Peer exercise on Sludge Management, focusing on possibilities and conditions for utilization/different applications: identification of objectives, milestones and expected results	Facilitated discussion
11.30-11.45	<i>Coffee break</i>		
11.45-13.30	Sludge management	Common practices and advanced processes	Dr. Simos Malamis, Sludge Management Expert, SWIM-H2020 SM
13.00-14.00	<i>Lunch break</i>		
14.00-14.30	Sludge management	Open floor for discussion	All
14.30-15.00	Expanding cities	Management of the water and wastewater network of an expanding city through time: The case of Athens Discussion	Dr. Efthymios Lytras Deputy Director of Environment and R&D Dept., EYDAP (Athens Water and Sewerage Company)
15.00-15.15	Sludge management	Introduction to next day's visit & Discussion	Dr. Simos Malamis, Sludge Management Expert, SWIM-H2020 SM
15.15-15.45	Promoting innovative technologies	SMART-Plant Horizon 2020 project: Distinct SMARTechs, stakeholders, communication activities, exploitation of the results. Discussion	Dr. Stelios Samios Head of R&D Dept., EYDAP
15.45-16.00	<i>Coffee break</i>		
16.00-17.00	Exercise	Team work exercise	All



DAY 2:	
Tuesday June	26 Field visit to Psyttalia Wastewater Treatment Plant
Time	Session
7.30	Gathering at the Lobby of Amarilia Hotel
7.40	Departure from the hotel to Psyttalia Wastewater Treatment Plant
9.00	Arrival to Akrokeramos
9.00-10.00	Welcome by the Director Mr. Dimoulas (WWTP)
	Presentation of the Athens WWTP (EYDAP/ Psyttalia – Dr. Tzouvaras and/or Mr. Karagiannis)
10.00-10.30	Visit to the pre-treatment Unit of the WWTP
10.30-11.00	Coffee Break
11.00– 15.00	Visit to Psyttalia Island WWTP
	<i>Technical tour of the various facilities including the pilot systems for reclamation of nutrients from sludge (SMART-Plant) and of high rate WWT</i>
15.00-16.00	Lunch at the “Limanaki” restaurant
16.00-17.00	Return to the hotel

DAY 3:			
Wednesday 27 June	Venue: Amarilia Hotel		
Time	Session	Work programme	Trainers/Speakers
9.30-11.00	Country presentations	Each country briefly presents their challenges and experiences on sewage sludge management	All countries
11.00-11.30	<i>Coffee break</i>		
11.30-13.00	Case study	Low-cost sludge management with 100% use in agriculture	Ms. Elisavet Georgiadou, Director of DEYA Kommotini (Public Water and Sewerage Company of Komotini)
	Case study	Thermal Drying Plant for Sludge, Thessaloniki	Ms. Georgia Dinopoulou, CHRISTOPHER D. CONSTANTINIDIS S.A
	Case study	Solar Drying	Mr. Xristos Lioumis, CHEMITEC
13.00-14.00	<i>Lunch break</i>		
14.00-14.30	Exercise	Team work on the solution of the exercise	All
14.30-15.00	Closing of training	Closing reflections Evaluation and certificates award	