



Sustainable Integrated Wastewater Treatment & Reuse in the Mediterranean

SWIM-Sustain Water MED: Network of Demonstration Activities for Sustainable Integrated Wastewater Treatment and Reuse in the Mediterranean,
A Project Funded by the European Union and the German Federal Ministry for Economic Cooperation and Development (BMZ)

Report on:

“Regional Conference of Sustainable Integrated Wastewater Treatment & Reuse in the Mediterranean”

***1-2 December, 2014,
Savoy Hotel, Sharm El Sheikh, Egypt***

Organizers: SWIM-Sustain Water MED project jointly with the Holding Company for Water and Wastewater (HCWW) and the German International Cooperation (GIZ), Water and Wastewater Programme, Egypt.

Funded by: The SWIM-Sustain Water MED project is funded by the European Union (EU) and the German Federal Ministry for Economic Cooperation and Development (BMZ).

Conference Chairman: *Dr. Ismail Al Baz (GIZ, Jordan)*
Conference Coordinator: *Prof. Dr. Rifaat Abdel Wahaab (HCWW, Egypt)*

***Sharm El-Sheikh, Egypt
2014***



مشاركة
Eau Participation
استدامة المياه
Jordanien
Wasser Good Governance
Gestion Intégrée ماء
Zusammenarbeit
Decentralization
Stakeholder
Tunisie



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Abbreviation list

ACWUA	Arab Countries Water Utilities Association
ANCSEP	National Agency of Sanitary and Environmental Control Products
BMZ	German Federal Ministry for Economic Cooperation and Development
BAU	Balqa Applied University Jordan
CSR	Corporate Social Responsibility
Eawag	Swiss Federal Institute of Aquatic Science and Technology
EIA	Environmental Impact Assessment
EU	European Union
EWRA	Egyptian Water and Wastewater Regulatory Agency
GIZ	German International Cooperation
HCWW	Holding Company for Water and Wastewater
IME	Mediterranean Water Institute
IUCN	International Union for Conservation of Nature
IWRM	Integrated Water Resources Management
MED	Mediterranean
NGOs	Non-Governmental Organizations
NRC	National Research Center
NWRC	National Water Research Centre
PPP	Public-Private Partnership
SWIM	Sustainable Water Integrated Management Programme
TU	Technical University
ZECU	Zero Energy Compact Unit



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Regional Conference on:

“Sustainable Integrated Wastewater Treatment & Reuse in the Mediterranean”

1-2 December 2014, Sharm El Sheikh, Egypt

Subject: Documentation of the Presentations and Panel Discussions

Preface

The regional conference “**Sustainable Integrated Wastewater Treatment & Reuse in the Mediterranean**” is organized by SWIM-Sustain Water MED project jointly with the Holding Company for Water and Wastewater (HCWW) and German International Cooperation (GIZ), Water and Wastewater Programme. The SWIM-Sustain Water MED project (2012/2015) is funded by the European Union (EU) and the German Federal Ministry of Economic Cooperation and Development. The conference is hold in Sharm El-Sheikh, Egypt during the period from 1 to 2 December 2014. There were an active participation from about 150 participants representing 12 countries including the partner countries of the project (Jordan, Egypt, Tunisia and Morocco) and interested institutions such as universities, research centers,



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consultant offices, financial and grant agencies, NGOs and media (Germany, Italy, France, Netherland, Yemen, Switzerland). There were an active contribution from IME, Agro-Paris-Tech, Technical University (TU) Berlin, Chemonics Egypt Consultants, National Research Center (NRC), Swiss Federal Institute of Aquatic Science and Technology (Eawag), The Arab Countries Water Utilities Association (ACWUA) is a Non-Governmental & Non-profit association (NGO), Jordan University, Cairo University, Sana'a University, Balqa Applied University and IUCN Jordan, etc.

Conference Objectives

The southern Mediterranean region is experiencing increasing water shortages. This situation is exacerbated by climate change impacts as well as rising water demand resulting from growing populations and expanding economic sectors in the region's countries. The safe use of non-conventional water resources offer viable options for sustainable solutions.

The conference aims to further exchange, discuss and disseminate knowledge and experiences to find unconventional solutions to the problems of sanitation and re-use of treated effluent in the Southern Mediterranean countries water (Egypt, Jordan, Tunisia, Morocco). It also aims to promote



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best practices, successful case studies and innovative solutions for sustainable water management. The conference has provided platform that

brings together water professionals, policymakers, private institutions, industry leaders, experts, consultants, regulators, academics and practitioners from Arab and European countries.



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Conference Programme

The two-day conference has addressed the latest and most pertinent issues regarding non-conventional water resources. The detail conference agenda is shown below. The main themes of the conference are:

- Cooperation and exchange of water management in the Mediterranean Region
- Decentralized Sanitation Management
- Stakeholder Participation and Capacity Building
- Wastewater Treatment Technologies for Rural and Semi-Urban Areas
- Sustainable Integrated Management of Wastewater Reuse
- Impacts of Treated Wastewater Reuse on Sludge/Soil management and Aquifer Recharge

The first day of the conference has included an official opening ceremony, 3-keynote speeches, three scientific sessions and open discussion. The opening ceremony board (Conference chairman, Conference Coordinator, EU delegate, HCWW- Chairman, ACUWA Chairman and GIZ representatives) has given an overview about Conference theme and topics. They have welcomed the conference participants and highlighted the challenges faces the Arab countries south the Mediterranean; Water scarcity, overpopulation and increasing water demand and climatic changes. They have emphasized on the urgency for finding alternative unconventional water resources through wastewater treatment and reuse. They have raped up the Wastewater management within the integrated Water Resources Management (IWRM)



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approach. They have assured the continuity of their financial and logistic support to create an enabling environment for wastewater treatment and reuse in the south Mediterranean in terms of legislative, institutional, management and financial arrangements.

The keynote speakers have highlighted the necessities for further cooperation and exchange among the Mediterranean countries (North & South) to develop experience, transfer technologies and share values regarding water management in its broad meaning. They also gave an overview about decentralized wastewater treatment applications in Germany and steps towards leadership development in water utilities.

The participants have presented innovative ideas for sustainable integrated wastewater management with emphasize on case studies, decentralization, stakeholder participation and capacity building. Case studies have shown wide range of local conditions, technologies, approaches, management tools and lessons learned that can be transferred among South Mediterranean countries. The open discussion has emphasized on the decentralization of the management of sanitation projects in rural areas (decentralized authorities); decentralized treatment plants need centralized management; no one solution fits all. They have highlighted the necessities for establishing an enabling environment to activate programs for integrated



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management of wastewater treatment and reuse. Implementation of capacity building and skills development programs and preparation of leaders in the field of water and sanitation projects with emphasize on managing water utilities.



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The second day of the conference has included 3-keynote speeches, three scientific sessions, open discussion and closing & recommendations. The keynote speakers have presented the importance of water reuse to sustain integrated water resources management in Mediterranean countries. They presented the different options for Managing aquifer recharge and natural systems for wastewater effluent polishing through soil aquifer treatment. They also gave an overview about planning and its importance for wastewater projects to benefit from local conditions and selection of appropriate technology.

The participants have presented different technologies for wastewater treatment in rural and semi-urban areas. They have adapted technologies for wastewater treatment and reuse in rural areas and small communities. They also discussed the application of zero energy compact unit (ZECU) for sewage treatment in small communities. They have also presented different case studies for wastewater reuse in irrigation and the impact and constraints of wastewater reuse in agriculture. They have highlighted technologies for Municipal sludge treatment and options for reuse. Moreover, soil management and aquifer recharge is discussed in the context of applications, reuse and impacts.



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The open discussion has emphasized on the economic value of wastewater and direct use of treated wastewater to take advantage of its high nutrients contents. This will encourage private sector participation. They have argument on “ selection of appropriate technology and system for Wastewater treatment & reuse” with emphasize on make use of the local conditions, resources and operation skills to minimize the cost and ensure sustainability. They have discussed the potential mechanisms and tools to ensure the safe use of treated wastewater.

This documentation has been produced with the financial assistance of the European Union. The Views expressed herein can in no way be taken to reflect the official opinion of the European Union.



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Conference Agenda

Day -1 Monday, December 1 st , 2014	
08.00-08.30	Registration of Delegates and Distribution of Documents
<p>Opening Ceremony Chair: Prof. Dr. Rifaat Abdel Wahaab (HCWW) Introductory Speech</p>	
8:30 – 09:30	<ul style="list-style-type: none"> ▪ Dr. Ismail Al Baz, SWIM - Program Manager, Jordan. ▪ Mr. Thomas Engelhardt, GIZ -Country Director, Egypt ▪ Eng. Khaldon Khashman, Secretary General, ACWUA, Jordan ▪ Eng. Mamdouh Raslan, Chairman, Holding Co. for Water and Wastewater, Egypt ▪ H.E. Mr. James Moran, EU-Ambassador, Egypt ▪ H.E. Dr. Mostafa Madbouly, Minister of Housing, Utilities and Urban Development, Egypt
09.30-10.00	<p>Keynote Speech: Cooperation and exchange of water management in the Mediterranean Region Mr. Hashmi Kennou Executive Director The Mediterranean Water Institute (IME), France</p>
10.00-10.30	Coffee Break / Media Interview



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Session I: Decentralized Sanitation Management	
Chair: Prof. Dr. Rifaat Abdel Wahaab	
10.30-11.00	Strategies and measures for the optimization of wastewater treatment plant performance – Case study, El Gouna, Egypt. Dr. Nikolaos Tzoupanos Technical University Berlin, Germany
11.00-11.20	Wastewater disposal in rural areas - An overview of options Prof. Dr. Ing. Matthias Barenbruch Head of the Department of Urban-Water Management, TU Berlin, Germany
11.20-11.40	Baseline data, policy recommendations and planning tools for the scaling-up of small-scale sanitation in Egypt. Mr. Philippe Reymond Eawag/Sandec, Swiss Federal Institute of Aquatic Science & Technology, Egyptian-Swiss Research for innovations in sustainable sanitation (ESRISS), Egypt
11.40-12.00	Scaling up decentralized wastewater management in Jordan Dr. Mi-Yong Lee Umweltforschungszentrum (UFZ), Jordan
12.00-12.30	Open Discussion
12.30-13.30	Lunch break



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Session II	
Decentralized Sanitation Management: Case Studies	
Chair: Dr. Ismail Al Baz	
13.30-14.00	Keynote Speech: Overview of decentralized wastewater treatment applications in Germany Prof. Dr. Roland Mueller Umweltforschungszentrum (UFZ), Leipzig, Germany
14.00-14.20	Rural decentralized sanitation in Egypt: A case study Dr. Joop Harmsen Senior Manager, Alterra, Wageningen-UR, The Netherlands
14.20-14.40	Decentralized sanitation management in Egypt: Lessons learnt Eng. Ernst Doering Senior Manager-GIZ, Water and Wastewater Program, Egypt
14.40-15.00	Pilot project for integrated water resource management in rural Morocco Eng. Elghali Khiyati Project Adviser, SWIM-Sustain Water MED, GIZ, Morocco
15.00-15.20	Open Discussion
15.20-15.40	Coffee break



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Session III Stakeholder Participation and Capacity Building	
Chair: Prof. Dr. Salah Bayoumi	
15.40-16.10	<p>Keynote Speech: Leadership development in water utilities Mr. Jean- Antoine Faby Directeur de la Chaire Eau pour Tous Agro Paris Tech-ENGREF, France</p>
16.10-16.30	<p>Good water governance in wastewater reuse: A case study from the province of Medenine, Tunisia Eng. Khaled Bedoui Project Adviser, SWIM-Sustain Water MED GIZ, Tunisia</p>
16.30-16.50	<p>Decentralized approaches to wastewater management in rural areas of developing countries: A case study from Jordan Dr. Ghada Kassab Researcher at the University of Jordan, Jordan</p>
16.50-17.10	<p>Capacity building for wastewater treatment and non-conventional water management through the SWIM-SM Project Charbel Rizq Project Manager SWIM Support Mechanism, Lebanon</p>
17.10-17.30	Open Discussion & closing of First Day

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DAY-II	
Tuesday, December 2nd, 2014	
Session IV	
Wastewater Treatment Technologies for Rural and Semi-Urban Areas	
Chair: Prof. Dr. Ahmed Moawad	
08:30-08.50	Strategies and measures for decentralized wastewater management in Jordan Prof. Dr. Bassem Abassi Al Balqa Applied University, Jordan
08.50-09.10	Adaptive technologies for wastewater treatment and reuse in rural areas and small communities Prof. Dr Soheir Abou Elela National research Centre, Egypt
9:10-09.30	Impact of application of olive mill wastewater treated by different technologies on soil properties and plant growth Prof. Dr. Munir Rusan Jordan University of Science and Technology, Jordan
09.30-09.50	Zero energy compact unit (ZECU) for sewage treatment in small communities Prof. Dr Tarek Sabry University of Ain Shamis, Egypt
09.50-10.10	Decentralized wastewater management in Jordan: A case study of Fuheis Mr. Mohammad A I-Zou'bi Al Balqa Applied University, Jordan
10.10-10.30	Decentralized wastewater treatment using the SBR technology at the Public Security Directorate in Jordan Nabil Wakileh General Manager of NAW & Sons, Jordan
10.30-10.50	Open Discussion
10.50-11.10	Coffee break



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Session V Sustainable Integrated Management of Wastewater Reuse Chair: Dr. Tarek Morad	
11.10-11.30	Keynote Speech: Can water reuse sustain integrated water resources management in Egypt? Prof. Dr. Fatma El-Gohary National Research Centre, Egypt
11.30-11.50	Impact and constraints of graywater reuse in agriculture at the old Sana'a city Dr. Eng. Fadhl Ali Al-Nozaily Water and Environment Centre, University of Sana'a, Yemen
11.50-12.10	Wastewater reuse in irrigation through applying the IWRM concept case study: Effluent of a Sana'a treatment plant Dr. Abdul-Rahman Al-Eryani Faculty of Agriculture, University of Sana'a Yemen
12.10-12.30	Reuse of wastewater in Morocco: Situation in 2012 and developmental perspectives in 2030 Mr. Makhokh Mhammed Head of the Division Water Quality, Delegated Minister of Water Morocco, Morocco
12.30-12.50	Open Discussion
12.50-13.50	Lunch break



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Session VI Impacts of Treated Wastewater Reuse on Sludge/Soil management and Aquifer Recharge	
Chair: Prof.Dr.Hosam Fahmy	
13.50-14.10	Keynote Speech Managing aquifer recharge – a sustainable way for drinking water supply Prof. Dr. -Ing. Uwe Troeger Technische Universität Berlin, Central Institute Campus El Gouna, Germany
14.10-14.30	Tunisian experience on artificial recharge using treated wastewater Mr. Habib Chaieb General Direction of Water Resources, Tunisia
14.30-14.50	Impacts of treated wastewater reuse on agriculture in Tunisia Mr. Hamadi Dekhil National Agency of Sanitary and Environmental Control Products (ANCSEP), Tunisia
14.50-15.10	Municipal sludge treatment and reuse options: Solutions for Jordan Prof. Dr. Maha Halalsheh University of Jordan, Jordan
15.10-15.30	Decentralized integrated sludge management Dr. Bassam Hayek Project Manager, GIZ, Jordan
15.30-16.00	Open Discussion
16:00-16:30	Coffee Break
16:30-17:30	Closing Session



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Deliverables

- Abstract book, available online (<http://swim-sustainable.eu/index.php?id=336>)
- Flash memory containing soft copy of the presentations (PPT), all presentations are available online as PDF (<http://swim-sustainable.eu/index.php?id=336>)



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Conference Recommendations

Regional Conference ‘Sustainable Integrated Wastewater Treatment and Reuse in the Mediterranean’ Sharm El-Sheikh , Egypt

1-2 December 2014

1. Establish an enabling environment to activate programs for integrated management of wastewater treatment and reuse, in terms of the legislative, institutional, management and financial arrangements.
2. Evaluation of legislations and existing laws and update them in addition to the creation of new laws to serve the water and sanitation sector and guarantee safe reuse without damaging the health and the environment.
3. The expansion of the direct use of treated wastewater to take advantage of its high nutrients contents, which helps to reduce the use of chemical fertilizers (Wastewater has an economic value & not waste), this encourage private sector participation & investment
4. Authorize a working group comprising experts in various disciplines to prepare a Guidelines manual to the stages of the implementation of sanitation projects start of planning at the level of the water catchment area and the preparation of feasibility and environmental impact assessment (EIA) studies and treatment programs and the reuse of the final effluent.
5. Expand the implementation of capacity building and skills development programs and preparation of leaders in the field of water and sanitation projects with emphasize on managing water utilities.



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6. Invest in the planning stage for sanitation projects in order to save money and effort and ensure the success of these projects.
7. Support and stimulate the various means of raising awareness through innovative means of communication and cooperation with the press and media to raise awareness, encourage social acceptance of new technologies and community participation in water and sanitation projects in rural areas.
8. Document the results of SWIM-Sustain Water MED project and build upon common database for rural sanitation to promote cooperation and exchange of experiences between the north and the south of the Mediterranean Sea countries through successful experiences of member states to the project (Egypt - Jordan - Tunisia - Morocco). There is an underlying premise to the SWIM-Sustain Water MED project regarding the importance of knowledge management. Lessons learned must be identified, analyzed, documented and shared for sound policy-making and regional exchange.
9. Finding unconventional means of financing for sanitation projects through community participation, corporate social responsibility (CSR) and the public-private partnership (PPP).
10. Encourage the decentralization of the management of sanitation projects in rural areas (decentralized authorities); decentralized treatment plants need centralized management; no one solution fits all



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11. Selection of appropriate technology and system for Wastewater treatment & reuse should make use of the local conditions, resources and operation skills to minimize the cost and ensure sustainability.
12. Adoption of the treated wastewater (effluent) as part of the water budget and the national water plan of the Arab countries
13. Participation of civil society organizations in the operation and maintenance of wastewater treatment plants and sewerage networks in rural areas.
14. Make mechanisms (legislations & other tools) to ensure the safe use of treated wastewater in different usages (agriculture, recreation, green spaces, etc.)



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Recommendations in Arabic

توصيات المؤتمر الإقليمي

“الإدارة المتكاملة والمستدامة لمعالجة وإعادة استخدام مياه الصرف الصحي

في حوض البحر المتوسط”

شرم الشيخ 1- 2 ديسمبر 2014

1. تهيئة البيئة المناسبة لتفعيل برامج الإدارة المتكاملة لمياه الصرف الصحي المعالجة، وذلك من الناحية التشريعية والمؤسسية والإدارة ومصادر التمويل.
2. تقييم التشريعات والقوانين القائمة وتحديثها بالإضافة إلي استحداث قوانين جديدة للمياه والصرف بما يخدم قطاع المياه والصرف الصحي وحتى يمكن استخدام المياه دون الإضرار بالصحة والبيئة
3. التوسع في الاستخدام المباشر لمياه الصرف الصحي المعالجة للاستفادة بما تحويه من مخصبات مما يساعد علي خفض استخدام الأسمدة الكيميائية
4. تكليف مجموعة عمل تضم خبراء في التخصصات المختلفة لإعداد دليل إرشادي لمراحل تنفيذ مشروعات الصرف الصحي بدء من التخطيط علي مستوى المجمع المائي Water catchment area وإعداد دراسة الجدوى والأثر البيئي EIA ونظم المعالجة وبرامج استخدام السيب النهائي



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5. ضرورة التوسع في تنفيذ برامج بناء القدرات وتنمية المهارات وإعداد القادة في مجال إدارة

مشروعات المياه و الصرف الصحي water utilities

6. ضرورة الاستثمار في مرحلة التخطيط لمشروعات الصرف الصحي وذلك لتوفير المال
والجهد لإنجاح هذه المشاريع

7. ضرورة دعم وتنشيط وسائل التوعية المختلفة من خلال وسائل اتصال مبتكرة والتعاون مع
الصحافة والإعلام لنشر الوعي و تشجيع المشاركة المجتمعية في مشروعات المياه والصرف
الصحي بالقرى

8. يجب توثيق نتائج مشروع SWIM والبناء عليها لتشجيع التعاون بين دول جنوب البحر
المتوسط والشمال من خلال التجارب الناجحة بالدول الأعضاء بالمشروع (مصر – الأردن –
تونس – المغرب)

9. البحث عن وسائل تمويل غير تقليدية لمشروعات الصرف الصحي من خلال القطاع الخاص
والمشاركة المجتمعية

10. تشجيع اللامركزية في إدارة مشروعات الصرف الصحي بالمناطق الريفية

11. يراعي اختيار التكنولوجيا المناسبة لكل موقع طبقاً لظروفه المحيطة لتقليل التكلفة وتحقيق
الاستدامة



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12. اعتماد المياه المعالجة كجزء من الموازنة المائية والخطة القومية للبلدان العربية
13. مشاركة منظمات المجتمع المدني في تشغيل وصيانة محطات وشبكات الصرف الصحي
بالقرى
14. وضع الآليات الكفيلة للاستعمال الآمن للمياه المعالجة في جميع المجالات (الزراعة، الترفيه، المساحات الخضراء).



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Appendix 1: Photographs from the Conference

Fig. 1: Regional Conference poster



Fig. 2: Registration of participants





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Fig. 3: Conference Introductory speeches



Dr. Ismail Al Baz (Conference Chairman)



Prof. Dr. Rifaat Abdel Wahaab (Conference Coordinator)



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Fig. 4: Opening ceremony



Fig. 5: Participants





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Fig. 6 a & b: Speakers present their works





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Appendix 2: List of participants

NO	Name	Country	Institution, Position
1	Mr. Janis AIZSALNIEKS	Egypt	EU Delegation/Egypt
2	Mr. Gutierrez Hidalgo	Egypt	EU Delegation/Egypt
3	Dr. Ismail Al Baz	Jordan	GIZ, SWIM - Program Manager
4	Hesham Asalamat	Jordan	GIZ, SWIM, Project Officer
5	Ms. Ebba Augustin	Jordan	Moderator for MENREM and SWIM Regional Meeting, consulting
6	Eng. Khaldoun Khashman	Jordan	ACWUA, Secretary General
7	Dr. Jarrah Al Zubi	Jordan	ACWUA, Project Manager
8	Dr. Ghada Kassab	Jordan	University of Jordan, Professor
9	Mr. Mohammad A I-Zou'bi	Jordan	Al Balqa Applied University, Professor
10	Mr. Nabil Wakileh,	Jordan	NAW & Sons Co., General Manager
11	Prof. Dr. Munir Rusan	Jordan	Jordan University of Science and Technology, Professor
12	Ms. Irene Sander,	Jordan	Senior Advisor, SWIM-Sustain Water MED, GIZ
13	Anke Wanda Kutzner	Jordan	GIZ, Technical Advisor
14	Mohammad SALEH ALNAS`AH	Jordan	Public Security Directorate(PSD) Engineer



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15	Prof. Dr. Maha Halalshah	Jordan	University of Jordan, Professor
16	Prof. Dr. Nasser Al Mnasser	Jordan	Al Balqa Applies University, Professor
17	Sameeh Nuimat	Jordan	IUCN, SWIM Project Manager
18	Iqbal Hamad	Jordan	JOUHD, Project Manager
19	Abdallah Ali Alqdah	Jordan	Public Security Directorate(PSD), Engineer
20	Khaled Abu Kabar	Jordan	Ministry of Environment, Engineer
21	Ahmad Sobeh	Jordan	GIZ, Water Programme, Component Manager
22	Dr. Mi-Yong Lee	Jordan	NICE, Umweltforschungszentrum (UFZ), Project Manager
23	Ismael Nouns	Jordan	GIZ, Water Programme, Component Manager
24	Ms. Constanze Bulst	Egypt	GIZ, Water Programme, Technical Advisor
25	Eng. Ernst Doering,	Egypt	GIZ, Water and Wastewater Program, Senior Manager
26	Eng. Fayez Badr	Egypt	GIZ, Water and Wastewater Program, Technical Advisor
27	Mr. Khalil Shaat	Egypt	GIZ, Water and Wastewater Program, Technical Advisor
28	Ms. Maha Khallaf	Egypt	GIZ, Water and Wastewater Program, Technical Advisor
29	Mr. Philippe Reymond	Switzerland	Eawag/Sandec, Swiss Federal Institute of Aquatic Science & Technology, Project Manager
30	Prof. Dr. Gamal Abdel Moaty	Egypt	GIZ, Water and Wastewater Program, Technical Advisor



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31	Dr. Mostafa Moussa	Egypt	GIZ, Water and Wastewater Program, Technical Advisor
32	Ms. Rania Ragheb	Egypt	GIZ – Water and Wastewater Program
33	Prof. Dr. Rifaat Abdel Wahaab	Egypt	HCWW, Head Sector, Research & Development (R & D)
34	Dr. Mohie Omar	Egypt	GIZ- SWIM, Project Manager
35	Eng. Aya Elwattar	Egypt	GIZ- SWIM, Project Assistant
36	Eng. Mamdouh Raslan	Egypt	Holding Co. for Water and Wastewater, Chairman
37	Dr. Salah Bayoumi	Egypt	HCWW
38	Dr. Ahmed Moawad	Egypt	HCWW
39	Ms. Reham Mohamed Reda	Egypt	HCWW
40	Dr. Tarek Nada	Egypt	HCWW
41	Eng. Gamal Elhossany	Egypt	HCWW
42	Eng. Naser Taha Naser	Egypt	HCWW
43	Dr. Mohamed Hassan	Egypt	Egyptian Water and Wastewater Regulatory Agency (EWRA), Cairo, Chairman
44	Dr. Ahmed Shaban	Egypt	National research Centre, Cairo
45	Prof. Dr. Fatima Al Gohary	Egypt	National Research Centre
46	Dr. Sohair Abou Elela	Egypt	National research Centre
47	Dr. Tarek Sabry	Egypt	University of Ain Shami
48	Dr. Magdy Salah	Egypt	National Water Research Centre (NWRC), Ministry of Water and Irrigation, Cairo
49	Dr. Hossam Fahmy	Egypt	NWRC, MWRI
50	Eng. Khaled Bakhet	Egypt	NWRC, MWRI
51	Dr. Tarek Morad	Egypt	Dutch Embassy, Cairo, Ex-Science Officer
52	Dr. Sherif Ahmed Mostafa	Egypt	Ministry of Housing, Utilities and Urban Development, Minister office, Cairo
53	Eng. Aly Hessen Aly	Egypt	Canal Cities W&WW, Ismailia
54	Eng. Gamal Abd Elhameed	Egypt	Canal Cities W&WW, Ismailia



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55	Eng. Elsayed Hassan Mahgob	Egypt	Canal Cities W&WW, Ismailia
56	Mr. Mohamed Salama Ebrahim	Egypt	Canal Cities W&WW, Ismailia
57	Eng. Laila Mustafa Abdel Salam	Egypt	Canal Cities W&WW, Ismailia
58	Dr. Kamal Ghodeif	Egypt	Ismailia, Consultant,
59	Eng. Mostafa Megahed	Egypt	Chairman, Qalyobia W&WW
60	Dr. Hesham Mohamed Nabeh	Egypt	Faculty of Eng. Zagazig University
61	Dr. Amr Abd El-Azez	Egypt	Faculty of Eng. Zagazig University
62	Eng. Radwan Fathy Ibrahim Khalifa	Egypt	SINA COMPANY ACCOM+MEETING
63	Eng. Mohamed Mahmoud Abdelatif	Egypt	SINA company
64	Eng. Hanan Mohamed Amr	Egypt	SINA company
65	Atef Mohamed Abdo	Egypt	SINA company
66	Gamal Abdel Sabour	Egypt	SINA company
67	Ahmed Hassan Mahmoud	Egypt	SINA company
68	Yasser Abdallah elsaeed	Egypt	SINA company
69	Ahmed Mostafa el alfy	Egypt	SINA company
70	ahmed abdelhamid	Egypt	SINA company
71	fahmy mohamed fahmy	Egypt	SINA company
72	amer hendy aly	Egypt	SINA company
73	Mohamed Abdelrehim Mohamed	Egypt	SINA company
74	Ahmed Elazab	Egypt	SINA company
75	Dr. Refat Abo Yousef	Egypt	National Research Center
76	Dr. Hesham Abdel Halim	Egypt	Ain Shams University
77	Prof. Dr. Abdelkawi Khalifa	Egypt	Ain Shams University
78	Mr. Amr Bayoumi	Egypt	HCWW
79	Ms. Nivine Abdelrahman	Egypt	HCWW
80	Eng. Mohamed Moawad Mahmoud	Egypt	HCWW
81	Ms. Seham Mohamed Hashem	Egypt	HCWW
82	Dr. Samia Galal Saad	Egypt	Alxanadria University
83	Dr. Sherif Sorour	Egypt	HCWW
84	Eng. Ahmed Hussein	Egypt	HCWW



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85	Eng. Sayed Hasanein	Egypt	HCWW
86	Eng. Alsyed Alashry	Egypt	NOPWASD
87	Eng. Ezzat El Sayyad	Egypt	HCWW
88	Mohie El Din Ahmad	Egypt	HCWW
89	Dr. Ahmed Mohamed Omar	Egypt	HCWW
103	Mr. Mohamed Ragab El Zoghby	Egypt	HCWW
104	Dr. Ahmed Gaber	Egypt	Cairo University
105	Eng. Gamal Oheid	Egypt	HCWW
106	Eng. Khaled Bedoui,	Tunisia	SWIM Project Manager
107	Mr. Habib CHAIEB	Tunisia	GIZ, Counter part
108	Mr.Hamadi DEKHIL	Tunisia	National Agency of Sanitary and Environmental Control Products (ANCSEP)
109	Ms. Sofia Abroug	Tunisia	ONAS, SWIM Counter part
110	Ms. Awatef Messai	Tunisia	ONAS, SWIM Counter part
111	Ms. Souad Dekhil,	Tunisia	DGGREE SWIM Counter part
112	Mr. Taher Smei,	Tunisia	CRDA Medenine, SWIM, Counter part
113	Mr. Lassed Zouari	Tunisia	ONAS, SWIM, Counter Part
114	Mr. Othman Harbaoui	Tunisia	ANPE, SWIM, Counter Part



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115	Mr. Selmen Hermi	Tunisia	DHMPE, SWIM, Counter Part
116	Mr. Adel Yasin	Palestine	Palestinian Water Authority, Adviser
117	Mr. Ramez El-Titi	Palestine	Water Programme in the Palestinian Territories, Technical Adviser
118	Mr. Tobias Mohn	Palestine	Water Programme in the Palestinian Territories, Technical Adviser
119	Ms. Franziska Stehnen	Palestine	GIZ Water Programme Palestinian Territories, Technical Adviser
120	Mr. Issam Nofal	Palestine	Climate Change adaptation project in Palestine, Palestinian Water Authority, Adviser
121	Mr. Christoph Brand	Morocco	GIZ, SWIM- Sustain Water MED, Technical Advisor
122	Eng. Mohammed Elghali Khiyati	Morocco	AGIRE / SWIM Project, Rabat, Project manager,
123	Ms. Nour El Houda EL HAMOUMI	Morocco	AGIRE / SWIM Project Rabat, Project manager
124	Mr. MakhokhH Mhammed	Morocco	Delegated Minister of water, Head of the division water quality
125	Mr. Abderrafia BENBOUZIANE	Morocco	Division Alimentation en eau Potable Rural / Service réalisation de projets
126	Mr. Hassan BRIGHET	Morocco	Division des Ressources en eau /Service Hydrologie
127	Mr. Youssef IFKIRNE	Morocco	Agence du Bassin Hydraulique du Souss Massa Draa/ Délégation de Ouarzazate,
128	Ms. Mounia EL AZHARI	Morocco	Agence du Bassin Hydraulique de l'Oum Erbiaa – Béni Mellal
129	Mr. Mourad JADOUD	Morocco	Agence du Bassin Hydraulique du Tensift Marrakech

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130	Dr. Redouane CHOUKR-ALLAH	Morocco	Institut Agronomique et Vétérinaire Hassan II, Agadir
131	Dr. Abdelghani EL ASLI	Morocco	School of Science & Engineering, Al Akhawayn University, Ifrane
132	Mr. Hashmi Kennou	France.	The Mediterranean Water Institute (IME), Executive Director, Marseille,
133	Mr. Jean- Antoine FABY	France.	Agro Paris Tech-ENGREF, Directeur de la Chaire Eau pour Tous
134	Dr. Nikolaos Tzoupanos,	Germany	Technical University Berlin, Berlin, Researcher
135	Prof. Dr. Roland Mueller	Germany	Umweltforschungszentrum (UFZ), Leipzig, Head of department
136	Dr. Joop Harmsen	Netherlands	Alterra, Wageningen-UR, Senior Manager
137	Charbel Rizq	Lebanon	SWIM Support Mechanism, Beirut, Project Manager
138	Prof.Dr.Ing. Matthias Barenbruch	Germany	TU Berlin, Head of the Department of Urban-Water Management
139	Prof.Dr.-Ing. Uwe Troeger	Germany	Technische Universität Berlin, Central Institute Campus El Gouna
140	Salah Abdulwahab Esmail Rashed	Yemen	GIZ Water Programme
141	Arwa Ahmed Ali Humadi	Yemen	GIZ Water Programme
142	Nadim Mulhem	Yemen	GIZ Water Programme



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143	Tawfiq Abdelwahed Alsharjabi	Yemen	GIZ Water Programme
144	Sami Al sadi	Yemen	GIZ Water Programme, Yemen
145	Dr. Eng. Fadhl Ali Al-Nozaily	Yemen	Water and Environment Centre, University of Sana'a, Yemen
146	Dr. Abdul-Rahman Al-Eryani	Yemen	Faculty of Agriculture, University of Sana'a, Yemen
147	Mr. Mohammed Al Aryqi	Yemen	GIZ Water Programme, Yemen
148	Prof.Dr.-Eng. Hussain Al-Towaie	Yemen	University of Aden, Yemen
149	Dr. Azmi Ghneim	Germany	Project Manager, German Water Partnership
150	Mr. Luigi Petta	Italy	SWIM Partner – ENEA - Italian Environmental Agency -
151	Mr. Roberto Farina	Italy	SWIM Partner – ENEA - Italian Environmental Agency -
152	Mr. Thomas Bayer	Germany	Evaluator for GIZ, Consulting
153	Ms. Annika Kramer	Germany	SWIM Partner – Adelphi, Project Manager
154	Gabrielle Weisenberger	Tunisia	GIZ Tunisia, Technical Adviser



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Consortium Partners at a glance



Ministry of Water & Irrigation
وزارة المياه والري



Agence du Bassin Hydraulique
du Sous-Messa et du Orta



Holding Company
for Water and Wastewater



République Tunisienne
Ministère de l'Environnement
Office National de l'Assainissement



Italian National Agency for New Technologies,
Energy and Sustainable Economic Development



Ministry of Water & Irrigation
وزارة المياه والري



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