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SWOT analysis of the institutional, policy and regulatory framework governing wastewater treatment and reuse in Tunisia, Lebanon and Spain

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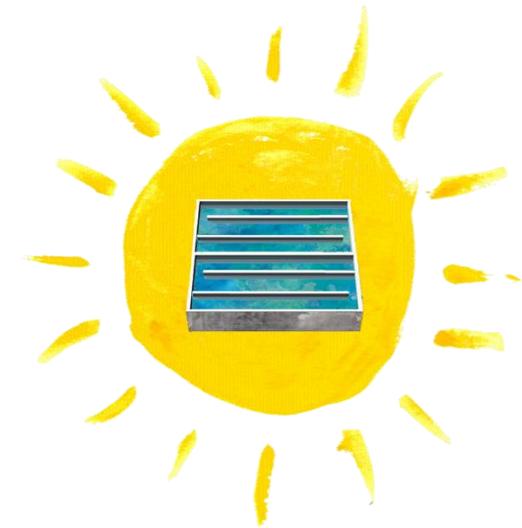
AQUACYCLE Focus on 3 regions of the Mediterranean where the 3-stage APOC technology, an eco-innovative wastewater treatment technology will be demonstrated



**Anaerobic
digester**



**Constructed
wetland**



**Solar raceway
pond**

Approach to the SWOT analysis

Collecting both positive and negative aspects concerning wastewater management using the same, systemic approach in Lebanon, Spain and Tunisia:

Documenting the context based on a **desk review**

Collecting viewpoints through **Questionnaire and interviews with stakeholders**

Approach to the SWOT analysis: documenting the context

What are the national policies?

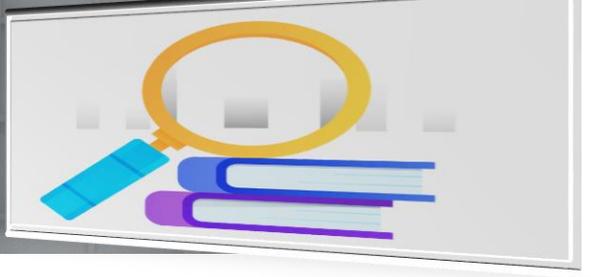
Who are the actors involved?

What are their roles and responsibilities?

Which projects or plans have been initiated?

Answers to these preliminary questions were obtained through a **desk review** in Lebanon, Spain and Tunisia





Outcomes from desk review

National policies with respect to wastewater reuse



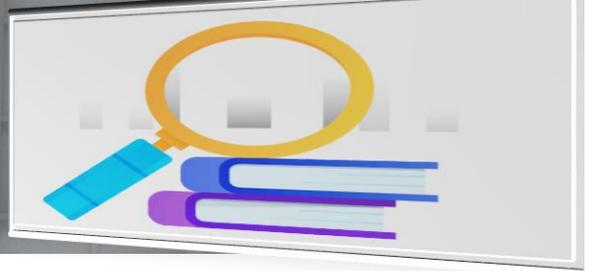
Lebanon: No legal framework in place. The use of untreated wastewater for irrigation is prohibited by a decree issued in 2011



Spain: Since 2007, a Royal Decree establishes the regime of reuse, allowed uses, criteria of quality and monitoring and the procedure for obtaining the grant of reuse

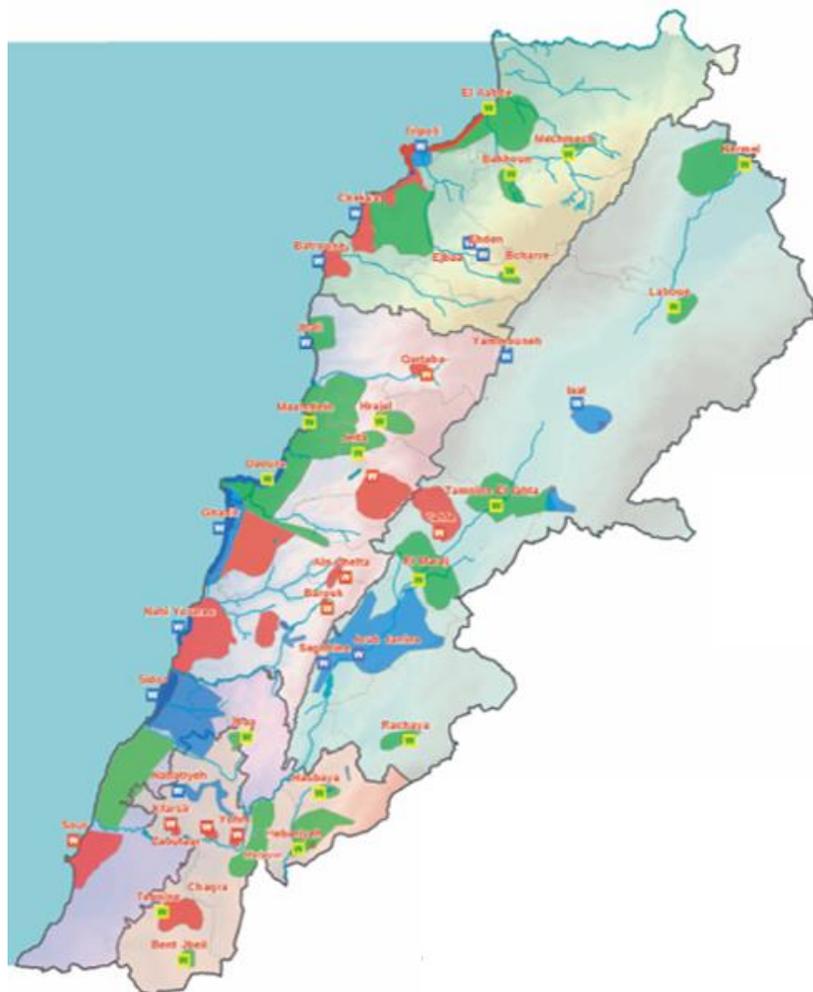


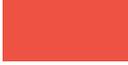
Tunisia: Since 1989, National standards regulate on releases of treated wastewater to the environment and on the use of treated wastewater in agriculture. A list of crops that can be irrigated was issued in 1994



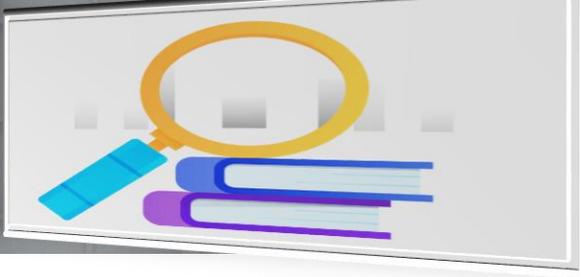
Outcomes from desk review

Wastewater treatment plant projects in Lebanon



-  Wastewater Treatment Plant, Ongoing
-  Wastewater Treatment Plant, Completed
-  Wastewater Treatment Plant, Under Preparation
-  Wastewater Collector, Completed
-  Wastewater Collector, Ongoing
-  Project Area, Completed
-  Project Area, Ongoing
-  Project Area, Under Preparation





Outcomes from desk review

Wastewater treatment plants in Tunisia 122 WWTPs (2019 ONAS report)



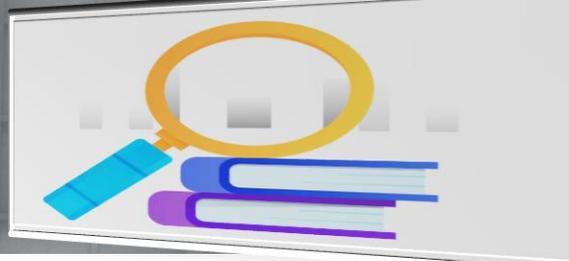
Urban Wastewater Treatment Plants



Rural Wastewater Treatment Plants



Industrial Wastewater Treatment Plants

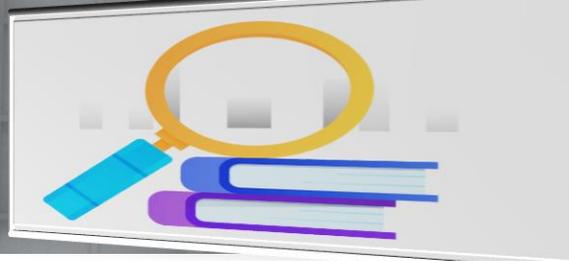


Outcomes from desk review



Wastewater treatment plants in Murcia Region Spain

Source: Entidad Regional de Saneamiento y Depuración de la Región de Murcia



Outcomes from desk review



Wastewater treatment plants in Murcia Region Spain

Source: Entidad Regional de Saneamiento y Depuración de la Región de Murcia

Next step: collecting additional inputs through stakeholder questionnaire

Script for Questionnaire and interviews

As a tool for obtaining an insight about wastewater management stakeholders' perceptions, views, plans, activities, suggestions and APOC adoption willingness and Readiness, a series of indepth, structured interviews were used based on beforehand dispatch of a questionnaire to the interviewee, discussed face to face and finally transcribed.

Four themes are discussed:

What is the current status of domestic wastewater treatment? Status of sanitation; main barriers that hinder the sanitation needs; availability and performance of operating WWTPs; sanitation challenges in small communities

What is the current status of treated wastewater reuse? Strategic regulations and norms; reuse management; wastewater reuse plans at regional/national level; perception of wastewater reuse; criteria/drivers that support/ hinder decision for a wastewater reuse project

How effective are initiatives with regard to these aspects and advocated steps?

Willingness and Readiness to adopt the APOC system? Knowledge and Training needs

**15 interviews were organized with stakeholders
in Lebanon, Spain and Tunisia**



SWOT Analysis

Current status in sanitation

Lebanon

Tripoli region

- In Tripoli region, there is one treatment plant which is considered as one of the largest plants in Lebanon

- Obsolescence and overload of treatment plants result in water quality outside of the norms for safe reuse
- Lack of financial resources (OPEX and CAPEX)
- Institutional gaps behind the poor sanitation in rural areas

- Adopt a new paradigm for sanitation in mid-sized cities and rural areas
- Adopt new technologies adapted to sustainable development such as the eco-innovative technology offered by AQUACYCLE's APOC system

- Loss in financial institutions' trust in debt repayment
- Corruption in allocation of public contracts
- Delays in projects implementation

Strengths 

Weaknesses 

Opportunities 

Threats 

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Willingness and Readiness to adopt the APOC system? Knowledge and Training needs

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SWOT Analysis

Current status in sanitation

Tunisia

- Availability of treated wastewater for reuse
- 270 million m³/year treated to level 2
- Programme for enlargement of wastewater treatment to encompass tertiary treatment (level 3)

- Mismatch between treatment plant locations and potential reuse areas
- Obsolescence and overload of treatment plants result in water quality outside of the norms for safe reuse
- Lack of financial resources (OPEX and CAPEX)

- Adopt a new paradigm for wastewater reuse in mid-sized cities and rural areas
- Adopt new technologies adapted to sustainable development such as the eco-innovative technology offered by the APOC system

- Loss of financial institutions' trust in debt repayment
- Corruption in allocation of public contracts
- Delays in projects implementation

Strengths 

Weaknesses 

Opportunities 

Threats 

SWOT Analysis

Current status in sanitation

Spain

Murcia region

- High level of experience in current wastewater treatment systems
- A lot of studies and research to improve the viability of the treatment, to explore novel systems and advances in food safety

- Funding depends on political decisions
- Consumers are not always confident to buy agricultural produce irrigated with reclaimed water

- To develop a new system which is more environment friendly and with lower operational costs
- To go further in the study of emerging compounds and their impacts
- To sensitize politicians on the need for further research

- Lack of future funding for research

Strengths 

Weaknesses 

Opportunities 

Threats 

Strategies proposed to policy makers by the AQUACYCLE Partnership

As the SWWTR sector is not fully developed, it is time to embrace a new approach and a new paradigm to tackle the problem with a vision based on a “closed loop” approach. A diagnosis of the actual situation of the concerned sectors is necessary, as well as the identification of coherent technical, economical and institutional options to rationalize investments in the field. For this purpose, it is imperative to involve and to engage stakeholders in the establishment of strategies for a sustainable sanitation in the country.

- To achieve a deep Diagnosis of the causes of the poor sanitation situation
- To identify a coherent technical, economical and institutional options to rationalize future investments
- To organise Awareness raising campaigns aimed at changing citizens’ and especially farmers’ perception of wastewater reuse

Lebanon

Time for a new vision



Strategies proposed to policy makers by the AQUACYCLE Partnership

Tunisia has extensive experience and a long-time tradition on WWT and reuse. The SWOT analysis showed that today is the appropriate time for:

a) renovation/upgrading of WWTPs, b) revision of water reuse standards, c) more coordination between public stakeholders, d) more information sharing (accelerate the establishment of the National Information System for Water “SINEAU”), e) strengthening procedures related to the involvement of farmers, diversifying the monitoring indicators and actors, f) an economic reflection to review the pricing structure of the use of treated wastewater but also to identify promising markets, and g) a multilateral exchange between research institutions.

Now is the appropriate time for:

Stepping up efforts aimed at safe reuse of treated wastewater through:

- Improved coordination between public stakeholders
- Strengthening the involvement of farmers in reuse action plans
- Review of reuse standards and of pricing structure

Tunisia Time for a revised strategy



Strategies proposed to policy makers by the AQUACYCLE Partnership

The region of Murcia is on track to achieving full compliance with the EU Urban Wastewater and Water Framework Directives

Now is the appropriate time to:

- Share the expertise with other autonomous regions as well as beyond the borders of Spain
- Continue investing in research on novel treatment technologies, not least to deal with emerging compounds of which the impacts on society and the environment are not as yet fully understood

Spain

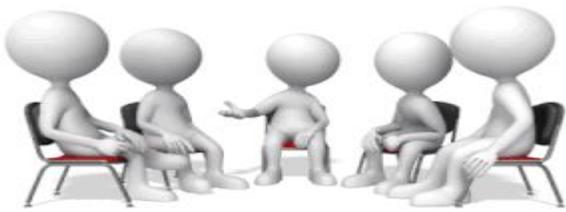
**Taking advantage
to go beyond
what has been
achieved**



Common Conclusion

For the three countries, governmental authorities are called to put the following required strategies:

- ❖ build partnerships with community, private sector and support organizations,
- ❖ decentralize SWWTR sector,
- ❖ increase the democratic process in decision-making and formulation of strategies of SWWTR for cities,
- ❖ enhance bottom-up planning by generating community-based initiatives,
- ❖ increase the government responsiveness,
- ❖ enhance comprehensive, appropriate and logical communication between government and community,
- ❖ encourage community-based organizations and SWWTR microenterprises, and
- ❖ look for mutual consensus among the stakeholders for the best solution and appropriate strategy.

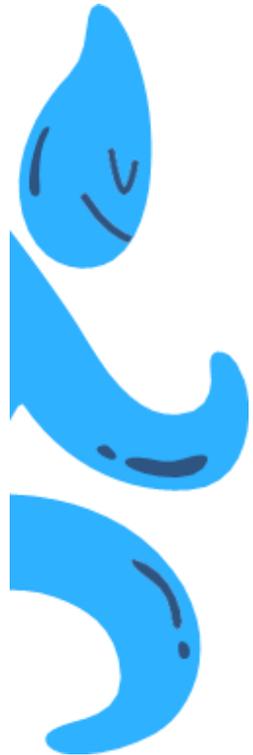


Present outcomes of SWOT analysis and proposed strategies to decision makers and stakeholders on the occasion of the

First Series of Stakeholder Workshops in Lebanon, Spain and Tunisia

with the theme

Changing the paradigm for wastewater treatment and reuse

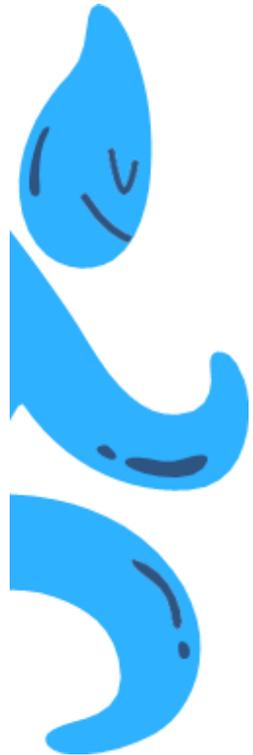




Next Steps

Community Approaches to Sanitation, Wastewater Treatment and Reuse

Second Series of Stakeholder Workshops in Lebanon, Spain and Tunisia



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Thank you for your attention!

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