AFEID
Association Française pour l'Eau, l'Irrigation et le Drainage

COSTEA
Ensemble pour relever les défis de l'agriculture irriguée

COSTEA "REUSE - WASTEWATER REUSE IN AGRICULTURE" INITIATIVE

LIVRABLE 3B: COUNTRIES WORKSHOPS SYNTHESIS

- PALESTINE –

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SCP

ABSTRACT

COSTEA (Scientific and Technical Committee on Agricultural Water), led by the French Association for Water, Irrigation and Drainage (AFEID) and financed by AFD, is a network that aims to promote sharing knowledge and experience between irrigation stakeholders to support agricultural water operations and policies,

One of the structuring actions of COSTEA entitled "REUSE" aims to document for six countries (Algeria, Morocco, Tunisia, Senegal, Palestine, Bolivia) systems and experiences of Wastewater Reuse in order to build common and specific recommendations. It is coordinated by the SCP (Société du Canal de Provence).

The ambition of this project is to work on **two distinct scales**:

- reuse in peri-urban areas, with large volumes of TWW, large irrigated areas and often intensive purification processes
- reuse after decentralized sanitation systems that produce more limited volumes of water.

Two teams worked closely:

- An international coordination team led by the Société du Canal de Provence
- Pairs of national operators for each of the six target countries: for Palestine in this case Mr. Naser QADOUS and Mr. Malek ~~Abufeilat~~ABUALFAILAT

The work is organized in **5 stages**:

1- Establishment of a team of international experts and a common intervention methodology
2- Summary of REUSE situation in the 6 target countries
3- Choice of two exemplary operations per country, and the organization of participatory workshops
4- Drafting of a regulatory and institutional benchmark for the 6 target countries
5- Holding of a final restitution seminar, and the drafting of a report of recommendations

The main ideas emerging from the workshops are:

- The strengths, successes or favourable successes or prospects of the sites are:
    - Cooperation between farmers as individuals (Jericho) or represented by their cooperative (Anza), was main reason behind success of reuse

  - The need for water is high in both sites, at a time when fresh water for irrigation is not adequate.
  - In Jericho a high value crop (dates) is spread in the area for large scale farmer who own resources to install unplanned water distribution systems
- The limitations and difficulties encountered are:
  - The volume of reclaimed waste water is not sufficient
  - There are no storage capacity to store water during low demand season (winter)

- Good practices that can be exported to other target countries are:
  - In Anza many crops were demonstrated, such crops are economic on the small scale like Lufa, and roses
  - Anza started reuse of water for resilient crop (olives) for the first 5 years of the grove life then shifted to supplementary irrigation of these olive groves and new stone fruit orchard as well as other seasonal crops

1 STATE OF PLAY

1.1 FEEDBACK ON THE COUNTRY SYNTHESIS AND THE FIRST NATIONAL WORKSHOP

1.1.1 COUNTRY SUMMARY

In Palestine only 54% of the households are connected to the sewer networks The **total generated WW is** 135 **MCM annually**, . While, 90% of the collected wastewater in Gaza is treated only 35% in the West Bank is treated at different levels (secondary, tertiary). However, not all treated wastewater fulfil the relevant specifications and standards due to the lack of proper management of WWTP and the inability of covering treatment costs. The **trans-boundary water** is estimated at 15MCM annually, such water is usually collected and treated in Israeli WWTP. Though this water is used by Israeli farmers, the cost of treatment is charged on the Palestinian budget through deducting the cost of treatment from the Palestinian tax money.

While there are **52 water service providers (WSPs) collecting wastewater in West Bank and Gaza** only **22 have treatment facilities** (17 in WB and five in Gaza). There are few planned and unplanned reuse activities in only eight urban treatment plants and 14 rural small scale WWTP. In the West Bank, almost all facilities with treatment of wastewater have, or had at certain time, a reuse scheme for the effluent, albeit not necessarily functioning. In Gaza there are only two pilots of reuse and a large aquifer recharge in Beit Lahia, which is still not considered as reuse scheme, however, this water could be recovered and used indirectly for irrigation, the recovery is still not functional.

The volume of annually used **RWW for agriculture in Gaza** was around **1.0 million cubic meter** out of 77.7 MCM treated, while **in WB the reused volume did not exceed this limit** out of 27 MCM of treated wastewater treated annually. Number of WWTP and consequently the volume of treated water increase year after year. Many of the rural ruse schemes were not sustained for a reason or another.

TWW reuse is planned in Jenin, Ramallah and Nablus where water distribution systems were installed. While it is unplanned reuse in **Jericho**, as farmers are connecting on their own without a well-designed and unified system. Only three WWTP were found to be compliant with the irrigation requirements. If all of the wastewater generated were to be reused, it would be possible to save 14% of the supply and demand gap.

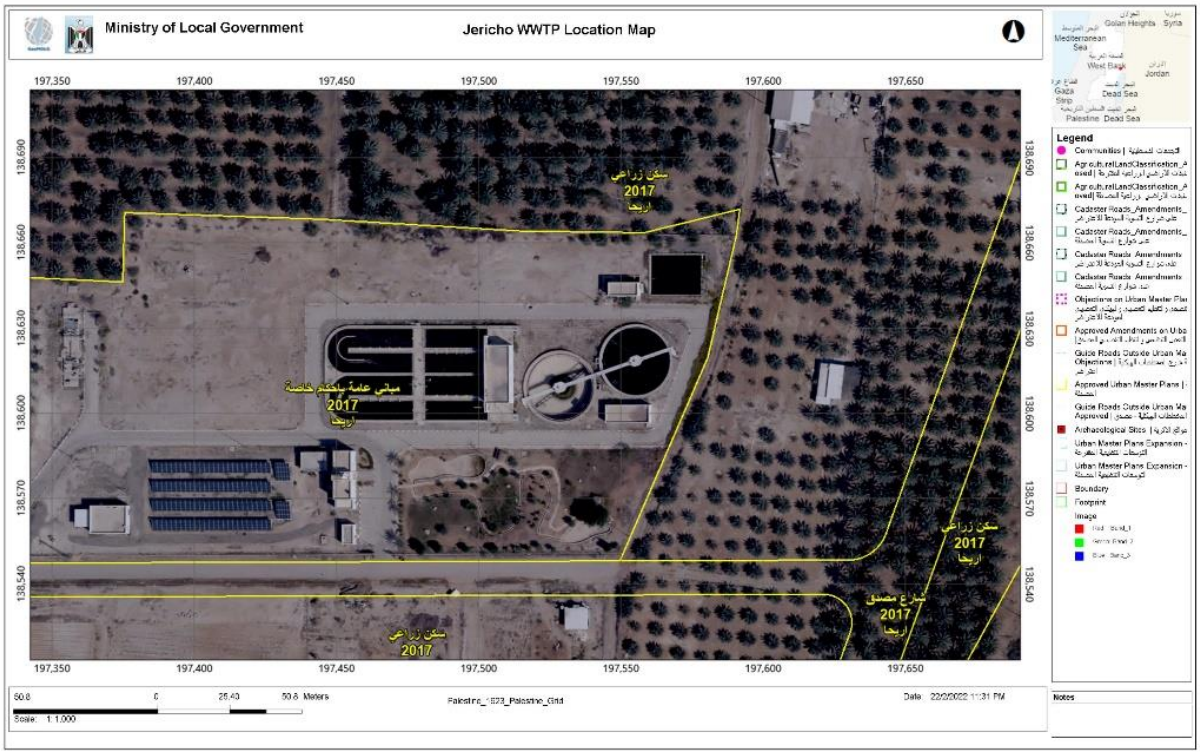
1.1.1 1ST NATIONAL WORKSHOP

The National Workshop was conducted on December 15th, 2021, in Bir Zeit Ramallah with participation of 12 representatives of Reuse stakeholders including local focal points. The two national consultants facilitated the workshop, the research team leader presented the project. The synthesis report was presented, to validate results, the SWOT analysis was deeply discussed. The Panel discussed the sites for the case studies and agreed on Anza in Jenin area as a rural planned reuse system, and Jericho as unplanned urban reuse system.

(*full report Annex 1).*

1.1 PRESENTATION OF SITE N°1: PERI-URBAN, INTENSIVE TREATMENT

1.1.1 GEOGRAPHICAL MAP



Map 1: Jericho WWTP Location Map

1.1.2 IDENTITY CARD

Perimeter identity card

Date of creation	2014	**Irrigated area**	760 dunum
Location	Jericho		
Water resource	Treated wastewater		
Characteristics of the current WWTP	Activated sludge treatment plant with capacity of 6600 cubic meters.		
Tertiary treatment	Secondary plus chlorination		
TWW flow available	2200 cubic meter		
Pumping station	Unplanned pumping network		
Storage	No storage facility		
Irrigation networks	Drip irrigation network		
Number of farmers	7 farmers according to season		
Agricultural production	Palm trees, dates		
TWW annual recovery rate	The WWTP serves 30% of the population of the city		
Comments	The reuse scheme is unplanned, but it serves more than 760 dunum, which is an indicator of success model of urban reuse of treated wastewater.		

1.1.3 NARRATIVE

The case study addressing the utilization of Jericho WWTP as unplanned urban reuse scheme in Palestine, the treatment plant depends on an activated sludge system including secondary treatment and chlorination.

The plant has the capacity to treat approximately 6600 CM daily, currently it receives 2200 CM, the whole volume is reused in irrigating 760 dunums of date palm trees, which is a high crop value extensively grown in the area and suffers the scarcity of water.

At the beginning of the operation of the treatment plant, there was an objection of reusing the treated wastewater in agriculture due to religion and health concerns, while after some pilots from farmers, and scares of irrigating water, farmers start to reuse the treated wastewater. The treatment plant operator (the municipality) has utilized the Take or Pay (ToP) payment scheme, where farmers are charged on an agreed minimum cubic meter of water per month by 1 ILS/CM. In other words, there is a minimum sum to be monthly paid regardless of the actual used volume of water on the same base price as per signed contract with the farmers.

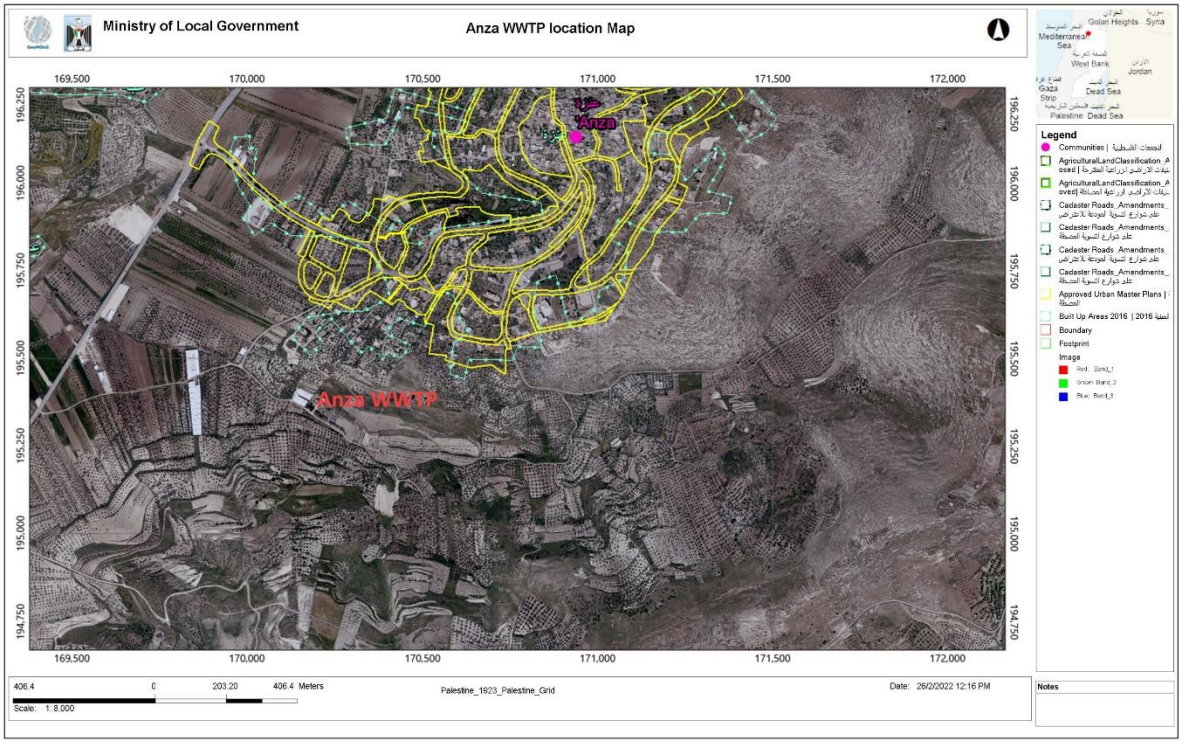
This model showed that although Jericho WWTP has utilized unplanned reuse scheme (in terms of network connection and water distribution), it succeeded to fill in the irrigation water gap

for the farmers and assist them to irrigate their crops. However, there is a clear and effective tariff.

Annex 2 showed the full report of the case study.

1.2 PRESENTATION OF SITE N°2: RURAL, EXTENSIVE TREATMENT

1.2.1 GEOGRAPHICAL MAP



Map 2: Anza Location Map

1.2.2 IDENTITY CARD

Perimeter identity card			
Date of creation	2015	**Irrigated area**	30 Dunams
Location	Anza Village/ Jenin		
Water resource	Treated wastewater		
Characteristics of the current WWTP	Activated sludge treatment plant with capacity of 500 cubic meters.		
Tertiary treatment	Secondary plus chlorination		
TWW flow available	120 cubic meter		
Pumping station	Water flow by gravity		
Storage	No storage facility		
Irrigation networks	Drip irrigation network		
Number of farmers	7-12 according to season		
Agricultural production	Mainly olives, almonds, apricots, roses and Lufa		
TWW annual recovery rate	The WWTP serves 80% of the population of the village, all the collected water (120 cubic meters are treated and used)		
Comments	Although small scale, but it serves a small community and forms a successful model of decentralized Treatment plants for the numerous similar communities spread in the West Bank.		

1.2.3 NARRATIVE

The WWTP of Anza uses the activated sludge technology. Currently producing 120CM/day of high quality treated effluent, which are totally reused . The whole water is used since finishing the scheme in 2015. In the first few years of operation water was used to irrigate newly established olive groves, and some alfalfa fields at a pilot scale. Later many crops were tested. Currently water is used to irrigate alfalfa, almonds, apricots, olives and Luffa. Recently a rose greenhouse (500m2) was established and it uses the TWW.

Every house pay $4.7 per month for sewage collection and the treatment. There are 400 houses connected to the system. The total operational cost for the WWTP is $1875 per month. Solar panels were installed recently with fund from a local NGO's, consequently reducing the operational costs.

Such pilot represents a good example of solving the environmental pollution of cesspits, as it collects sewage water, treat it and use it in agriculture. It forms a case to learn from, though considered very small scale. The formation of a cooperative to own and run the system sormed the seed for a larger scale farmers cooperative which extended its scope beyond the WWTP and the reuse scheme.

2 DEBRIEFING OF LOCAL WORKSHOPS

It should be recalled here that the content of the workshops was formatted in a note from October 2021 entitled "workshop framework note".

2.1 WORKSHOP N°1: PERURBAN, INTENSIVE TREATMENT

2.1.1 ORGANIZATION AND PROCESS

Instructions: recall the date, the place, the number of participants, those present and those absent (report to be added in the appendix). Describe the dynamics of the workshop, the positioning and the play of actors of the participants. Give feedback on the process.

The workshop took place on December 30th, 2021, at Jericho WWTP Hall, where 10 representatives attended the WS from Jericho municipality, ministry of agriculture, and farmers. The workshop started with a short brief on COSTEA project, the objective of the WS, and was followed with key questions by the consultants on what went well? what needs to be improved? and lesson learned.

The atmosphere of discussion was conductive; participants were in agreement on major issues. However, some objection on the principle (take or Pay) as sometimes specially during winter farmers do not use the whole allocated water. The workshop ended with Ideal Reuse wheel exercise where each of the participants has presented his/her opinion freely on the wheel four topics.

2.1.2 PRESENTATION OF THE WHEEL

Instructions: display the work produced during the exercise to define the current state of the PI according to different axes declining the 4 main themes of COSTEA REUSE (see 2.4.2 of the framework note). Present the convergent and divergent opinions, the key success factors and the limits of the operation of the REUT on the chosen site. Give the opinion of the pair of operators on these conclusions

The ideal wheal covered the following thematic crosscutting issues:

1. *The environment:*

The project does not provide enough amount of water vs. the treated ones, only 1600 CM is utilized out of 2200 CM per day, however, the sludge is not being used in land optimization at all, but generally, the project has a positive impact on the environment and economy, as

it solved the issue of random non healthy cesspits and unplanned disposal of house wastewater in Jericho city.

2. *Accessibility and governance:*

   The roles and responsibilities between the parties is very clear, where the municipality is the only responsible party to manage the WWTP, and to conduct the agreements with the farmers, however, the MoA does not allow any water to get into farms without quality test.

3. *IWRM and Economy*

   The project is generating revenues to the benefit of the WWTP operator, which is covering partially the electricity bill of the treatment plant, maintenance, staff, and admin cost furthermore, the price is fair enough comparing with freshwater, where 1 CM of fresh water is costing 2 ILS comparing to 1 ILS per CM for the treated water.

4. *Technical and Sanitary*

   The treated effluent does not affect the operator team health as they are provided with SPE (Safety personal equipment). No health incidents of complaints were reported. Treated wastewater is delivered to the farmer with an unplanned wastewater network, which is risky to be clogged or having a fault in case of technical problems such as pressure increase. However the system is a set of individual pumps and carrier pipes for every beneficiary farmer. Operated by each farmer separately. As for TWW quality, as per technical report the TWW quality is enough comparing to the needed requirements. Water is tested on regular basis, quality is consistent.

Figure 1: Jericho WWTP Ideal Reuse Wheel

Recommendations to improve reuse in Jericho:

To mitigate the issues in the Jericho WWTP and better optimize the reuse scheme, Participants indicated that the following actions are required:

1- Treat the resulting sludge through drying, taking advantage of the weather of Jericho as a hot dry area with lowest rainfall compared to other cities and communities located in upper areas of the West Bank. Such treatement and reuse of sludge, can enhance soil as a fertilizer following local regulations and standards.
2- Connecting more houses in Jericho would provide more effluent to be treated and utilised, yet solving the problem of sewage from non connected houses
3- Systematizing and institutionalizing the water distribution system, not only relying on unplanned irrigation water distribution system. This is expected to reduce costs of operating the system and will ensure equitable distribution and utlisation of TWW.

2.2 WORKSHOP N°2: RURAL, EXTENSIVE TREATMENT

Instructions: same structure and same instructions as before

2.2.1 ORGANIZATION AND PROCESS

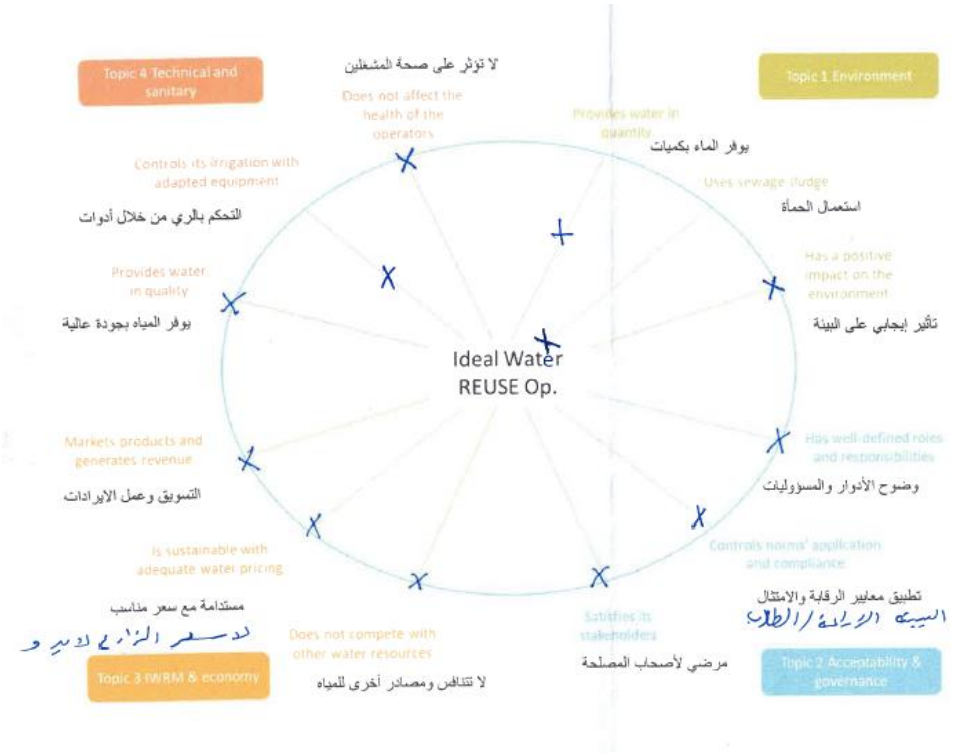
A workshop was conducted on December 29th 2021. In which Nine Participants representing different stakeholders: Ministry of Agriculture, the village council, farmers, and the operator of the plant attended. The workshop started with brief introduction and welcoming from the village council of Anza, followed by brief introduction on COSTEA project, and the objectives of the WS.

The workshop raised key questions on the current reuse scheme related to what went well, what lessons learned, the barriers, and what can be improved. The workshop presented the reuse ideal wheel exercise where each representative feed in the wheel.

The workshop has ended with a field tour to the farms that reusing the TWW, and to the WWTP. The discussion was viable, all participants showed full and unified understanding. No complaints. The team felt integration in roles and common understanding of responsibilities. Water is distributed fairly. The formation of a cooperative in the village to run the system extended the scope to act as umbrella for large number of farmers, not only water users.

2.2.2 PRESENTATION OF THE WHEEL

The pair of consultants has presented the Ideal Water reuse operational wheel to the participants and has describe each performance indicators to them, the results are illustrated at the end.



The evaluation of the current state of the Anza WWTP operation as shown in the wheel showed that Anza reuse scheme is ideal and proved to succeed except that sludge is not treated or reused, rather carried to the close solid waste dumping site. The water Quantity is not sufficient it covers 25% of the farmers need in the village. The control on irrigation is primitive depending on farmers experience. Other than these three parameters all goes well and indicate success.

Full report of the workshop of Anza (annex 3)

Recommendations to Improve Reuse:

1- Assist in sludge treatment and reuse: this needs studies, however as Anzah is close to the main dumping side (few kilometers) the cost of dumping is not high, but still sludge could be a source of natural fertilizer, if properly treated.
2- Connect more houses so the quantity of water is increased. However, the cost of connecting remaining houses is relatively high due to topography.
3- Improve the irrigation systems efficiency through replacing some main carries and replacing drip systems after being in action for more than five years

The treatment Plant in Anzzah

3 IN-DEPTH DIAGNOSIS

During the second national workshop the stakeholders agreed that the following points are convergence between the two case studies:

1. The general health aspects within the fence of the treatment plant:

Operators indicated that there is no suffering from bad smelling in Anza whereas it is close to residential areas, while Jericho is far away from people. However, representative of PWA mentioned that there are some complaints at certain times of the year when the weather is too hot or at times of cleaning or sludge movement.

Another health issue is the vaccination of Operators of treatment plants against hepatitis and water-borne diseases. In Jericho case all workers are taking the needed vaccines, but this was not the case in Anza, where the operators are not receiving the vaccines. This was related to the availability of vaccines in health facilities in Jenin areas, the fund was available to have vaccines in Jericho (covered by the operator), but not in Jenin. The representative of the Ministry of Agriculture indicated that this issue was officially communicated with the Ministry of Health, who in turn indicated that there is no need to vaccinate farmers who use TWW as hepatitis is not air-borne or water borne, rather transmitted through blood or sexual relations.

2. The Sludge management

The sludge management is an operational struggle that both case studies are suffering from, where stakeholders emphasized on the need to have an adequate management intervention of the sludge as byproduct. In Jericho, the sludge is being dried in dry beds, and then transfer to a nearby industry to be crushed and mixed with soil, which is not the case in Anza, where it is still considered as a struggling waste.

4 NATIONAL RECOMMENDATIONS

4.1 PRIORITY RECOMMENDATIONS

1. General Health

The stakeholders have agreed that the general health issue is a priority recommendation that need to be addressed in all reuse scheme stages (treatment, pumping, and irrigating), thus the Ministry of Agriculture is taking care of the quality of treated effluent outside the fence of the treatment plant along with the pumping approach.

The PWA is taking care of quality within the fence (TSS, COD, and BOD), according to the Palestinian standards of treated effluent, additionally, the PWA is responsible for the general health of treatment plant operators, and asked them to be vaccinated from the water borne diseases, and to be tested negatively on bi-annual basis.

2. Sludge Management

Another priority that needs to be addressed in all reuse scheme is the sludge management, which is considered national priority by all participating stakeholders. Sludge remains a barrier in term of treatment, transfer, or dumping in the landfill sites, due to national regulation and standards of reuse, which are very conservative. The cost of dumping in landfills is too high.

3. The Tariff of treated wastewater

The stakeholders have addressed the tariff issue as a critical pillar of any reuse scheme, where they all agreed that farmers shall pay from the outlet of the treatment plant, but not for the treatment itself, as it is already covered by the residents' bills based on the "polluter pay" principle. Farmers tariff scheme shall cover the pumping, the maintenance of the distribution networks as well as irrigation networks and shall consider the related human resources. This is the case for secondary treatment, while for tertiary the user (farmer) should pay.

4.2 COMPREHENSIVE TABLES OF RECOMMENDATIONS

	Title	**Quick description of content**	**Responsible structure**	**Deadline (short term medium term long term)**	**Scale (local regional or central)**	**Mentioned during local workshops (Y/N)**
Action 1	Activation of the system of connecting buildings to sewerage system	The system is existing in most of cities and communities with sewer system, but need to be applied. In licensing of buildings each design should include the connection. No further licensing of any buisness in the buildiing is granted if the building is actually connected .	Ministry of Local Governance	Medium term	Local	Yes in both
Action 2	Development and adopting of Water Tariff system	The tariff system will enable the WWTP operator to charge farmers fairly considering the tariff components such as electricity for pumping, deterioration, and human resources	Palestinian Water Authority Water Sector Regulatory Council Ministry of Agriculture	Short term	National	Yes
Action 3	Enhancing and promoting the water users' associations Law	The WUAs can help the PWA, and MoA to have better management of water reuse scheme in the country, it will have the database of all farmers' names, their agricultural crops, the areas of cultivated land, and the need per month. It is also monitoring the mixing ratios, and assure the treated effluent quality	MoA	Long term	National	No
Action 4	Reviews on the Palestinian standards and regulations	The review of the standard will help into identifying the required parameters to monitor, will be less	Palestinian Standard Institute	Short term	National	Yes

	for the reuse of TWW	conservative and allow more flexible uses of TWW. as well better define roles and responsibilities of stakeholders	MoA PWA EQA			
Action 5	Identify the governmental roles and responsibilities in the reuse scheme per governmental entity	In Palestinian system there is an overlap into roles and responsibilities in reuse scheme, as there are different ministries and organizations governing the reuse and the treatment sector	PWA MoA MoLG WSRC Service providers	Medium	National	Yes As obstacle and loss of responsibility
Action 6	Enabling Audit and monitoring tools	The current WWTP audit tools focus on measuring quantity and quality of treated effluent, the frequency of having faults, and obligation of OHS standards within the treatment plant. Furthermore, the audit for reuse is on the technical issues such as treated effluent quantity on the gate of the farms, and administratively such as the tariff tools.	PWA WUAs MoA	medium	Regional	No
Action 7	Self-monitoring	Each treatment plant, shall conduct a bi-monthly self-monitoring report, to be reported to PWA, and MoA, which will assure the water quantity and quality. However, this will add costs	WUAs PWA MoA	Long	Local	Yes
Action 8	Unified Treated effluent standards	Identify the minimum required standards per treatment plant technology, since the efficiency of technologies is variant	PSI PWA MoA	long	National	No
Action 9	Sludge management	Identify the best practices to treat and use the sludge considering the current standards and regulations, as well as the cost, many example on success recovery of sludge such as waste to energy.	PSI MoA PWA	long	National	Yes

Action 10	Enhancing Public Private Partnership	Private sector in Palestine is playing an important role in reuse scheme as it is the only client of the reuse in Palestine, but without proper partnership principles, but rather a client relationship .	LGUs WUAs PWA MoA	Long	National	No
Action 11	Research and studies	Conduct a comparison study for different wadis (creeks) and watersheds to identify the opportunities of different treatment schemes in different areas	PWA MoA Private Sector	Long	National	Yes

4.3 CRITICAL LOOK OF NATIONAL OPERATORS

4.3.1 POSSIBLE ADDITIONAL RECOMMENDATIONS

Instructions: add the recommendations that the national operators find interesting, which would have been formulated in the local workshops but not retained in the second national workshop. Also add other recommendations if necessary.

1. *Mixing Ratio (TWW/ fresh water):*

One good practice is to mix fresh water with TWW when available. The local workshop in Jericho has focused on a ratio of water vs treated water in Palm trees irrigation, which was considered as a key element for the quality, thus, the farmers recommended that the operator helps them into setting the proper ratios of water vs treated wastewater. This requires special research and counseling through the Ministry of Agriculture. However, research could be conducted through universities and master students.

2. *Sludge treatment and reuse:*

As it is mentioned in all occasions, the national operators stress that this is a national priority. The experience in this field is not sufficient. Any help would have an impact on the country level. The standards and regulations need to be changed and become less conservative following other countries. Sludge is a resource that can be used especially as soil in the region is weak in organic matter.

3. *Developing existing WWT facilities*

Improving WWTP equipment in different areas would be of lower cost and higher impact. Most WWTP faces challenges in covering the costs of treatment. Solar panels helped Anza to partially cover the cost of treatment. Solar energy will help in pumping as will as treatment process. Consequently, enhance the efficient use of TWW. The more the reuse the less the deduction

from the Palestinian taxes collected by Israelis to pay for treatment of transboundary wastewater.

4.3.2 TRAINING AND STUDIES NEEDS

Instructions: identify and describe the structuring national studies that seem to be lacking and the training needs useful to respond to the problems encountered.

1. Essential national studies

The stakeholders, and the national operators agreed that the following studies are required to have better feasibility of Palestine reuse scheme:

1) Comparative study on treated effluent quality resulting from different WWTP and testing its suitability for reuse based on national standards.
2) Study on major crop tolerance of the physiochemical indicators (TSS, BOD, COD), as well as methods for increasing irrigation efficiency through developing and or adapting equipment
3) Study the scheduling of TWW reuse for irrigating most important crops, as well as the need for fertilizers taking into consideration the level of organic micro contaminants and mineral content of the TWW
4) Capacity development for the farmers and the operators to be aware of the best practices in dealing with TWW, and operating the irrigation systems. Training is essential in the reuse principles and the needed practices and safety measures to be adopted in reuse of TWW. Farmers as well need to know how to deal with irrigation and use of fertilizers.

2. Capacity building

Both farmers and treatment plants operators need to have capacity development program to qualify to deal with TWW. Examples of training subjects mentioned by workshops participants are:

1. *Treated effluent management in agricultural field.*
2. *Private sector participation in the reuse of treated effluent.*
3. *Fertigation in Reuse*
4. *Safety and general health guidance in dealing with TWW.*

4.3.3 SHARING SLOTS

Instructions: identify and describe national strengths whose feedback could be useful to other target countries. Similarly, identify and describe learning points that could benefit from feedback from other target countries.

Palestine is considered junior in the reuse sector, despite that fact that studies and talks about reuse started more than 20 years ago. However, the following are points -we think- could be of benefit to share:

1- We believe that the most successful reuse schemes are located in areas where there is huge deficit in irrigation water. We appreciate that the treatment is conducted not for the sake of reuse per se, but rather for preventing pollution and solve environmental and health hazards.
2- It is not a prerequisite to have a planned reuse scheme to start actual reuse, but rather the appreciation and need for the water resource. Unplanned irrigation systems worked in high efficiency.
3- Never send the TWW coming out of a treatment plant to an area where fresh water is available or land is not wide enough.
4- The utilization of Take or Pay+ (ToP+) tariff scheme is an innovative approach of contracting with the farmers (clients), as they can declare the needed amount per month, they pay for what they declare whether they use it or not, but if they need more than the declared amount they will pay on the base price.

ANNEXES

Annex 1 First national workshop Report

Annex 2: Jericho local workshop report

Annex 3: Anza workshop report

Annex 4: Presentation of First National Workshop

Annex 5: Presentation of Second National workshop