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## Mitigating Transboundary Water Conflicts

Building partnerships and trust through collaborative workshops.



Image Credit: AIES. The Arava Institute hosted a workshop in Nablus (above) in October 2014, where participants toured a newly installed grey-water system and heard from a number of lecturers.

## Introduction

The effects of the seemingly intractable conflict between Israel and its neighbors extend well beyond the political sphere into daily life. Wrangling over the use and management of limited resources, particularly water, gives everyday activities a political weight of their own. In the arid Middle East, acts as simple as pouring a glass of water, taking a shower, and flushing the toilet can add to the reservoir of tension and mistrust that stands between the blocks the path to peace. Fueled by this tension, the ever-present potential for water conflict stands in the way of constructive progress—and makes dialogue and cooperation over these issues crucial to building a durable peace in the region.

As part of a broader program addressing some of the roots of water conflict, the Arava Institute for Environmental Studies—supported by a generous grant from USAID—held 11 cross-cultural and multi-national workshops for young decision makers, technicians and students in the region. Led by the Institute’s Center for Transboundary Water Management, these workshops

focused on topics ranging from the Eco-industry to resource management and wastewater treatment, and took place in Israel and the West Bank.

Over three years, these workshops hosted around 340 participants drawn from a range of national and cultural backgrounds. The plurality of participants (over 110) were Israelis, making up a third of all workshop attendees. Palestinians from the West Bank made up around a quarter of the participants, and Americans constituted nearly 20 percent of the workshops. International and multi-national participants filled the remaining quarter, with Jordanians making up the largest piece of the international group (See Figure 1). Just over a third of attendees were women (128), and over 40 percent of all participants were under 30 years old.

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Image Credit: AIES  
Workshop participants tour an Arava Institute grey water treatment system at a family home in Nablus.

**USAID Office of Conflict Management and Mitigation:**

Founded in 2002, the USAID Officer of Conflict Management and Mitigation (CMM) aims to “analyze the causes and consequences of violent conflict, support early warning and early response to violent conflict, and conflict mitigation and analysis into USAID’s analysis,

strategies and programs” (USAID website). CMM promotes training, outreach and technical assistance in conflict areas including the West Bank and Gaza, and CMM’s “People to People” fund was the largest source of funding for the Arava Institute’s workshops.

**Project Background**

Wastewater treatment in the West Bank differs sharply from wastewater treatment in Israel. Existing Palestinian Authority wastewater treatment facilities are unable or insufficient to treat much of the sewage in the West Bank, and inefficient storage methods like cesspits and latrines can contaminate groundwater with harmful pathogens. Nearly 60 million cubic meters of raw sewage is discharged into the West Bank environment each year—much of it reaching streams and flowing into Israel, where the sewage is treated and the Palestinian Authority charged for the inconvenience. Tension and recriminations over the treatment and use of this wastewater, as well as over the difficulty of creating or expanding wastewater facilities, adds

to the distrust between Israel and the Palestinians.

Funded by USAID, the Mitigating Transboundary Water Conflicts (MTWC) project began in the Autumn of 2012 as a multi-faceted program to help make tangible progress on these waste-water issues. The first major aspect of the project—small-scale greywater treatment systems for rural families and communities not reached by the Israeli or Palestinian water treatment grids—were installed at seven sites in Israel and the West Bank. These low-energy and low-tech systems help families and municipalities treat and ultimately reuse much of their wastewater to irrigate fields, saving money and resources.

The second aspect of the MTWC program, cross cultural and multi-national workshops addressing technical, political and environmental issues and possibilities in the region, aimed to chip away at the mountain of mistrust and animosity through constructive relationships. Based on a fundamental hypothesis, that “relationships yield partnerships and partnerships yield trust,” these workshops brought together carefully vetted students, technicians

and emerging leaders in the region in an effort to build trust through shared learning and discussion.

## People to People- Methodology

The Arava Institute’s 11 workshops targeted three distinct “stakeholder” groups and focused on engendering dialogue about wastewater issues and cooperation.

**3** Decision Makers workshops

**3** Technicians workshops

**4** Students Workshops

**1** Combined Workshop

Potential attendees, divided into “Decision Makers,” “Technicians,” and “Students,” received emailed invitations prior to the workshop, and after passing the USAID vetting process received funding for travel and lodging arrangements. While the initial project goals called for four



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workshops per stakeholder group, the Institute ultimately replaced several with a multi-group workshop that gave participants a broader glimpse into wastewater management.

As part of the workshop process, the Arava Institute collected intake and outtake questionnaires from each participant. These questionnaires aimed to quantify the effectiveness of the workshops by a number of metrics—as required by USAID—and the efficacy of these efforts is discussed in the Summary and Results sections as well as in the final Recommendations. Almost every workshop’s questionnaire included an iteration of at least two of the following three statements and required an answer between Strongly disagree to Strongly Agree:

- 1. After this workshop I have a better understanding of wastewater issues.**
- 2. After this workshop I have a better understanding of the “other.”**
- 3. Israelis and Palestinians should cooperate on wastewater management.**

Most questionnaires also included additional space for

comments or concerns, some of which are included in the report and recommendations sections.

The responses to these questionnaires are analyzed in the results, summary and recommendations sections.



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## Implementation: December 2012-July 2015

### Workshop 1

Decision Maker, Students, Technicians



Image Credit: AIES. A participant at the kickoff workshop learns about grey-water technology.

## Decentralized Water, Wastewater and Energy Solutions Conference

Israel, Jordan, the Palestinian Authority  
(Arava Institute, 17-19 December 2012)

### Workshop Highlights

The first workshop, held at the Arava Institute in Southern Israel in mid-December 2012, brought together 60 water experts from Israel, Jordan and the Palestinian authority (West

Bank, Gaza), and focused on six central themes:

- Cross-border wastewater treatment and reuse
- Renewable energy for water supply and treatment

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- Appropriate treatment technology
- Renewable energy and the energy sector
- The role of the private sector in water and energy management
- The role of regional NGOs in promoting water and energy management

The first day of the three-day workshop focused on panel discussions between the speakers and attendees—and moderated by Dr. Clive Lipchin and Dr. Shmuel Brenner of the Arava Institute and by past president of the Israel Palestine Center for Research and Information Gershon Baskin. The second day included a number of discussion workshops, which featured regional NGO representatives and water technicians, addressing the six central workshop themes (above), and featured a keynote address from former Israeli ambassador to France Daniel Shek, who touched on opportunities for cooperation over regional water and energy management.

The program concluded with a field trip on water and energy management in the Southern Arava

region in Israel—one of the driest places in the world.



Experts and participants took part in a field trip throughout the southern Arava—which receives less than 25mm of rain per year—to learn about techniques of water management.



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## Attendee Statistics

of **76** total participants: **27** Israelis, **19** Americans, **13** Jordanians, **12** Palestinians, **5** International.

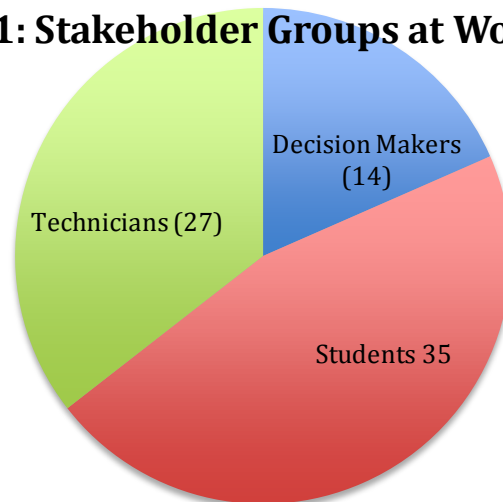
**52** Men

**24** Women

of these **24** youth

Including members from each stakeholder group:

**Figure 1: Stakeholder Groups at Workshop 1**



## Questionnaire Results

The kick-off workshop was the only conference without intake and outtake questionnaires, as the Institute was still determining how best to collect quantifiable data. Despite this lack of quantifiable data, we can still draw some conclusions

on the efficacy of the workshop based on the wrap-up discussion.

The wrap-up discussion at the end of the conference revolved around the advantages of transboundary cooperation in water and wastewater management projects. During this discussion, participants from every stakeholder group and every country agreed that cooperation was key to



better water management. Some attendees pointed to the importance of building relationships and trust, while others noted the possibilities for sharing technology and expertise across borders. The discussion as a whole suggested most participants supported cooperation and technological and economic interaction in the wastewater sector. The clearest conclusion, however, was the need for quantifiable data; a conclusion that led to intake and outtake questionnaires at all subsequent workshops.



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## Workshop 2 *Students*



Image Credit: AIES.

### **Issues of Wastewater Management Kidron Valley, Israel, 10 April 2013. Israel, The Palestinian Authority**

#### **Workshop Highlights**

The second workshop, held in and around the Kidron Valley, hosted more than 50 students and interns from both the Arava Institute and from the region. Led by the Arava

Institute, the workshop addressed several key themes:

- Pollution and wastewater treatment in the Kidron Valley.
- Difficulties in inter-governmental cooperation.
- The economic, recreational, tourism and peace building

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potential of a rehabilitated Kidron Valley.

Students got a glimpse into the rich history of the Kidron Valley from archeologist Dr. Avner Goren before hearing from a number of speakers about the health and environmental issues stemming from untreated raw sewage. Beginning at Hess View point in Talpiyot, Jerusalem, students

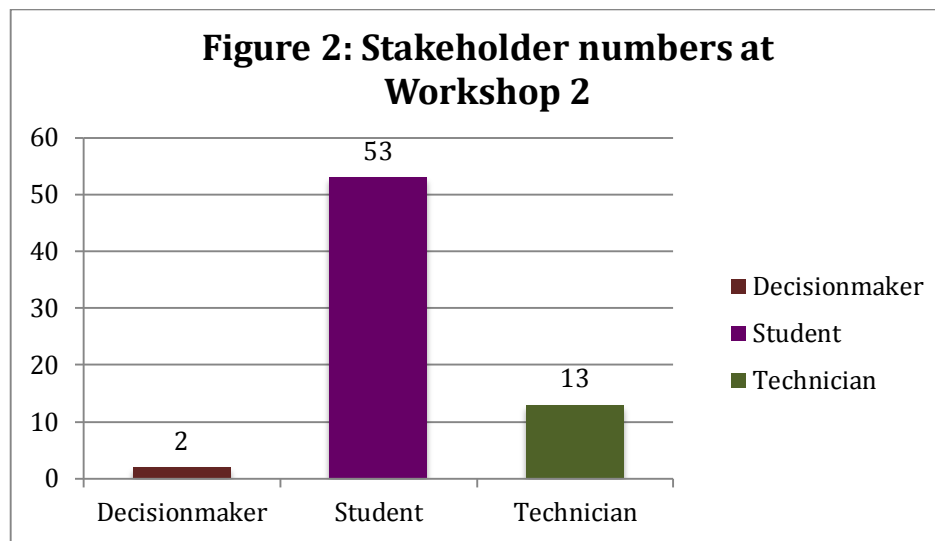
visited a family home in East Jerusalem to get a better understanding of everyday water concerns, and listened to speakers from a Palestinian NGO and the Palestinian Authority. The workshop concluded with a visit to the Ogg Reservoir, a Jewish settlement in the West Bank, and finally a discussion at the EcoMe Centre in Jericho.

### Attendee Statistics

Of **70** participants: **39** Men **31** Women of these **39** Youth

Including:

**19** Israelis, **19** Americans, **18** Palestinians, **8** Jordanians, 6 Internationals



Several attendees were AIES employees, and as such are not included in the above figure.

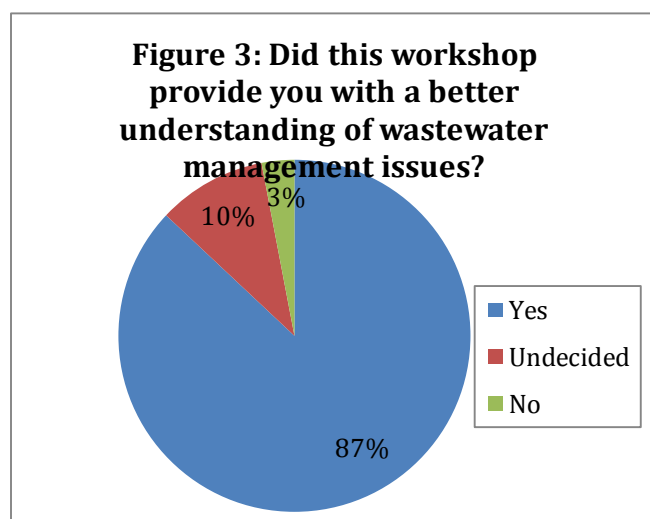
### Questionnaire Results

Due to different arrival and departure times as well as logistical difficulties, not all participants completed intake and outtake

questionnaires. Of 54 participants, 36 filled out both intake and outtake questionnaires.

The results of two questionnaires indicated participants left with an improved understanding of wastewater issues. Question 6 of the outtake questionnaire asked participants whether or not they felt they had an increased understanding of these issues, and more than 85 percent of

an increase in shared benefits, many participants from varying nationalities expressed frustration at government policies that inhibit wastewater cooperation. Participants also reported that a lack of cooperation, trust, and interaction between governments was the largest impediment to progress on wastewater issues. The difficulty collecting quantifiable data for the “percent change in perception of the other” is discussed at length in the recommendations section.



participants answered ‘Yes’ (Figure 3).

The second USAID objective—engendering a more positive perception of the other—was more difficult to quantify. Results from the outtake questionnaires and group discussions suggest that participants developed an increased interest in cooperating with the ‘other’ based on





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## Workshop 3 *Technicians*



Image Credit: AIES. Participants watch a demonstration of A.R.I. technologies.

### **Water Technology and Environmental Control (WATEC)** Israel, Jordan, The Palestinian Authority (Tel Aviv, Israel, 22-24 October 2013)

#### **Workshop Highlights**

The third workshop, the first of several technicians' workshops hosted by the Arava Institute, focused on the following themes:

- Regional and cross-border wastewater treatment and reuse.
- Appropriate technologies for water supply and treatment at a local, regional, and national scale.
- The role of the private sector in water and energy management.
- The role of NGOs in water and energy management.

- Reduction of human and environmental risk through better management strategy.

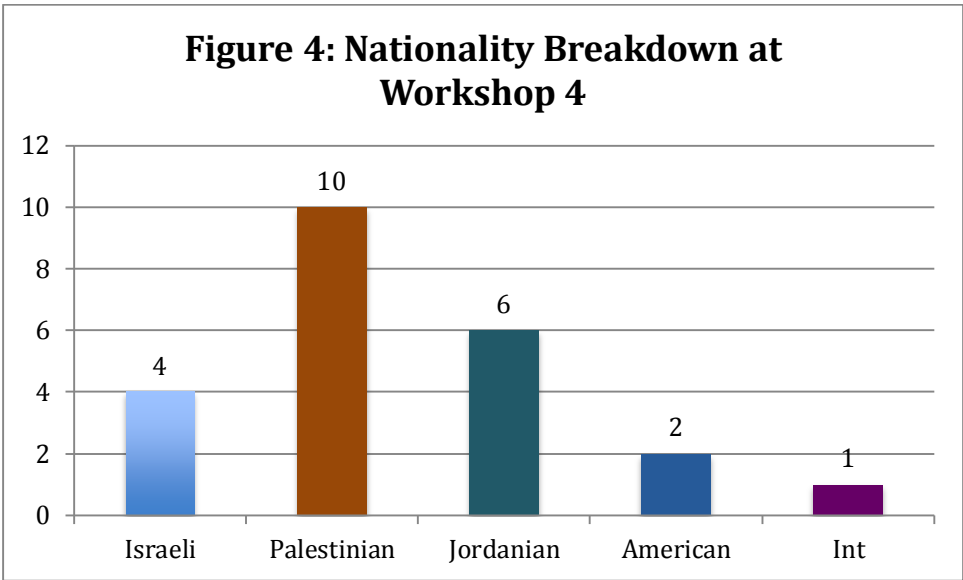
The first day featured two panel discussions, one on the role of water technologies in regional cooperation, and the other on options and technologies to replenish the rapidly shrinking dead sea. After hearing from distinguished speakers from private companies and the Israeli, Palestinian and Jordanian

governments, participants embarked on a field trip to Be'erot Yitchak - Avrot Industries to learn about reinforced sewage pipes that prevent leaks and seepage—a major problem in the West Bank. The following day included tours of an Israeli-Jordanian water transfer station, as well as visits to Arad Technologies and A.R.I to hear about cutting-edge water monitoring and control technologies.

**Attendee Statistics**

Of **23** participants, **19** men, **4** women, **1** youth

**2** decision makers, **2** students, **19** technicians





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## Questionnaire Results

The intake and outtake surveys, collected at the conference, indicate that the conference was successful in meeting the USAID project goals.

Our calculations suggest these goals were met.

The first goal, determining the change in perception of the other, was difficult to measure, although a few questions within the questionnaire suggest a positive perception in all three groups of participants. Firstly, in the outtake questionnaire, 100% of participants concluded that cooperation between Israeli and Palestinian communities will encourage higher-level decision makers to pursue further cooperation. Similarly, 100% of participants concluded that it is in the best interest of Israelis and Palestinians to cooperate on wastewater and water management. Additionally, 74% of



participants believed that Israelis and Palestinians should share the costs and benefits of water management in the outtake survey.

Participants were also asked whether the workshop gave them a better understanding of wastewater issues in the West Bank. 64% of the participants responded that they agreed or strongly agreed with the statement.



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## Workshop 4 *Technicians*



Image: AIES. Attendees examine an AIES recycled gray-water system in Sakhnin.

### **Challenges of Wastewater Treatment in Rural Areas** Israel, the European Union, The Palestinian Authority (Sakhnin, Israel, 12-16 January 2014)

#### **Workshop Highlights**

The longest of all 12 MTWC conferences, the 5-day workshop in January 2014 included numerous discussions and roundtables and played host to a myriad of speakers from private-sector companies and the Israeli and Palestinian governments and focused on the following themes:

- The role of NGO's and foreign governments in mitigating wastewater conflict.
- Technological solutions to regional issues.
- Different approaches to water treatment and management.

Despite a rocky start, as political and visa issues enabled only 7 beneficiaries to travel to the conference, the workshop began on



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time, with participants hearing on the first day from Dr. Hussein Tarabeiah from the Town Association for Environmental Quality and from the Arava Institute's Drs. Lipchin and Kimchie. The 13th opened with remarks from scholars from the TECHNION, Palestinian Hydrology Group and the Jordan Ministry of Water, and continued with numerous discussions with private and public sector water companies and environmental groups.

Discussions and panels on the third day focused on the role of the

European Union in funding and promoting water infrastructure development, followed by company exhibitions, and on the fourth day participants had the opportunity to go on a number of site visits, including the Akko Wastewater Treatment Plant, the MEKOROT Eshkol filtration site, the OFRA Aqua Plant, and the Galil Society in Akko. The workshop concluded with a discussion with USAID representatives on the 16th.

### **Attendee Statistics**

Of **7** participants: **1** Israeli, **6** Palestinians,

**1** Decision Maker, **6** Technicians,

**6** men **1** woman



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## Questionnaire Results

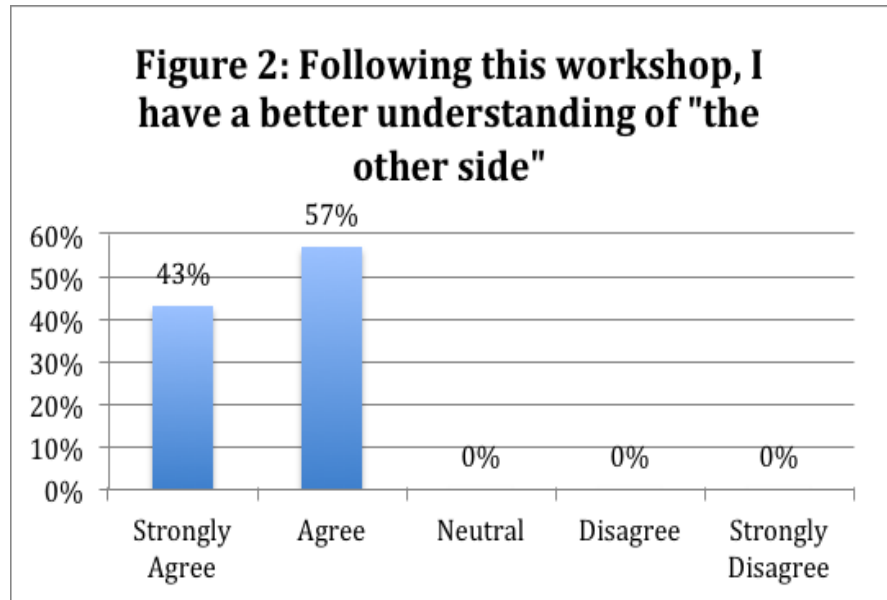
The results of the intake and outtake questionnaires suggest that the workshop was successful in its first objective of improving participant understanding of transboundary wastewater issues.

The first question of the outtake questionnaire asked whether or not the workshop increased their **understanding of wastewater management issues**, and **29% of participants responded 'Strongly Agree'** while the remaining **71%**

**responded 'Agree'**. There were no participants that were neutral or disagreed.

The second indicator was addressed in the outtake questionnaire, in which participants were asked whether the workshop **provided them with a better understanding of "the other side" of the wastewater conflict**. Once again, all

participants **agreed (57%) or strongly agreed (43%) with the statement (figure 2)**. All 7 workshop attendees filled out an intake and outtake questionnaire.





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## Workshop 5 *Students*



Image Credit: Example of Dead Sea sinkholes. Photo Credit: Gil Cohen-Magen, Haaretz

### **Arava Institute for Environmental Studies Student Field Trip Israel, The Palestinian Authority, Jordan (Arava Institute, 1-3 April 2014)**

#### **Workshop Highlights**

The fifth workshop, one long field trip that showed participants a number of water systems, gave students at the Arava Institute for the spring semester an outside-the-classroom look at Israel's

environment, and focused on the following themes:

- Regional cooperation on water and energy management.
- Technological solutions to wastewater conflict.
- Difficulties in coordinating transboundary water

cooperation between governments.

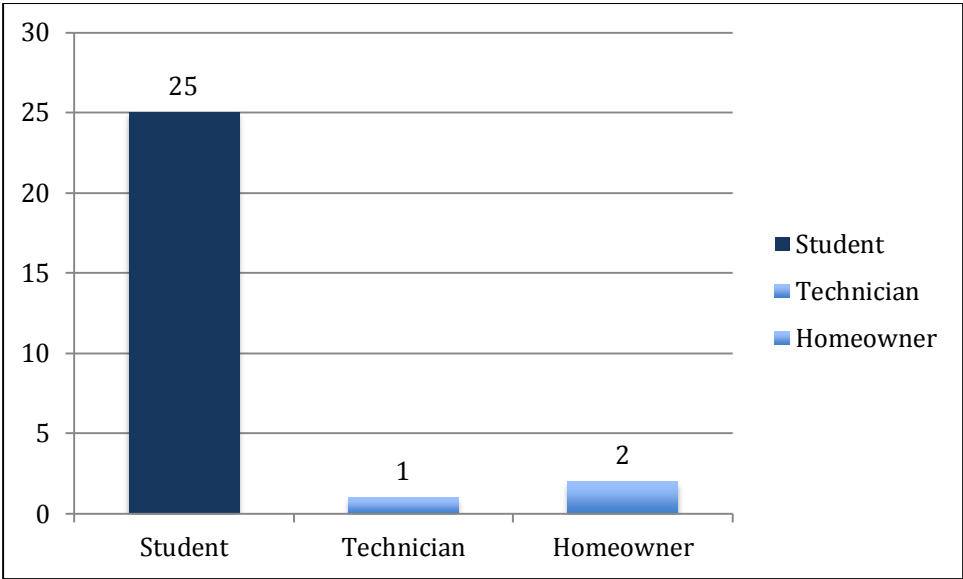
Led by AIES faculty, students visited the Dead Sea, where Dr. Lipchin lectured on the spread of sinkholes due to declining sea levels, a Palestinian Salt factory, Kibbutz Ein Gedi, and the EcoMe Center for Peace and Ecology— all on the first day.

The second day included visits to the Jordan River and a Palestinian village, an Israeli-Jordanian water station and Lake Kinneret/Sea of Galilee. After a morning hike at Majrase, the workshop concluded with lunch and a return to Kibbutz Ketura.

**Attendee Statistics**

Of **28** total participants: **20** Men, **8** Women, **19** Youth,

**8** Israelis, **10** Palestinians, **5** Jordanians, **5** internationals



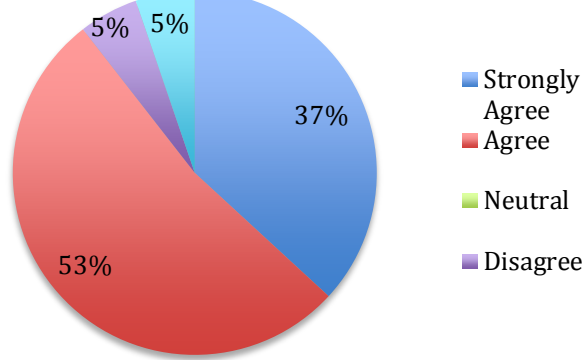




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**Figure 8: This workshop has given me a better understanding of wastewater issues**



### Questionnaire Results

The results of the intake and outtake questionnaires suggest that the workshop was successful in its first objective of improving participant understanding of transboundary wastewater issues. The questionnaire asked directly whether or not the workshop has given them a **better understanding of wastewater issues**. **37% of participants responded ‘Strongly Agree’ and 53% responded ‘Agree**. Therefore, we determined that 90% of participants increased their understanding of the wastewater challenges in the region.

Participants were also asked whether the workshop provided them with a better understanding of “the other side” of the wastewater conflict. The question asked to what extent did the workshop influence their perception of each national group. After taking a weighted

average of each national group’s response, we determined that there was a **48% positive perception change of workshop participants**. Comments on the reliability of this metric are included in the recommendations section. Each participant at this workshop filled out an intake and outtake questionnaire.



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## Workshop 6 *Students*



Image Credit: AIES. Participants watch an experiment in the lab at the Arava Institute

### **Biogas and Greywater System Training Workshop** Perez Center for Peace, Palestine Wildlife Society, and the Arava Institute for Environmental Studies (Arava Institute, 29 April-1 May 2014)

#### **Workshop Highlights**

The sixth workshop, hosted at the Arava Institute and focusing on BioGas and greywater systems, featured representatives from the Shimon Peres Center for Peace and

the Palestine Wildlife society, and focused on the following themes:

- Technological solutions to energy and wastewater issues.

- Economic and tourism applications of environmental policies and technology.
- Regional cooperation on water and wastewater issues.

Over three days, the more than 40 student attendees observed some of the potential applications for existing Biogas—gasses produced by the breakdown of organic matter like sewage or food waste— and greywater technology. The core of

the conference focused on greywater and biogas system training, led by Dr. Yair Teller and Dr. Shlomo Kimchie, and participants gained insight into the technical operation of these systems. The group of Israeli, Palestinian and Jordanian attendees also had the opportunity to visit neighboring Kibbutz Lotan and learn about its ecotourism initiatives and permaculture, greywater and biogas systems.

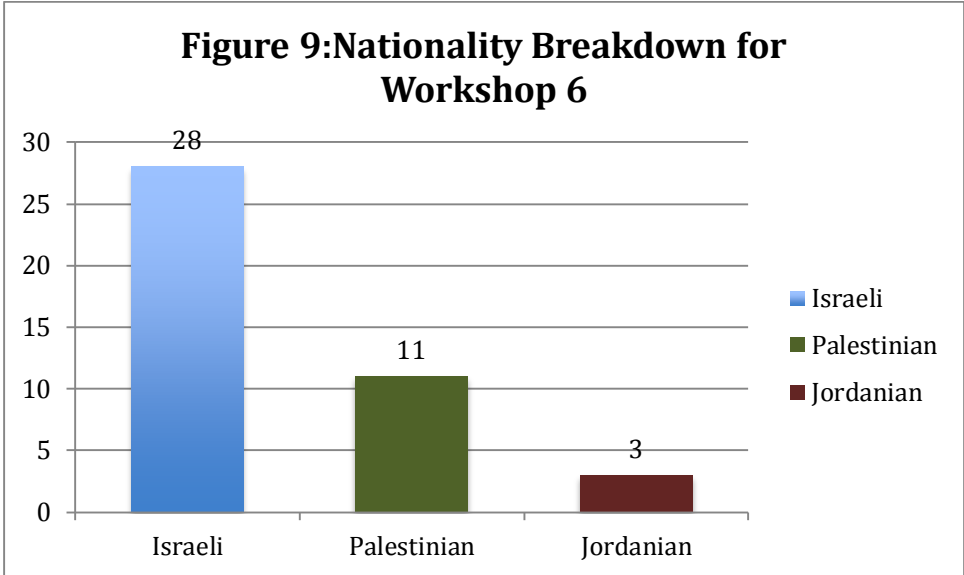
**Attendee Statistics**

Of **42** participants: **42** students,

**35** men

**7** women,

**27** youth.





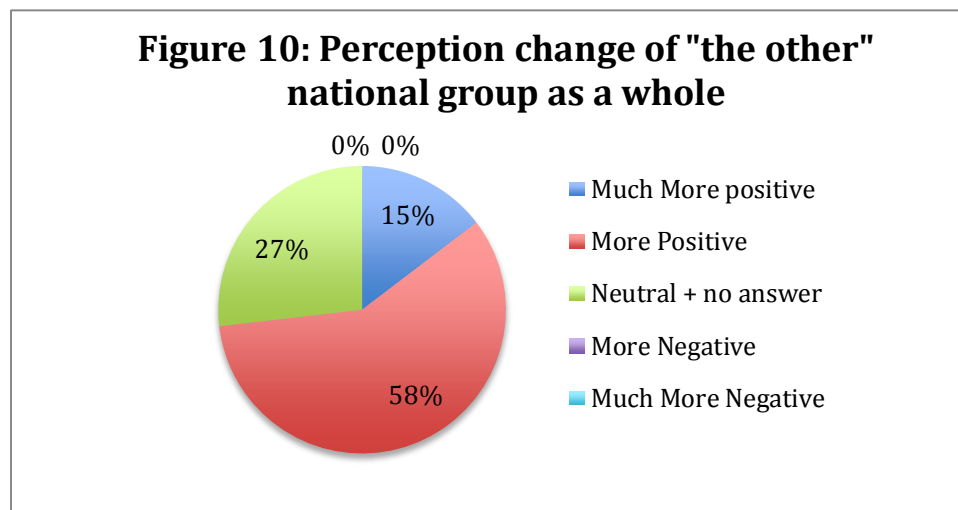
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## Questionnaire Results

The results of the intake and outtake questionnaires suggest the workshop was successful in improving participant understanding of transboundary wastewater issues. Asked whether the workshop had provided them with a better understanding of wastewater issues, **29% of participants responded 'Strongly Agree' and 56% responded 'Agree—thus, 85% of participants had an increased understanding of the wastewater challenges in the region.**

The questionnaires also asked whether participants had a better understanding of the “other side”, and after taking a weighted average of each national group’s response, we determined that there was a **73% positive perception change of workshop participants.** Each participant filled out an intake and outtake questionnaire at the sixth workshop.





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## Workshop 7 *Decision Makers*



Image Credit: AIES. An attendee takes a break during a discussion in Beit Jala.

### **Palestinian—Israeli Cross Border Wastewater Workshop** The Palestinian Authority (Beit Jala, West Bank, 26 June 2014)

#### **Workshop Highlights:**

The seventh workshop—hosted solely in the West Bank—dealt with cross-border wastewater management and focused on the following themes:

- Regional and cross-border wastewater management and reuse.

- Appropriate technologies for monitoring and managing wastewater and water supplies.
- Difficulties in reducing sources of pollution.
- The role of cooperation in bettering wastewater management.

Over 40 participants heard research presentations from Israeli

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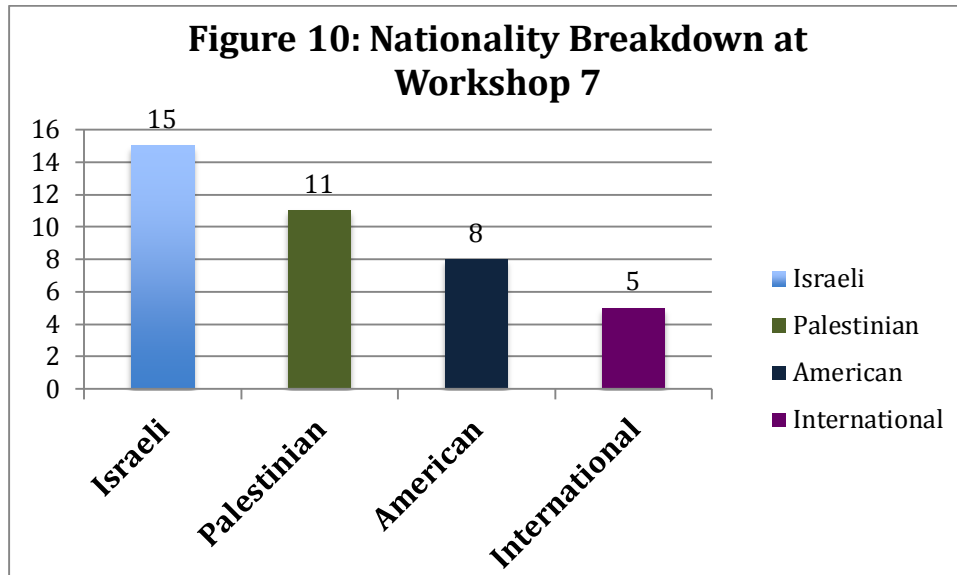
and Palestinian scholars on topics ranging from satellite analysis of watersheds to the Stonecutting and Tannery industries in Hebron and

their role in water pollution. The one-day workshop also included a number of case study presentations and a discussion section.

### Attendee Statistics

Of **39** participants: **26** Decision makers, **12** students

**24** Men, **15** Women, **7** youth



(AIES employees are not counted as part of a stakeholder group)



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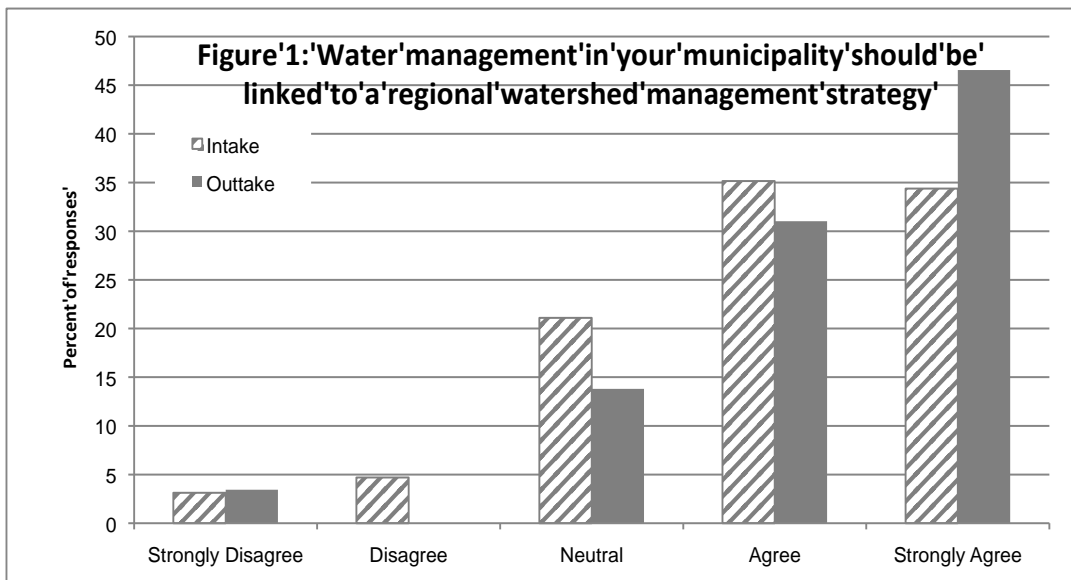


## Questionnaire Results

The results of the intake and outtake questionnaires suggest that the workshop succeeded in its first objective to improving participant understanding of transboundary wastewater issues. Participants were asked in the intake and outtake questionnaire: “How important is it that water management in your municipality/town is linked to a regional watershed management strategy,” to measure the increased understanding of wastewater issues. Calculations of the percent of participants moving from negative or neutral responses to positive responses between the intake and outtake questionnaire, **showed an**

**82% increase in understanding of wastewater issues.**

The second indicator was addressed in a question asked in both the intake and outtake questionnaire. Following a qualitative assessment of the amount of positive versus neutral or negative responses in the outtake questionnaire, we determined that there was a **64% increase in positive responses between the intake and outtake questionnaires.** The limitations of this method are discussed in the recommendations section. Each participant filled out an intake and outtake questionnaire.





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## Workshop 8 *Technicians*



### Homeowners and Technicians Workshop The Palestinian Authority Nablus, West Bank, 30 October 2014

#### Workshop Highlights

The eighth workshop, showcasing an installed greywater treatment system in Nablus, included a mix of Palestinian technicians and homeowners and demonstrated AIES' cost-efficient greywater technology. The workshop focused on the following themes:

- Appropriate technologies for monitoring and managing wastewater and water supplies.
- Regional and cross-border wastewater management and reuse.

In tandem with Engineer Majdi Shaheen from House and Water Energy (HWE), a Palestinian NGO, the Arava Institute explained the efficiency of the constructed-

wetlands greywater system, and demonstrated how to properly maintain and test these systems. In the afternoon, the nearly 20 participants traveled to Deir al Hatab to observe an installed system and to

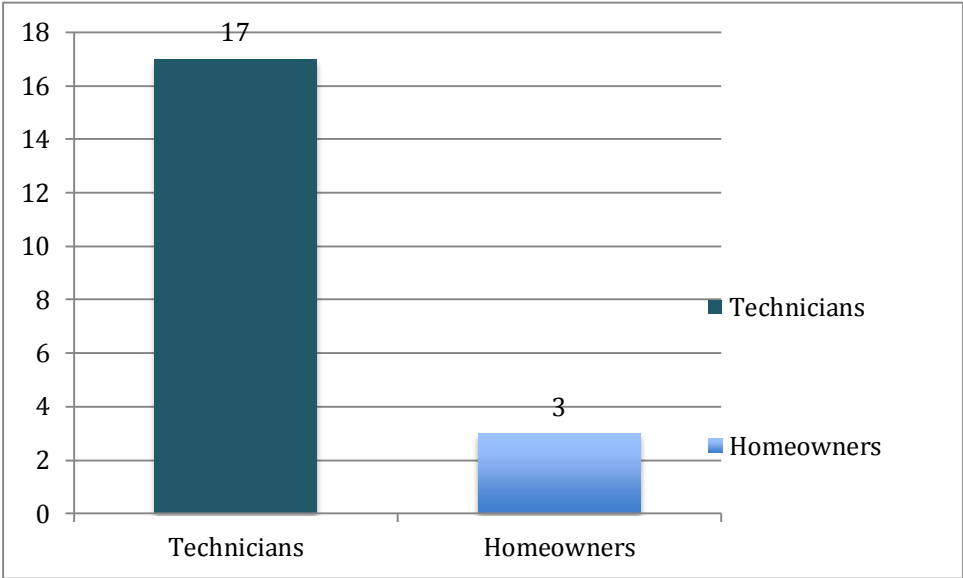
discuss the newly made homeowners manual. Participants also saw vegetables and crops grown using recycled greywater (like the peppers above).

### Attendee Statistics

Of **20** participants:

**17** Palestinians, **1** American, **1** Israeli, **1** Jordanian

**8** Women, **12** Men, **4** youth





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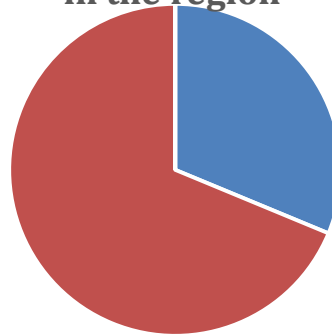


## Questionnaire Results

Questionnaire results indicate the workshop succeeded in improving participant understanding of transboundary wastewater issues. Asked whether or not the workshop has given them a better understanding of wastewater issues, 100% of participants responded affirmatively, with 31% strongly agreeing and 69% agreeing. 100% of participants also agreed (intake and outtake) that wastewater cooperation was in the best interests of Palestinians and Israelis, a positive sign but also likely due to the self-selecting nature of these workshops, which draws participants who already believe in the importance of regional cooperation. Unfortunately, the workshop location in Area A of the West Bank cut down on the number of Israeli participants who could legally attend, and therefore interaction between Israelis and

Palestinians was minimal. Thus, we have determined that it is not possible to quantify a positive or negative perception change of “the other” from this workshop. Each participant filled out an intake and outtake questionnaire.

**This workshop gave me a better understanding of wastewater issues in the region**



■ Strongly Agree ■ Agree ■ Neutral ■ Disagree ■ Strongly Disagree





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## Workshop 9 *Decision Makers*



Image Credit: AIES.

### **Eco-Industry as a Lever for Regional and International Development**

Israel

Be'er Sheva, Israel, 24-5 February 2015

and highlighted the following  
themes:

#### **Workshop Highlights:**

The ninth workshop, which focused on the role of the Eco-Industry in promoting economic development, brought 20 Israelis and Palestinians together in Beersheba

- The role of the private sector in water and energy management.
- Changes in wastewater and pollution management.

- Cooperation between governments and the private sector on environmental issues.

Participants ate dinner with representatives from the Rahat Water Company, toured the Neot Hovav Eco-Industry Park and Solar Venture Company, and visited the Environmental Services Company to

hear about alternative energy solutions. After a tour of Machteshim factory, which addresses possible wastewater treatment solutions, the conference concluded with a roundtable discussion dealing with the changing relationship between industry and environment entitled “From a Polluting Industry to Eco-Industry.”

### Attendee Statistics:

Of **20** participants: **20** Decision Makers

**9** Palestinians, **10** Israelis, **1** Int.

**16** men **4** women **3** youth

### Questionnaire Results

The results of the intake and outtake questionnaires suggest that the workshop was successful in its first objective of promoting the importance of cooperation between Israelis and Palestinians on environmental issues that affects and involve both of them. We used one question asked in both the intake and outtake questionnaire, “On a scale of 1 to 5, please indicate to what extent you think Palestinians and Israelis

should cooperate on shared environmental issues like water and wastewater management” to measure the level of support to this statement before and after the workshop. **91% of participants responded with 4 or 5 in the intake questionnaire and 92% did the same in the outtake questionnaire.**

Participants were also asked if the workshop had given them a better understanding of wastewater issues, and **92% either agreed or strongly agreed.**



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## Workshop 10



Image Credit: Gerardo Tremont. A student explores the landscape near the Dead Sea.

### **Student Water Trip: Challenges of Water and Wastewater Treatment in the Middle East** Israel, Jordan, The Palestinian Authority (Dead Sea, Aqaba, Wadi Rum, 17-20 March 2015)

#### **Workshop Highlights**

The tenth workshop, a student field trip through southern Israel and southern Jordan, gave students from the Arava Institute a glimpse into differences in water and wastewater management, and focused on the following themes:

- Regional and cross-border water management and reuse.

- The role of governments in bettering and/or complicating water relations.
- International aid as a tool for water conflict resolution.

Students visited the Dead Sea and the famous Qasr el Yehu baptism site on the Jordan River, and learned about the impact of a shrinking Dead Sea. After touring around the Hebron/Beersheva watershed,

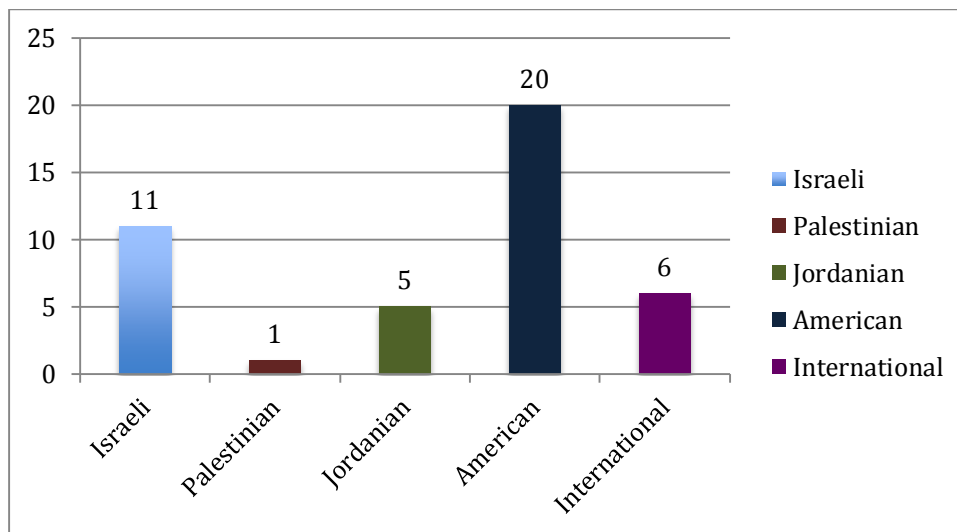
Arava Institute for Environmental Studies  
Kibbutz Ketura, D.N., Hevel Eilat 88840  
Phone: 972-8-6356618 Fax: 972-8-6356634 email: [info@arava.org](mailto:info@arava.org)

students observed differences and difficulties of wastewater management in isolated Bedouin communities in the Negev desert before crossing into Jordan through Aqaba. In Jordan, students heard about the planned Red-Dead conduit that Israel and Jordan plan to

implement to regenerate the Dead Sea, and then stayed the night in Wadi Rum. Following a site visit to the Aqaba Water Company, the workshop concluded with a Shabbat dinner back at Kibbutz Ketura.

### Attendee Statistics

Of **42** participants: **42** Students,  
**20** Men, **22** Female, **20** youth

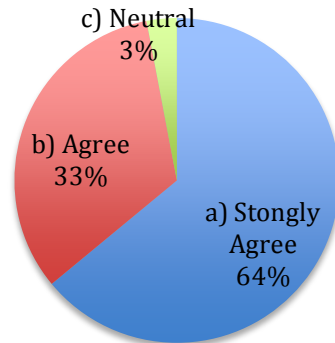




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**It is in the best interests of  
Palestinians and Israelis to cooperate  
on shared environmental issues like  
water and wastewater management**



Participants were also asked whether the workshop provided them with a better understanding of “the other side’s” role in the wastewater conflict. Students were asked to rate the following statement: It is in the best interests of Palestinians and Israelis to cooperate on shared environmental issues like water and wastewater management.

Before the workshop, **95% supported cooperation between Israelis and Palestinians** while **after the workshop 97% supported cooperation**. The change although positive wasn’t statistically significant, likely due to the self-selecting nature of the participants. This is discussed at more length in the recommendation section.

Each participant filled out an intake and outtake questionnaire.

## Questionnaire Results

The results of the intake and outtake questionnaires suggest that the workshop succeeded in improving participant understanding of transboundary wastewater issues. Asked whether or not the workshop has given them a better understanding of wastewater issues, **16% of participants responded ‘Strongly Agree’** and **61% responded ‘Agree**. Therefore, we determined that **77% of participants had an increased understanding of the wastewater challenges in the region.**





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## Workshop 11

### Palestinian Israeli Cross Border Waste-Water Workshop

The Palestinian Authority

(Beit Sahur, West Bank, 25 May 2015)

#### Workshop Highlights

The 11th workshop, a one-day conference in Beit Sahur, West Bank, brought together 36 Israeli, Palestinian, American and Swedish decision makers to discuss cross-border wastewater management and focus on the following themes:

- The benefits of regional wastewater and energy cooperation.
- Differences in water treatment across borders and regions.
- Difficulties in engendering regional cooperation between governments.

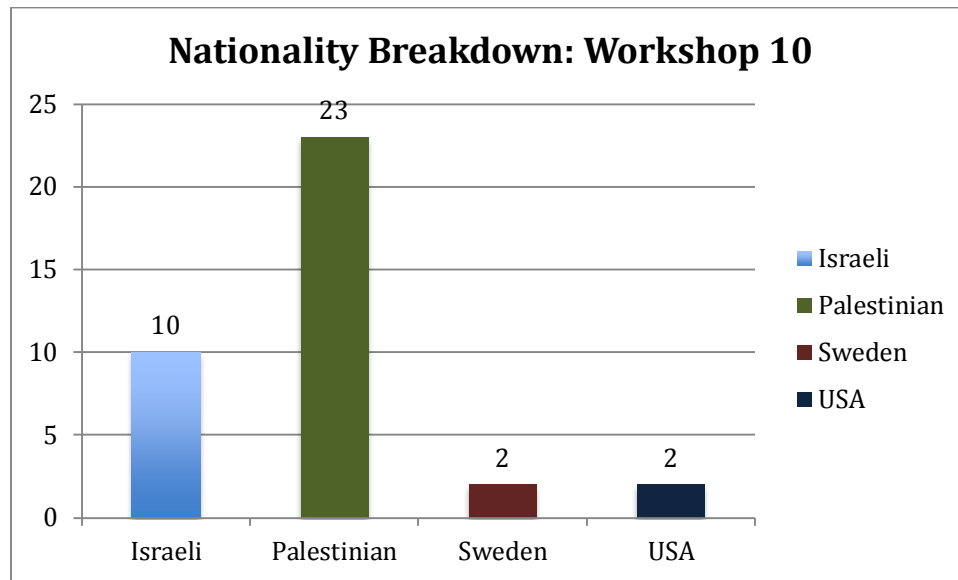
- Technological solutions to wastewater conflict.

The workshop began with lectures laying out the differences between wastewater treatment in the West Bank and in Israel, and the impacts of different levels of treatment on environmental and human health. Lecturers from Israel and the West Bank also touched on cost-efficient water treatment discussions before a panel discussion including several Israeli government representatives and faculty from the Palestinian Al-Quds Public Health Society. The session concluded with a general discussion and a group lunch.

#### Attendee Statistics

Of **36** total participants: **36** decision makers,

**22** men, **14** women





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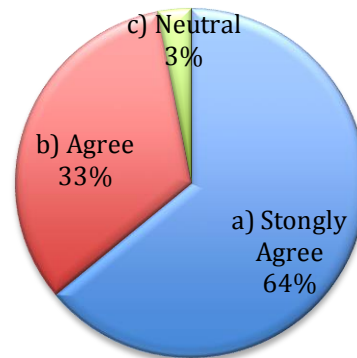
## Questionnaire Results

The results of the intake and outtake questionnaires suggest that the workshop succeeded in promoting future cooperation between Israelis and Palestinians on common wastewater issues. Participants were asked to agree or disagree with the following statement: **“Israelis and Palestinians should share both the costs and the benefits of water and wastewater treatment”**. In the intake 86% of the people strongly agreed or agreed with the statement, and by the conclusion of the workshop 95% of participants strongly agreed or agreed.

Attendees were also asked to agree or disagree that: **“Palestinians and Israelis academics would bring better improvements on their researches on shared wastewater issues if they cooperate with each other’s work”**. 100% of the people strongly agreed or agreed both at the beginning and conclusion of the workshop.

Finally, 71% of participants answered that they left the workshop with a stronger understanding of wastewater issues.

**It is in the best interests of Palestinians and Israelis to cooperate on shared environmental issues like water and wastewater management?**





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## Executive Summary and Analyzing Project Goals

The MTWC workshop program was a success according both to the project targets set out in 2012 as well as from an objective standpoint. Focused on a central goal, for “Israeli and Palestinian university students, decision makers and technicians to build personal and professional relationships in order to provide a solid foundation for the reduction of cross-border wastewater conflicts and maximize the opportunity of using treated wastewater in irrigation,” the project brought together more than 350 decision makers, technicians and students from around the region—well within the stated aim of 240-360 total participants—and reached out to nearly a thousand. The Arava Institute initially aimed for between 30-50 percent of participants to be women, and ended with just under 34 percent female participation through all 12 workshops. Of these participants, the Institute facilitated constructive interaction between over 200 Israelis and Palestinians—and many of these participants reported gaining a “better perception of the other” as a result of the workshops. Attendees overwhelmingly agreed that they had gained a better understanding of wastewater issues through these workshops, as detailed in the previous reports section, and most workshops resulted in 80 to 90 percent agreement that Israelis and Palestinians should cooperate on wastewater issues.

Participants heard from numerous distinguished speakers from the Israeli, Palestinian and Jordanian governments as well as leading environmental researchers and scholars from around the world. They engaged in constructive discussions on environmental, political and technological issues and solutions to wastewater management, and visited industrial and technological sites—as well as newly built, USAID-funded greywater treatment systems—all over Israel and the West Bank. As one Israel participant commented, “I was happy to discover people who share the same thoughts, and have a strong will like me to make a change.”

[www.arava.org](http://www.arava.org)

The project was not completely without the occasional issues: political and visa disputes at times prevented some prospective participants from attending (Workshop 4), and participants often forgot or were openly reluctant to complete questionnaires or attach their names to these questionnaires. But despite these issues, discussed at more length in the recommendations section, the project was indisputably successful in its main goal—to bring together from across borders and across societies the men and women who will play an integral part in solving regional environmental issues and mitigating wastewater conflicts in the future.





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## Analysis and Recommendations for the Institute—Data Collection

Listed below are some positive data collection and analysis procedures carried out during the MTWC project that the Institute would benefit from retaining and expanding, as well as some problematic procedures and recommendations for their improvement.

### Positive procedures

1. The meticulously organized collection of all documents, emails, approvals, questionnaires and reports in the DQA binder was the most helpful tool for understanding and analyzing the workshops and their impact. Documents that were at times hard to find or non-digitized online were almost always in the binder in a consistent way, and thus the binders were key to summarizing and reporting on the project. The Institute should continue to keep such meticulous records in the future, and continue ensure that important documents are entered consistently after each workshop.
2. The questionnaire and quarterly reports, while not always perfect, were useful for understanding the impact and efficiency of the workshops, and the Institute should incorporate these into workshop analysis in the future.
3. Intake and Outtake questionnaires were clearly designed to meet USAID DQA requirements and to address required indicators, and no questionnaires showed any sign of bias towards any nationality or gender, and were collected reliably on time and designed by well-trained staff. Questionnaires covered a range of topics, and focused on analyzing stated USAID indicators. The Institute should continue to maintain such a high standard in meeting donor requirements in the future.

## **Problematic procedures and recommendations for improvement**

1. Data collection was not consistent throughout the MTWC program, and questionnaires differed workshop by workshop in phrasing, content, and answer styles. Some questionnaires relied heavily on written responses while other incorporated more 1-5 scales. The inconsistency between reports makes quantifying this data beyond individual workshops difficult and calls the validity of multi-workshop calculations into question. In order to best analyze the efficacy of its efforts, the Institute should use the same intake and outtake questionnaire for each workshop.

2. The questions included on the questionnaires at times made the data analysis unnecessarily complicated. For example, most questionnaires asked some variation of “Do you now have a better understanding of wastewater issues?” and “Do you have a better understanding of the other?” Participants could choose between 5 options—strongly disagree, disagree, neutral, agree, and strongly agree.

Given that the Institute was trying to quantify the increase in understanding of wastewater issues and the increase in positive perception of the “other,” the following questions could be asked instead: “Do you now have a better or worse understanding of wastewater issues compared to the beginning?” and “Do you now have a more positive or more negative perception of “the other” side of the conflict compared to your perception at the beginning?” The options for answers would be “Better/Positive” and “Worse/Negative.” This would make the data analysis very simple, satisfy the USAID metric and eliminate the need for layers upon layers of qualitative calculation to determine what constitutes positive and negative responses.

3. Every single participant needs to complete and intake and outtake questionnaire. Despite the Institute’s best efforts, this did not always happen—whether through participant reluctance/lack of interest or as a byproduct of a stressful and chaotic day, which detracts from the data’s veracity. One possible strategy for future workshops: Include a link to the intake questionnaire in the

initial email invitation, and note that participants will not be submitted for funding approval until the questionnaire is completed. At the workshop, schedule the completion of the outtake questionnaires before the last meal, or after a field trip, and collect them as participants leave for food or disembark from the bus. This will ensure complete participation in filling out the questionnaires.

4. Some parts of the questionnaire lead participants towards certain answers and do not actually provide usable information. For example, the statement, “It is in the best interests of Palestinians and Israelis to cooperate on shared environmental issues like water and wastewater management” appeared on a number of questionnaires, and participants were to choose between Strongly Agree and Strongly Disagree. Considering that each attendee voluntarily chose to attend a collaborative workshop with Israelis and Palestinians, it’s quite unlikely for someone to disagree with this statement. Of all collected questionnaires with this question, only three participants responded with anything less than agree. Additionally, the statement’s wording, “best interest,” suggests to the reader the answer the Institute expects and would like to receive. The Institute should design deeper, more nuanced questions that provide more information, and without diction that leads to the reader to the expected answer (Recommendation 5).

5. Participants at these workshops are self-selecting and come from a distinct group that already accepts cooperation and cross-cultural/societal exchange. Thus, questions like the one in the previous recommendation, understandably, yield agreement almost 100 percent of the time. By wording questions in a more substantive way, for example, by asking, “Who should be primarily responsible for bettering water and wastewater management in the region? Choose as many as you would like. (A) Israel, (B) The Palestinian Authority, (C) Private and International Funders, (D) Foreign Governments.” This could aid the Institute in collecting higher-level data about participants’ beliefs.

6. The *Analysis* of data needs to be consistent, and the methodology for these analyses directly enumerated in any report. For this project, the Institute

was looking at two metrics—change in understanding of wastewater issues, and change in perception of the “other side” of the conflict. To determine these metrics, the Institute often relied on qualitative, and therefore subjective, analyses of question responses to determine what constituted a positive or negative change. For example, Questionnaire report 7 included the following sentence: “Following a qualitative assessment of the amount of positive versus neutral or negative responses in the outtake questionnaire, we determined that there was a 64% increase in positive responses between the intake and outtake questionnaires.” The objective reader does not know what metric the analyst used, does not know what questions were used, and the word “qualitative” gives the impression that that analysis was completely subjective. The criteria for analysis needs to be consistent, clear, and laid out in each report, as well as included in the DQA binders or Google Drive, so that an outside observer could duplicate the analyses and confirm their validity.

7. Many spreadsheets included unlabeled calculations or calculations that needed to be checked. Analysts should make sure to label all calculations this would enable a new intern or staff member to quickly gain an understanding of the methodology. In this same vein, the Institute should make sure to save all questionnaire calculations in a separate, clearly labeled folder. It is really tempting to think the next person will understand intuitively what was done, but in the midst of 60 unlabeled calculations, those unlabeled calculations just lead to a lot of confusion and lot of repeated work.

## **Appendix A: Workshop Itineraries**

### **Workshop 1**

#### **Decentralized Water, Wastewater and Energy Solutions Conference (Israel, Palestinian Authority, Jordan)**

**Arava Institute, Kibbutz Ketura, Israel, 17<sup>th</sup>-19<sup>th</sup> December, 2012**

#### **Schedule – Subject to Change**

##### **Day 1, Monday December 17<sup>th</sup>, 2012**

**11:00 – Registration  
11:30**

**11:30 – Greetings (proposed) – facilitated by Eng. Shira Kronich, Arava Institute:  
12:15**

- Representative of the US Embassy , Tel Aviv (invited)
- Mr. Udi Gat, mayor, Hevel Eilot Regional Council
- Representative of the Ministry of Regional Cooperation
- Mr. David Lehrer, director, Arava Institute for Environmental Studies

**12:15 – Panel Discussion on the Current Status of Water and Energy Resources in the  
13:15 Middle East**

- Facilitator: Dr. Clive Lipchin, Arava Institute
- Panelists will be selected from Israel, Jordan and the Palestinian Authority

**13:30 – Lunch  
14:30**

**14:30 - Room Check-In/Optional Guided tour of Kibbutz Ketura and Arava Institute  
15:30**

**15:30 – Panel Discussion on the Opportunities and Obstacles for Regional Water and  
17:00 Energy Management**

- Facilitator: Dr. Shmuel Brenner, Arava Institute
- Panelists will be selected from Israel, Jordan and the Palestinian Authority

**17:30- Coffee Break  
18:00**

**18:00-19:00**      **Key Note Address (proposed): Opportunities for regional cooperation in water and energy management** - Ambassador Daniel Sheck, Arava Institute Public Council

**19:00 – 20:00**      **Dinner**

**20:00-21:00**      **Coffee and Cake – meet and greet**

#### Day 2, Tuesday December 18<sup>th</sup>, 2012

**07:00-08:30**      **Breakfast**

#### Parallel Workshop Sessions

**9:00-11:00**      **Workshops - Session One**

- Israeli-Palestinian Cross-border water, wastewater and energy management - **technicians**
- Israeli-Palestinian Cross-border water, wastewater and energy management – **decision makers**
- Israeli-Palestinian Cross-border water, wastewater and energy management – **university students**
- Opportunities for Biogas as a source of Renewable energy for Israel, West Bank, Gaza and Jordan  
*Session chair: Dr. Tareq Abu Hamed, Arava Institute for Environmental Studies*

**11:00-11:30**      **Coffee Break**

#### Special session

**11:30-13:00**      **How to integrate NGOs, the government and the private sector in improved management of water, wastewater and energy needs in the Middle East**

- Facilitator: Gershon Baskin, past Israeli president of the Israel Palestine Center for Research and Information



**13:00-  
14:00**            **Lunch**

**Parallel Workshop Sessions**

**14:30-  
17:30**            **Workshops continuation - Session Two (technology demonstration activities)**  
Greywater, solar desal, biogas, renewable energy

**17:30-  
18:00**            **Coffee Break**

**18:00-  
19:30**            **Combined workshops session summary and discussion**  
• Facilitator: Mr. Avraham Israeli, A.R. Technologies

**20:00-  
21:00**            **Dinner**

**Day 3, Wednesday December 19<sup>th</sup>, 2012**

**07:00-  
08:30**            **Breakfast**

**9:00-  
12:00**            **Field trip southern Arava, Israel:**  
                    **Constructed Wetlands - Kibbutz Elifaz**  
                    **Auora Solar tower - Samar**  
                    **Shikum Binui – Solar field**

**12:00-  
13:00**            **Lunch**

**13:30**            **Departure**

## Workshop 2

<b>2. Workshop Agenda - Wednesday</b> April 10th	<b>Water and Sewage Management in the West Bank: Opportunities and Challenges. Case study: Kidron Basin - Wadi Nar Project</b>
6.00 - 7.00 Breakfast hotel	7.15 Meet in the reception with bags
7.30 Leave hotel.	8:15- 9:00 Hess view point, Talpiyot, Jerusalem

Meet partners in the Kidron Basin project: Prof. Richard Laster, Environmental Lawyer, Hebrew University, Mr. Muhammad Nakhal, Community Activist, East Jerusalem resident, and Dr. Avner Goren, Archaeologist.	9:00- 10:30 Tamer Jumah' home, Jabel Mukhaber, East Jerusalem
Meet Mr. Malek Abulalfailat and Dr. Eyad Yacoub Yaqob, water and sewage specialists-	10:30- 11:15
Travel and view point of the Kidron-Wadi Nar, along the way - continue with Malek Abulalfailat and Dr. Eyad Yacoub Yaqob.	11:15-12:15 Ogg Reservoir
Meet with Mr. Zofi Yossi, water and sewage specialist, regional council Megilot-.	12:30- 13:30 EcoME, Jericho/Almog junction
Tour and lunch	13:30- 15:00 EcoME
Outdoor and group activity	15:00 – 15:30 Summary of day
15:30 Leave EcoME	Palestinian students head to Jordanian border.
<b>** After crossing border **</b>	Drive to Al-Joud Hotel.
Evening meal and free night.	
Rest of group will be staying at Kibbutz Nir David, Israel.	Travel from EcoME to Kibbutz Nir David
Check in at Guest house	17.45 Talk about Kibbutz Nir David
18.15 Meet in lobby for dinner	18.30 Drive to dinner at הכיכר שיפודי
21:00 Day summary and discussion of next days schedule.	

## Workshop 3

### **Monday, October 21st**

Jordanian and Palestinian delegations arrive in Israel and spend the night in the Tel Aviv region.

### **Tuesday, October 22<sup>nd</sup>**

- 09:00-10:00 Jordanian and Palestinian delegations arrive at WATEC, registration
- 10:00-13:00 Guided tour of exhibition/informal business forum
- 13:00-14:00 Lunch (WATEC to sponsor)
- 14:00-15:40 Regional water cooperation session

- 14:00-14:10 Welcoming remarks – Ambassador Daniel Shek, previous Israeli ambassador to France and director of the Arava Institute Public Council  
14:10-14:40 Panel discussion with Israeli, Palestinian, and Jordanian water technology experts;  
Topic: the role of water technologies in regional cooperation (facilitator: Dr. Clive Lipchin, Arava Institute)

*Speakers (subject to change)*

Mr. Khaled Haramy, USAID.

Dr. Loay Hidmi, Director Water Supply and Sanitation, SaafConsult, Jordan

Ms. Orly Rabi, Nia Water, Israel

14:40-15:00 Open discussion with audience

15:00-15:30 Special topic for discussion: Can saving the Dead Sea lead to regional water management-the Red Sea-Dead Sea and Mediterranean Sea-Dead Sea conveyance projects.

15:30-15:40 Closing remarks by panelists

15:40-16:00 Coffee Break

16:00-16:30 Jordanian and Palestinian delegations depart WATEC for field trip

16:30-17:30 Be'erot Yitchak -Avrot Industries tour – steel reinforced high density polyethylene pipes for drainage and sewage

17:30-18:30 Dinner at Avrot Industries

18:30 Depart for hotel in Kfar Haruv

**Wednesday, October 23<sup>rd</sup>**

08:00-09:00 Breakfast at Kfar Haruv

09:00-11:00 Tour and explanation at A.R.I. (Kfar Haruv)

12:00-13:00 Lunch at Sea of Galilee

13:30-14:00 Tour of transfer station of water from Israel to Jordan

14:00-15:30 Tour of Arad Industries at Kibbutz Dalia

16:00-17:00 Jordanian delegation returns to Jordan and Palestinian delegation returns to West Bank

## Workshop 4

# "The Challenges of Wastewater Treatment for Rural Areas"

**Sunday, January 12, 2014**

14:00 pm to 15:00 pm | Registration and Reception

15:00 pm to 16:00 pm	<b>Opening Ceremony and greetings:</b> Introduction of Towns Association for Environmental Quality (TAEQ) and MIGAL Galilee Research Institute
16:00 pm to 17:00 pm	<b>Developing water and wastewater treatment technologies integrated with R&amp;D projects of high school and college students at TAEQ, Dr. Hussein Tarabeih - TAEQ</b> <b>Using constructed wetland technologies in USAID-supported projects to upgrade rural wastewater to the quality level necessary for irrigation and streams recharging, Dr. Clive Lipchin - Arava Institute for Environmental Studies, and Dr. Shlomo Kimchie - TAEQ</b>
17:00 pm to 18:00 pm	Site Visit - TAEQ Campus
18:30 pm to 20:00 pm	Evening Reception and Dinner

## **Monday, January 13, 2014**

09:00 am to 10:00 am	<b>Overview:</b> <b>Regional Water Issues – General Review, Prof. Galil Noah - TECHNION Israel Institute of Technology, Dr. Abed Al-Rahman Tamimi - Palestinian Hydrology Group (PHG), Ali Subuh - Jordan Ministry of Water</b>
10:00 am to 10:20 am	<b><u>Technological Session:</u></b> <b>Compact Solutions for Waste Water Treatment , AQWISE Company</b>
10:25 am to 10:45 am	<b>Advanced Management of Water &amp; Waste Water, MEKOROT Company</b>
10:45 am to 11:00 am	Coffee Break
11:00 am to 11:20 am	<b>The Challenges in Olive Oil Mill's Effluent Treatment, Prof. Uri Marchaim, MIGAL</b>
11:25 am to 11:45 pm	<b>Advanced Water &amp; Waste Water Filtration Solutions , AMIAD Company</b>
11:45 pm to 12:05 pm	
12:10 pm to 12:30 pm	<b>Wastewater treatment at the Palestinian Authority, Eng. Abed al-Razak Abu Rahma- PHG</b>
12:30 pm to 14:00 pm	Lunch

14:00 pm to 15:30 pm	<b><u>Workshop and Discussion:</u></b> <b>The Value of Building Regional Cooperation, Mentors: Dr. Ayman Rabi – PHG, Dr. Iggy Litaor – Israel, and Dr. Sireen Naoum - Jordan</b>
15:30 pm to 16:00 pm	Coffee Break
16:00 pm to 16:20 pm	<b>Transboundary coordination of waste-water treatment – a key for optimal use for all – can we achieve it?, Ram Aviram, and Adel Yasen.</b>
16:30 pm to 17:15 pm	<b>Presenting and discussing the workshop outcome</b>
17:20 pm to 17:40 pm	<b>Water &amp; Waste Water Management – Challenges and achievements, Eng. Hadi Naamneh, Peleg – Hagalili Water Corporation</b>
18:00 pm to 20:00	Evening Reception and Dinner

## **Tuesday, January 14, 2014**

09:00 am to 13:00 pm	<b>Working with the EU on Water, Moderator: Alexandra Meir, EU Delegation, Tel Aviv</b>
09:00 am to 10:00 am	<b>The Sustainable Water Integrated Management (SWIM) Project, SWIM representative tbd</b>
10:00 am to 11:00 am	<b>Part 1: What have we accomplished so far? What should we do in the future?, Presentations and panel discussion with managers of EU-funded projects</b>
11:00 am to 11:30 am	Coffee Break
11:30 am to 13:00 pm	<b>Part 2: What have we accomplished so far? What should we do in the future? Presentations and panel discussion with managers of EU-funded projects</b>
13:00 pm to 14:00 pm	Lunch
14:00 pm to 16:00 pm	<b>Company Demonstrations &amp; Exhibition – meetings, B2B, and discussions</b>
16:00 pm to 16:30 pm	Coffee Break
16:30 pm to 18:00 pm	<b><u>Roundtable and Discussion:</u></b> <b>Selected Topics of Water management and wastewater treatment Mentors: from Jordan, Israel and Palestinian Authority</b>
18:30 pm to 20:30 pm	Evening Reception and dinner

## Wednesday, January 15, 2014

<b>9:00 am to 17:00 pm</b>	<b><u>Professional Sites Visits</u></b>
09:00 am to 10:00 am	<b>OFRA AQUA PLANTS – Sustainable Ecological Solutions</b>
10:30 am to 12:00 pm	<b>MEKOROT Eshkol Site – The Central National Water Filtration Site</b>
12:30 pm to 13:30 pm	<b>The Galil Society for Health, Research and Services</b>
14:00 pm to 15:30 pm	Lunch at the old city of Akko
16:00 pm to 17:00 pm	<b>Akko Waste Water Treatment Plant</b>
16:30 pm to 18:00 pm	Travel back to the hotel

## Thursday, January 16, 2014

09:00 am to 09:45 am	<b>International scientific cooperation on Horizon 2020 with a focus on water, <b>Angela Liberatore, European Commission, DG RTD</b></b>
09:45 am to 11:00 am	<b>Funding for Regional Cooperation Presentations and discussion of rationale behind the programmers, <b>USAID, GTZ tbc</b></b>
11:00 am to 12:00 pm	<b>Closing Ceremonies – Summaries, Evaluation &amp; Near Future plan</b>
12:00 pm to 13:00 pm	<b>Lunch</b>
13:00	<b>End of workshop and travel back</b>

## Workshop 5

### Day One-Tuesday, April 1<sup>st</sup>

6:30	Load bags at bus stop near Mercaz <i>then</i> grab breakfast to go
7:00	Leave Ketura for Dead Sea (Meet alumni at 9:00am)
9:30-10:00	Overview of Dead Sea Water Management at Dead Sea Overlook, Dr. Clive Lipchin
10:30-11:00	Dead Sea Sinkholes lecture, Dr. Clive Lipchin
11:00-12:30	Swim in Dead sea
13:00-14:00	Lunch at Kibbutz Ein Gedi
15:00	Tzomet Halido
15:30	Tour of Palestinian Salt Factory
19:00	Dinner, lecture, and overnight at EcoME



**Day Two-Wednesday, April 2<sup>nd</sup>**

- 7:00-8:00 Breakfast at EcoMe  
8.30-9:30 Jordan River baptism site - Qasr el Yehud  
10.00-11.30 Visit A'uja village and spring near Jericho, tour of wastewater treatment system and lecture  
13.30 Lunch in Wadi Ara  
16:00 Israel/Jordan Water Transfer Station  
17:00 Sea of Galilee Lecture from Coastal Viewpoint  
17:30 Arrival at Ohalo Hotel at Kibbutz Kinneret  
19:30 Dinner at Ohalo

**Day Three-Thursday, April 3<sup>rd</sup>**

- 7:30-8:30 Breakfast at Ohalo Hotel  
9:30-11:30 Water Hike at Majrase  
12:00-13:00 Program Closing and lunch at Majrase  
14:00 Drop off in Tiberius bus station  
15:30 Drop off in Benyamina train station  
Dinner stop and Return to Kibbutz Ketura

**Workshop 6**

**Biogas and Greywater System Training Workshop**

Peres Center, Palestinian Wildlife Society, and the Arava Institute for  
Environmental Studies

<b>Tuesday April 29<sup>th</sup></b>	
13:00	Arrival and registration at Kibbutz Ketura and AIES
14:00	Lunch in kibbutz dining hall
15:00	Welcome to the Arava Institute, David Lehrer, Director, Arava Institute Introductions - Ido Sharir, Director, Peres Center for Peace Imad Atrash, Director, Palestine Wildlife Society
15:15	Theoretical overview of renewable energy, Suleiman Halasah
15:45	Coffee Break
16:00	Biogas: Technical overview of biogas digesters, Yair Teller
18:00	Biogas case studies in the West Bank, Imad Atrash and others
19:00	Dinner in the kibbutz dining hall
20:00 – 21:30	Participant Introductions Overview of Peres Center and PWLS, introduction to the EU project Overview of academic and internship programs at AIES
<b>Wednesday April 30<sup>th</sup></b>	

8:00	Breakfast in kibbutz dining hall
9:00	Greywater recycling: Theoretical overview, Dr. Clive Lipchin Technical overview, Dr. Shlomo Kimchie
12:30	Lunch in the kibbutz dining hall
13:30 – 15:00	Group 1: Biogas system training, Yair Teller and Imad Atrash Group 2: Greywater system training, Shlomo Kimchie
15:00	Coffee Break
15:30 – 17:00	Group 1: Greywater system training, Shlomo Kimchie Group 2: Biogas system training, Yair Teller and Imad Atrash
17:00- 17:45	Presenting logistics for upcoming field work to participants
19:00	BBQ Dinner at kibbutz pool with AIES students
<b>Thursday May 1<sup>st</sup></b>	
8:00	Breakfast in the dining hall
9:00	Checkout
9:15	Depart for Kibbutz Lotan
9:30-11:30	Tour of Kibbutz Lotan ecotourism adobe structures, permaculture, greywater and biogas systems
11:35	Return to Kibbutz Ketura for lunch in the kibbutz dining hall
12:45	Evaluation questionnaire and Departure

## Workshop 7

**Palestinian – Israeli Cross Border Wastewater Workshop  
June 26<sup>th</sup>, 2014  
Hotel Everest, Beit Jala, Palestine**

**Schedule (subject to change)**

9:00 – 9:30: Arrival and Registration  
9:30 – 9:45: Welcome: Mr. Nader el Khateeb-FOEME/WEDO and Dr. Alfred Abed Rabbo

**9:45 –12:00: Project Updates on USAID/ MERC and USAID/CMM-West Bank/Gaza  
Transboundary Wastewater Research**

Introduction: Dr. Clive Lipchin-Arava Institute, Dr. Shai Arnon-Ben Gurion University  
Research Presentations:

- Tammee Albrecht: “GIS analysis of the Hebron/Besor Watershed”

- W'ad Odeh: "Monitoring of EDC Compounds from Discharged Sewage in Palestine"
- Tal Godinger : "Effectiveness of Sewage Treatment in Reducing EDCs in Effluents"
- Leila Hashweh: "Surface and Groundwater Monitoring of the Hebron/ Besor Stream"
- Ma'ayan Yesha'yahu: "Environmental Risk from EDCs in Three Transboundary Streams"
- Malek Abualfaila: "Water Pollution from the Stonecutting and Tannery Industries in Hebron: A Case Study"

12:00-13:00: Lunch

**13:00-14:30: Evaluating Present Wastewater Treatment Standards and the Role of Cooperation**

- Dr. Yossi Inbar-Hebrew University: "Israel's Wastewater Reuse Standards In Retrospect"
- Mr. Adel Yasin,-Palestinian Water Authority- (To Be Confirmed): "Palestinian Wastewater Plans and Standards"
- Mr. Mohammad Said Al Hmaid: "Jenin – Sewage Treatment and Reuse: A Case Study"

14:30-15:30: Discussion –Facilitators: Dr. Alfred Abed Rabbo, Prof. Alon Tal & Mr. Nader el Khateeb

15:30 Departure

## **Workshop 8**

### **Homeowners and Technicians Workshop – Nablus, WB October 30<sup>th</sup>, 2014**

9:00 – 9:30: Arrival and Registration

9:30 – 9:45: Welcome by Eng. Imad El-Masri. Nablus Municipality

10:00-12:00: Presentations

- Constructed wetlands overview – Dr. Shlomo Kimchie
- Construction and technical maintenance of greywater treatment systems –Eng. Majdi Shaheen, HWE
- Monitoring of water quality – Jess Little, Arava Institute

12:00-13:00: Lunch

**13:00-14:00: Site visit at Deir al Hatab**

14:00-14:30: Round table discussions for homeowners and technicians on greywater system manual.

14:30: Departure

## Workshop 9

# Eco-Industry as a Lever for Regional and International Development

## Workshop Agenda

### Tuesday 24.2.2015

16:30 Pick up from checkpoint and drive to Beer Sheva

18:00 Arrive in Beer Sheva, Leonardo Hotel

19:00 Dinner with Rahat Water Company CEO and Manager

### Wednesday 25.2.2015

8:00 Breakfast at hotel

9:00 Leave hotel for Neot Hovav – Eco Industry Park

<http://neot-hovav.org.il/en/>

9:30 Welcome address by Neot Hovav Municipal Mayor  
Presentation about Eco-Industry Park at Neot Hovav

10:30 Tour of Neot Hovav Park including visit to Solar Venture and visit to  
Environmental Services Company Ltd. (ESC)

<http://enviro-services.co.il/index.php?ln=eng>

11:00 Tour of Machtshim Factory and their wastewater solutions

<http://neot-hovav.org.il/en/content.php?cid=19>

12:30 Roundtable discussion

**From a Polluting Industry to Eco-Industry** – the session will address the connections between industry and the environment, and in the changes that have been taking place over the years, in relation to the environment, economy and society.

Participating:

Neot Hovav CEO

Neot Hovav Environmental Unit Manager

13:30 Light lunch

14:30 Drive back to check point

## **Workshop 10**

Student Water Trip: Challenges of Water & Wastewater Treatment in the ME

### **Agenda**

March 17<sup>th</sup> – 18<sup>th</sup> 2015

#### **Day One - Tuesday, March 17th**

13:00-14:00: Swim and lunch in Dead Sea

14:30-15:30: The status of the Lower Jordan River: Visit to Qasr el Yehud Baptism Site on the Lower Jordan River

16:00-17:00: Visit to the Palestinian Salt Factory at Northern Dead Sea

17:00-18:00: The shrinking Dead Sea- lecture and tour of the sinkholes

**Accommodation: Kibbutz Kramim**

#### **Day Two - Wednesday, March 18th**

7:30-8:30: Breakfast

9:00-10:00: Israeli-Palestinian Transboundary Wastewater Management: Tour and lecture of the Hebron/Besor/Beer Sheva watershed

10:30-11:30: Water and wastewater resources management in the Bedouin community of the Negev desert- Rahat

12:30-13:30: Lunch

16:00: Cross border to Jordan

19:00-19:30: Intro to Jordan

19:30 Dinner and hang out in Aqaba

**Accommodation: Double Tree hotel, Aqaba, Jordan**

### **Day Three - Thursday, March 19th**

7:00-8:00: Breakfast

8:00-9:30: Talk about Red / Dead Conduit; Adul Raouf (Aqaba Development Corporation) about water issues in Jordan and Clive the Red/ Dead as a solution.

10:00-12:00: Tour of Aqaba south beach area – Conservation and development in the Gulf Aqaba

12:30-14:30: Lunch & Suk time in Aqaba

16:00-18:00: Check in and nature hike in Wadi Rum

**Accommodation: Hilawi camp, Wadi Rum, Jordan**

### **Day four – Friday March 20th**

7:00-8:00: Breakfast

9:00-12:00: Water resources management in Aqaba: Site visit and lecture at the Aqaba Water Company and waste water treatment plant

12:00-13:00: Ayla

13:00-14:00: Lunch in Aqaba

14:30: Cross border & return home!

19:00 Shabbat Dinner in Kibbutz dining hall

**Accommodation: Kibbutz Ketura, Israel**

## **Workshop 11**

### **Palestinian – Israeli Cross Border Wastewater Workshop**

**May 25<sup>th</sup>, 2015**

**Murad Spa, Beit Sahour, Palestine**

**Schedule (subject to change)**

9:00 – Welcome – Nader el Khateeb/ Clive Lipchin



9:15 – Keynote comments

10:00 – Presentations:

10:00 Wa’ad Odeh / Alfred Abed Rabbo – Wastewater Treatment in the West Bank, Implications for Environmental Health and Endocrine Disruption.

10:30 - Tal Godinger / Shai Arnon: Wastewater Treatment and Effluent EDC Concentrations in Israel – Findings from a Three-Year Study.

11:00 Break

11:15 Nina Gordon-Kirsch/Alon Tal – Upgrading wastewater treatment – a Cost-Effectiveness Analysis.

11:30 Vivian Futran Forman – EDC exposure to effluents – A Risk Analysis

11:45 – Responses and Panel Discussion:

- Eyad Yaqob, Independent Consultant
- Alon Zaks, Deputy Director for Water, Ministry of Environmental Protection
- Professor Ziad Abdeen, Al-Quds Public Health Society
- Dr. Tamar Berman, the Israel Ministry of Health

12:45 General Discussion

13:15 Lunch

14:15 Departure

## **Appendix B: Partners**

USAID West Bank and Gaza Office Program for Conflict Mitigation

Israeli Ministry for Regional Cooperation

Osprey Foundation

Ben Gurion University

Israeli Foreign Ministry

A.R.I.

Arad Technologies

Avrot Industries

Israel Water Association

House of Water and Environment

WEDO Palestine

TRIDE

***Mitigating Transboundary Wastewater  
Conflicts, Workshop Report***

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Naked Sea Salt  
The European Union  
The Peres Center for Peace  
The Palestinian Authority  
MEKOROT