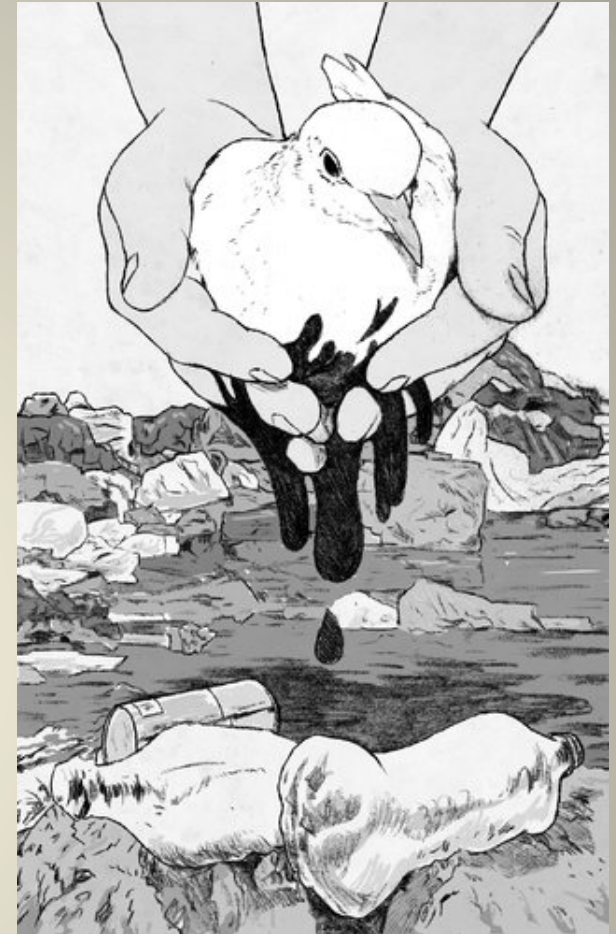


# Peacebuilding across the Israeli/ Palestinian Border through Environmental Education

GSA 2017 Meeting,  
T6. Cross-Border Community Engagement Using  
Geoscience Research, Education, and Outreach

Malcolm Siegel, PhD, MPH  
Director, Education and Operations  
Water Resources Action Project, Inc.

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



# Water Resources Action Project

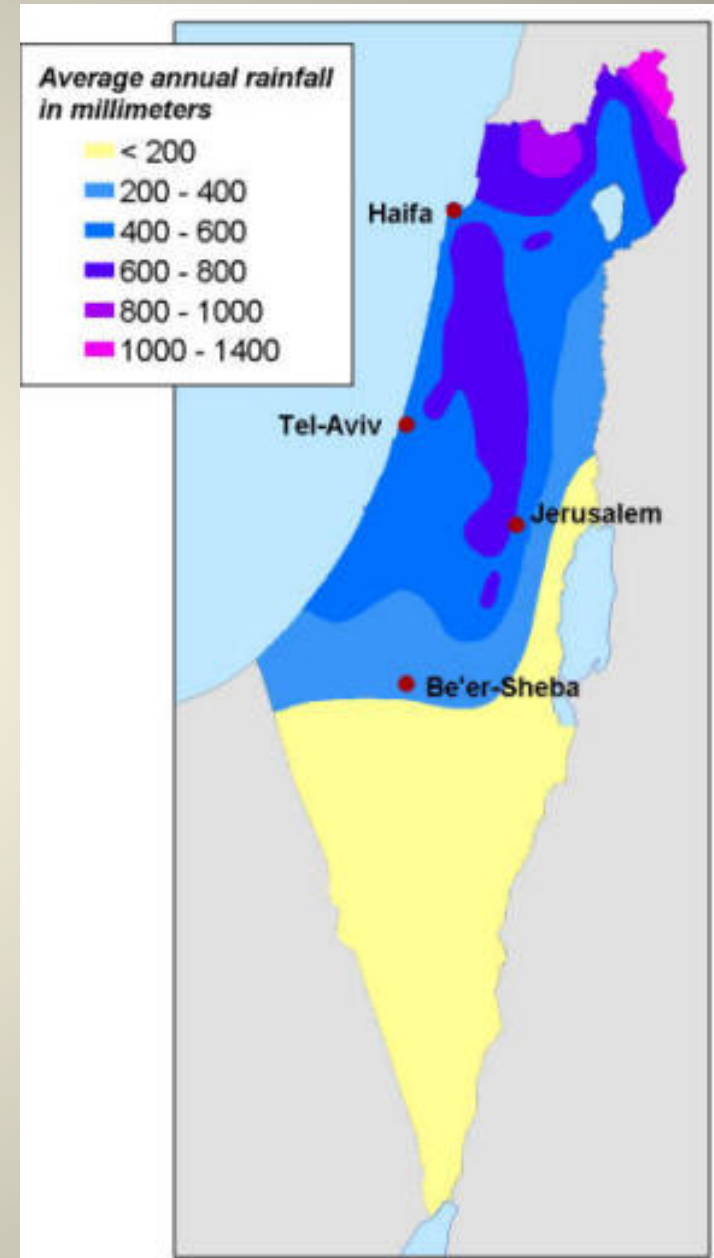


- US-based non-profit organization founded in 2009.
- Seeks to improve public health in underserved communities in Israel, Palestine and Jordan through improved water stewardship.
- Works across *political, cultural* and *geographic* borders
- Strict political and religious neutrality.
- Sponsors, designs, and installs rainwater harvesting systems at schools which supply 85% of water to rest rooms.
- Seeks to connect Arab and Jewish students through related environmental educational program.
- Works with other grass-roots environmental organizations in Middle East.

# Water Problems in Israel/Palestine

- Climate variable over small region
  - Coastal/north Israel: cool rainy winters
  - West Bank and south & east Israel
    - arid, extended hot and dry season
  - Rainfall varies greatly (< 50 to >1000 mm/yr)
- Ongoing pollution of Mountain Aquifer
  - 90% of sewage (50 MCM/yr) from PA towns flow into environment untreated.
- Unequal distribution of water resources
  - 118,000 Palestinians not connected to water; buy from tankers; can spend 40% of income; average use is 20 L/day (WHO recommends >60 L/day)
  - Borders of Jerusalem Municipality, Separation Wall and Green Line leave some residents cut off from water supplies.

On-going environmental damage due to lack of Peace Treaty

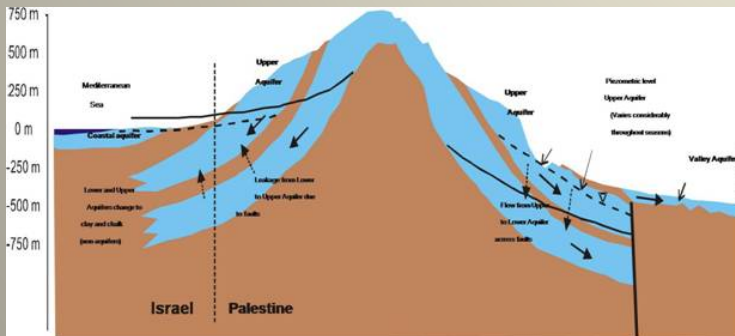


Ave annual precip (1961-1990)

# Future Conflicts Over the Mountain Aquifer



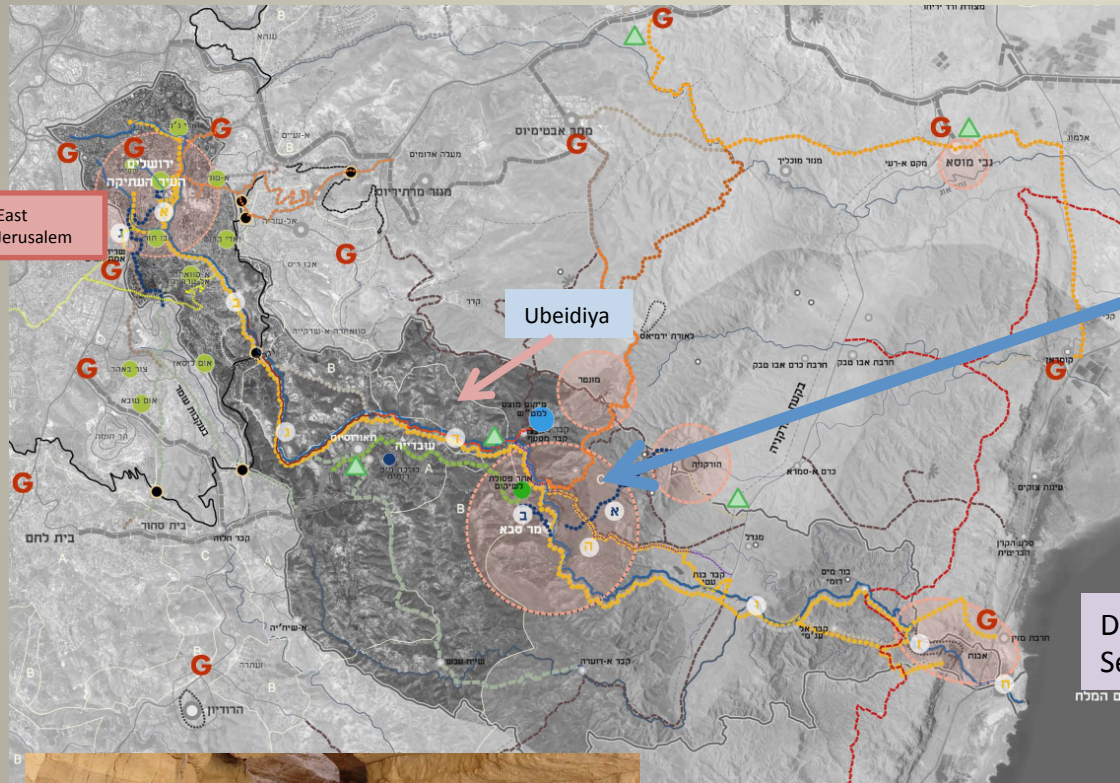
2 Major Water Sheds



90% of groundwater comes from Mountain Aquifer.  
Most recharge in West Bank.

# Kidron Valley/ Wadi Nar Basin

“a putrid, waste-infused channel that suffocates both Israel and the West Bank with its stench”. (Haaretz, 2013)



Dead Sea  
ים המלח

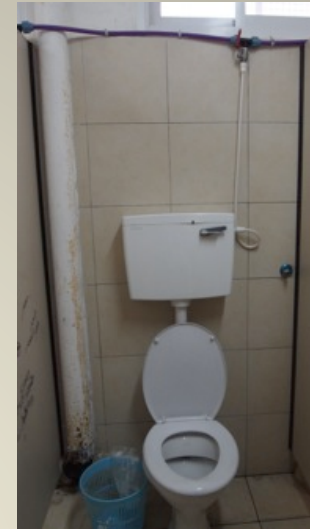
# Environmental Peacebuilding:

## A People-to-People Movement



WRAP Schools

- Theory:
  - ❖ Sustainable management of ecological resources **creates an opportunity** for cooperation **distinct** from economic and political spheres.
- Participants are not waiting for Peace Treaty
- Builds transboundary communities based on shared resources
  - Mountain Aquifer, Jordan River
  - “Good water neighbors”
- Examples of NGO’s involved in Environmental Peacebuilding
  - Water Resources Action Project (WRAP)
  - EcoPeace-Friends of the Earth
  - ALLMEP

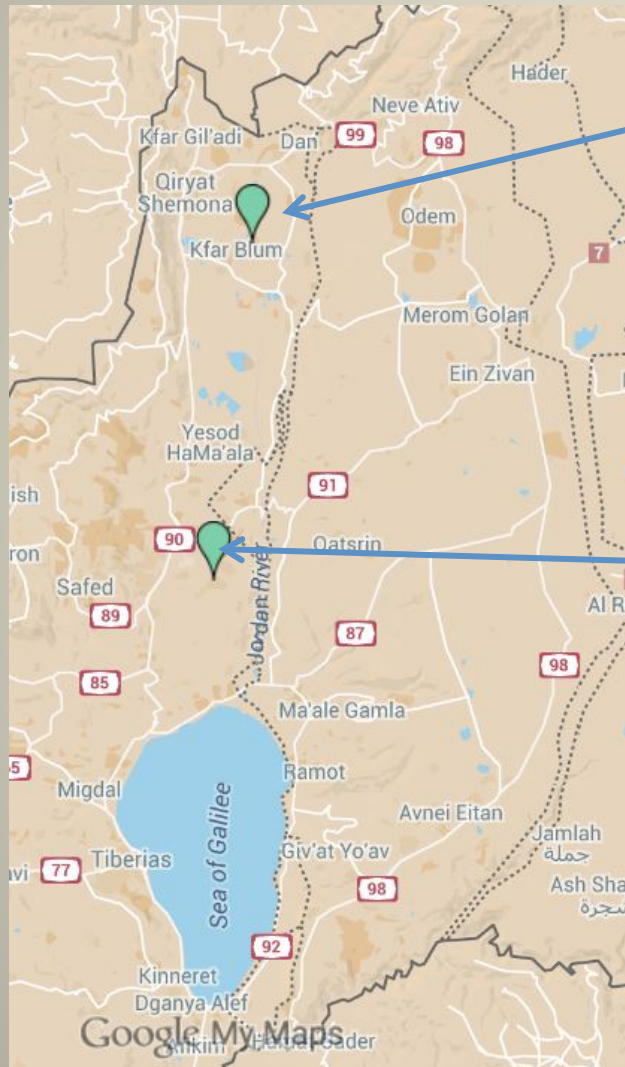


## WRAP Programs

- From Barrels to Education
  - Water harvesting monitoring and design
  - Environmental gardens with collected rainwater
  - Innovative recycling of solid waste
  - Water quality chemistry tests
  - Meteorology and climate change
  - Public health-clean water
  - Community education – Science Fairs

# *Crossing a cultural border*

## Paired Arab and Jewish Schools in Northern Israel



- Eynot Yarden
  - Kibbutz Amir
  - 430 Jewish mid-school boys and girls
  - Completed March 2014
- Tuba Zangaria
  - Bedouin Village
  - 387 Israeli Arab mid-school boys and girls
  - Completed March 2014



# Eynot Yarden High School, Kibbutz Amir



## Programs:

- Visits to Tuba and assistance after fire in Mosque
- Arabic language course to focus on water issues
- Participation in field trips with students from both schools



# Tuba Zangaria



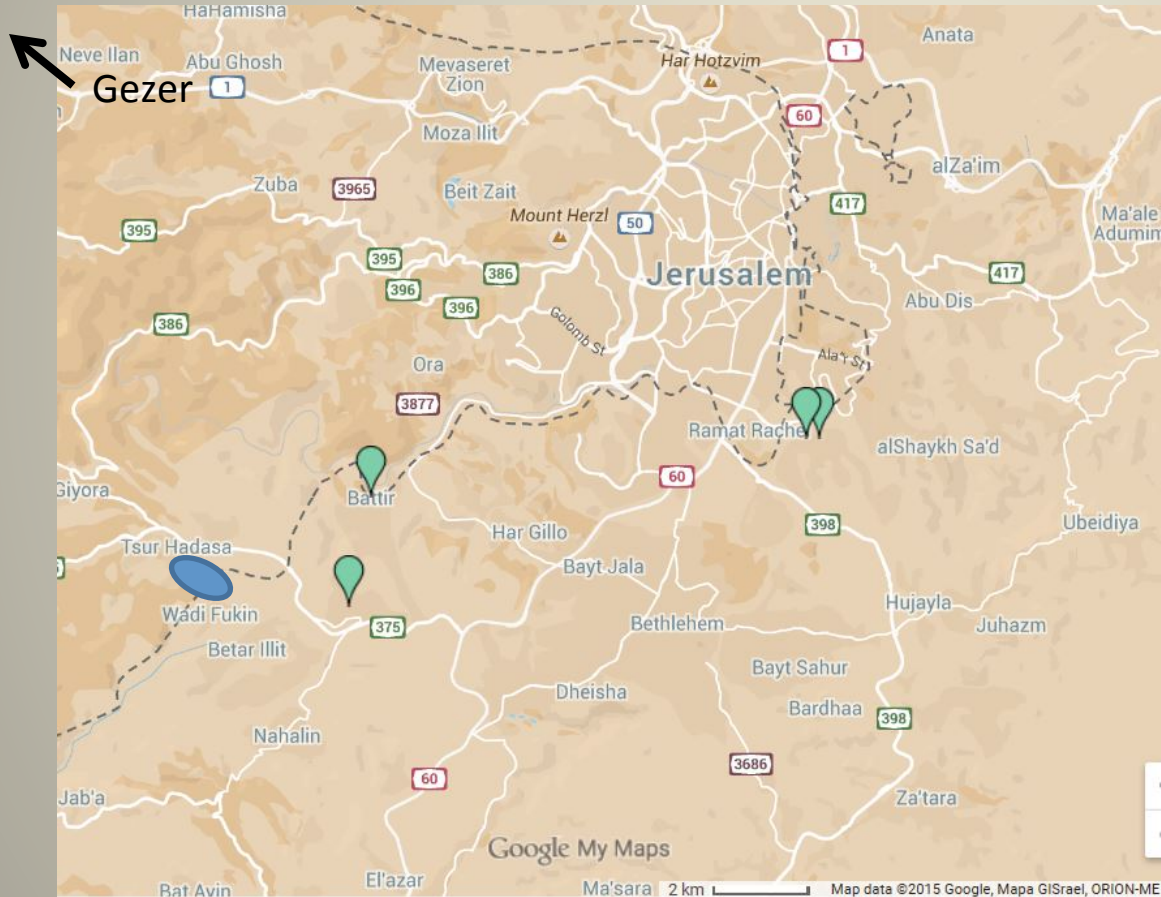
## Programs:

- Rainwater harvesting for toilets and garden.
- Hosting visits by Eynot students with discussions with Iman about Islam
- Holocaust education presentation
- Construction of greenhouse and hydroponics with guidance from Eynot



# *Crossing political and geographic borders*

## Schools in Palestine, Israel and America



- Joint agricultural project across Green Line:
  - Tsur Hadasa and Wadi Fukin
- Schools in East Jerusalem and Israel
  - For My Earth Project
  - Triplet Program (with Albuquerque Academy and Kibbutz Gezer)
- Schools in Palestinian Authority:
  - Battir Girls School
  - Husan Boys School

# Village of Sur Baher, East Jerusalem



- Population
  - 18,000 (?)
- Area: 2.2 square miles
- Employment
  - Manual labor, trade, some agriculture
- Annexed by Israel in 1967
  - divided by Separation Wall
- 90% residents hold Israeli Identity card but are not full citizens.
- Strong support for environmental education in two WRAP schools
  - Sur Baher Girls School
  - Afak School for Special Needs

# Environmental Education at Sur Baher Girls School

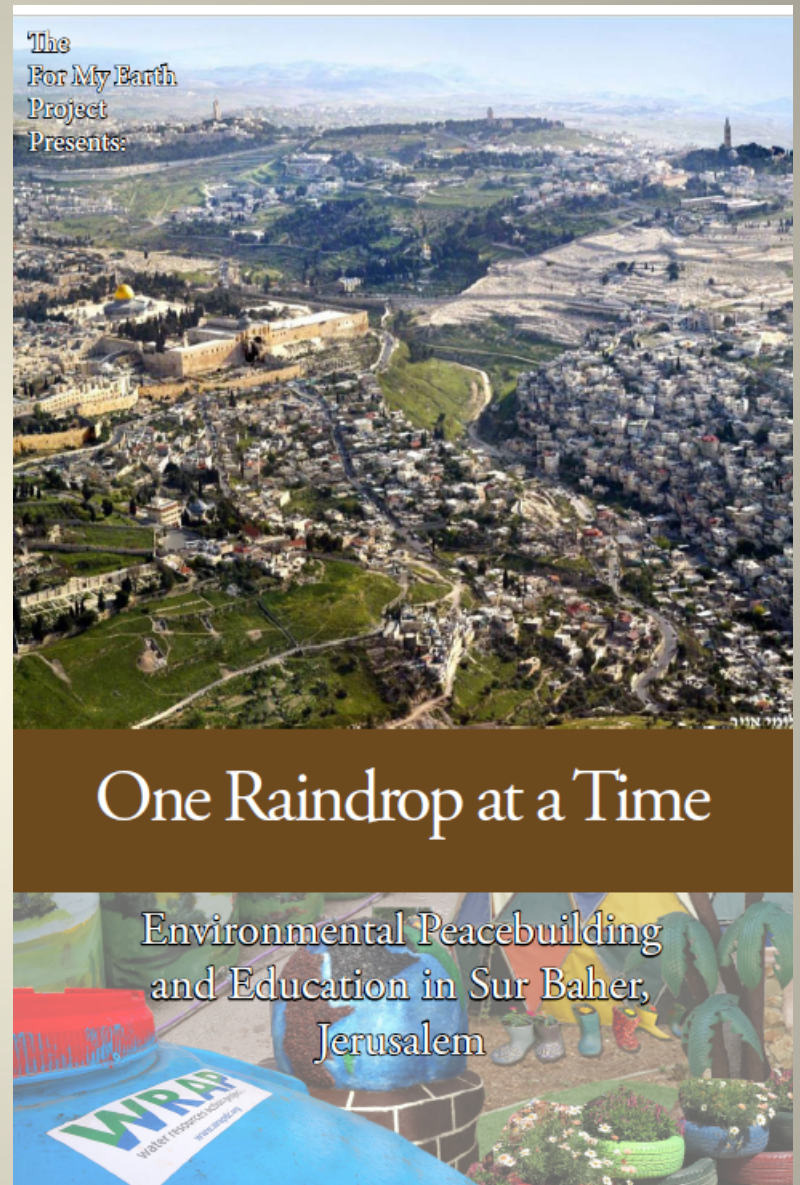


# For My Earth Project

- Describes environmental education at Sur Baher and Afak schools
- Collaboration with University of New Mexico
- FME Vision:  
“To celebrate and reward children and local organizations for their extraordinary efforts protecting, preserving, and restoring our Earth through the production and sale of Ebooks, printed books, and documentaries.”

## WRAP Goals:

- Raise funds for projects at schools
- Develop network among WRAP schools
- First Ebook published in Early 2017





*"We believe that educating the girls how to be healthy as an attitude and as a life style will affect the society in the future in a positive way as these girls will become mothers and will raise the whole society."*  
- Zoubaida Salman, Teacher at the Sur Baher School for Girls



Lama – Student at Sur Baher

أنا لى خالد دبش من الصف السابع  
أنا من البنات المسؤولات عن مشروع مياه الأمطار حيث أقوم  
كل يوم بحساب كم هو مقدار المياه في الخزانات التي تصل إلى  
المراحيض (السيفونات) وبعدها أقوم بتسجيل قراءة ساعة المطر  
وساعة البلدية وبعدها نوجد الفرق.  
عندما اختارتني المعلمة كنت متحمسة كثيراً و عندما بدأنا بهذا  
العمل أحببته كثيراً لاننا نستغل مياه المطر التي كانت بالعادة  
تذهب هباء باستخدامها في السيفونات و غيرها و انا ارى ان هذا  
المشروع اكثر من رائع اتمنى ان اعلمها لغيري داخل وخارج حدود  
البلاد التي ستفيدنا جميعاً.

My name is Lama Khaled Dabash. I am in seventh grade, and am one of the girls who is in charge of the rain water project at Sur Baher School for Girls. Every day, I measure the water level in the tanks connected to the bathroom as well as registering the meter readings of both the rain and municipal meters so as to find the difference between them.

When my teacher chose me to do the work, I was excited as I enjoyed this work and learned how to save rain water for bathroom se, which was wasted before this project. I find this project fascinating and wish to teach what I know to others in and outside the country, which is beneficial to all.

# WRAP Triplets Program

- Designed to overcome institutional barriers to direct Arab-Jewish communication.
- Joint blog and activities involving 3 schools:
  - Arab, Jewish Israeli and American
  - Produce E-books as way to raise funds and show projects to respective communities.
- Plant4peace blog
  - Posts in English, Arabic (and Hebrew)



Albuquerque Academy Bio-E



Sur Baher Girl's School E-Club



Kibbutz Gezer

Eco-village located near Jerusalem with environmental club activities



# Still waiting at the Border

## Palestinian Authority Schools



Battir School for Girls  
120 Arab girls  
Opened October 2013



Partner: EcoPeace Middle East



Al Sadeeq School, Husan , West Bank  
389 Arab boys, opened October 2015.

# Battir Girls High School

## Village of Battir , West Bank

- 120 Arab girls
- Cistern System
  - 62,000 Liter capacity
- Water used in 3 restrooms
  - Previously closed due to water shortages
- Cost savings Fall 2014
  - 40% of school water bills
- Student environmental club
- Summer camp and community garden

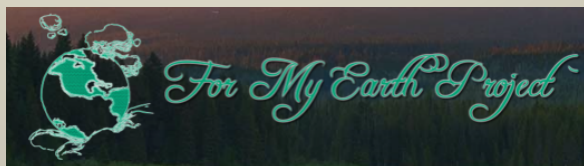


Ministries of Education on both sides of border create political barriers to exchanges.



# Cross-border Network of Partners in Environmental Peacebuilding

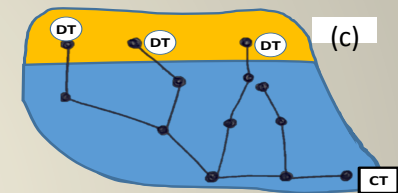
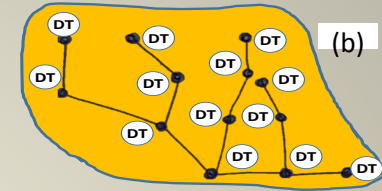
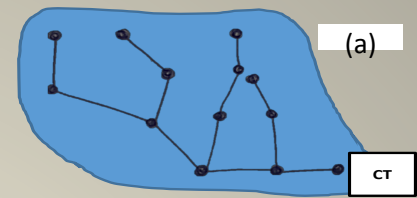
- Water Resources Action Project
- Only Green/Kidron Valley Master Plan
- EcoPeace - Friends of the Earth
- For My Earth Project
- Engineers without Borders
- Albuquerque Academy
- Arava Institute
  - Center for Transboundary Water Management
- The Environmental Peacebuilding Fund
  - Jewish Community Foundation of New Mexico
- Rotary International: Hands Across Water
- Alliance for Middle East Peace (ALLMEP)
- Build Israel Palestine
- Rawabi Foundation



## University Programs Across the Borders: Feasibility of a decentralised approach to treatment and reuse of wastewater in the Kidron Valley/Wadi Nar basin:

UNESCO IHE Delft, Hebrew University and Al Quds University

- Citizen observatories for participatory water management
- Virus and bacteria removal in Constructed Wetlands in Palestine and Israel
- Optimal configuration of) centralised (CT) and decentralized (DT) wastewater systems in the Kidron/Nar basin
- Energy consumption in a regional and transboundary wastewater management system in the KidronNar basin
- Anaerobic Baffled Reactor/Wetland system at the Yafa and Al Istaqlal schools in Ubadiyah.



Candidate system (Membrane Bioreactor) for both Abu Dis and HUIJ/Givat Ram campus

## Community Projects in Kidron Valley/Wadi Nar Cultural Basin



“Problems cannot be solved by the same level of thinking that created them.” (Albert Einstein)

- Sharing of water resources is one of the *Final Status* issues in the Israeli-Palestinian conflict.
  - conflicting narratives about the past and present make cross-border discussion difficult.
- Environmental Peacebuilding focuses on common environmental problems to build trust between the parties.
- Environmental education provides many opportunities for students to work together across cultural, political and geographic borders.

“You are not obligated to complete the work, but neither are you free to abandon it.”

(Rabbi Tarphon, the *Talmud*.)

# Thanks

- Brendan McGinnis and Board of Directors (WRAP)
- Holly Hitzemann, Brady Riggs (UNM-FME)
- Karen Temple Beamish, Nada Kherbik, Charles Bergman and students at the Albuquerque Academy
- Zoubaida Salman (Sur Baher Girls School)
- Rana Khalaf, Hazar Khatteb (Al Afak School)
- Amir Yechieli, Dani Livney , Richard Laster (Only Green)
- Nader Khateeb (EcoPeace)

For more information: [www.wrapdc.org](http://www.wrapdc.org)