

# Making the Water Pie Bigger “New Water” A win-win positive sum solution

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IPU  
Second roundtable on Water

## 'Making the pie bigger': Generating and sharing regional benefits



TWO-Analysis,  
SIWI 2008

# Objectives

- **of Second Roundtable on Water:** “ To Turn words into actions in order to develop a tailored regional cooperative project stemming from the recommendations of the First Roundtable”
- **Of my presentation:** “ To build upon the New Water presentation I delivered in the First Roundtable in 2016, through our discussion and exchange on my proposed concrete steps towards the actual attainment of a bigger water pie ”

# How did I approach this?

- Preliminary mapping of known existing regional “initiatives”
- Looking at various components of “New Water” in terms of national/regional efforts
- Quick mapping of the known expertise of each of the participating countries in the different components of “New Water”
- Exploring “opportunities “ that would assist in using Water as a vehicle of Peace and the use of “New Water” as one win-win tool for sharing transboundary water resources, and for management of endogenous water resources.

# What is “New Water”

- “New Water”= alternative non-traditional sources of water
- The provision of “new water” refers to the development of water supplies, over and above, those provided by existing water resources, such as through desalination, water re-use, or possible importation from other basins.
- The provision of “new water” is a totally separate issue from specific allocation of the existing shared water resources of the parties
- Investing in “new Water” does not negate , detract, or prejudice Water Rights of a State
- Different forms of “new water” can be used to augment supply of each party
- The continued growth in population- if this persists- will eventually require production of very significant amounts of “new water”

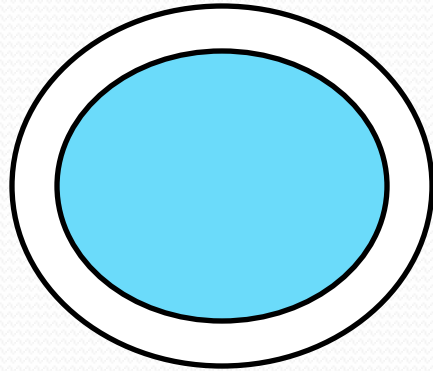
# Recognition of the added value of “New Water”

- Under international law, “new water” which is developed unilaterally by one Party could be employed by the other Party to trigger a reallocation of the total combined water resource, after the original “equitable and reasonable” allocation.
- All responsible and committed parties agree that there is a need to develop new water resources , through a number of activities. It is notable that such “new water” will alter the magnitude of the total water resource in a particular region.

# *Current Components of “New Water”*

- Collaborative Measures = total water in Basin increased
  - ✓ This ‘makes the pie bigger’ and also allows reallocation to occur without any party losing water over time.
  - ✓ This requires New Water can be produced by:
    - ✓ - desalination;
    - ✓ - enhanced wastewater re-use;
    - ✓ - improved Green Water/Blue Water management;
    - ✓ - inter-basin transfers.
- Transition is the key concept, here

# Making 'New Water'

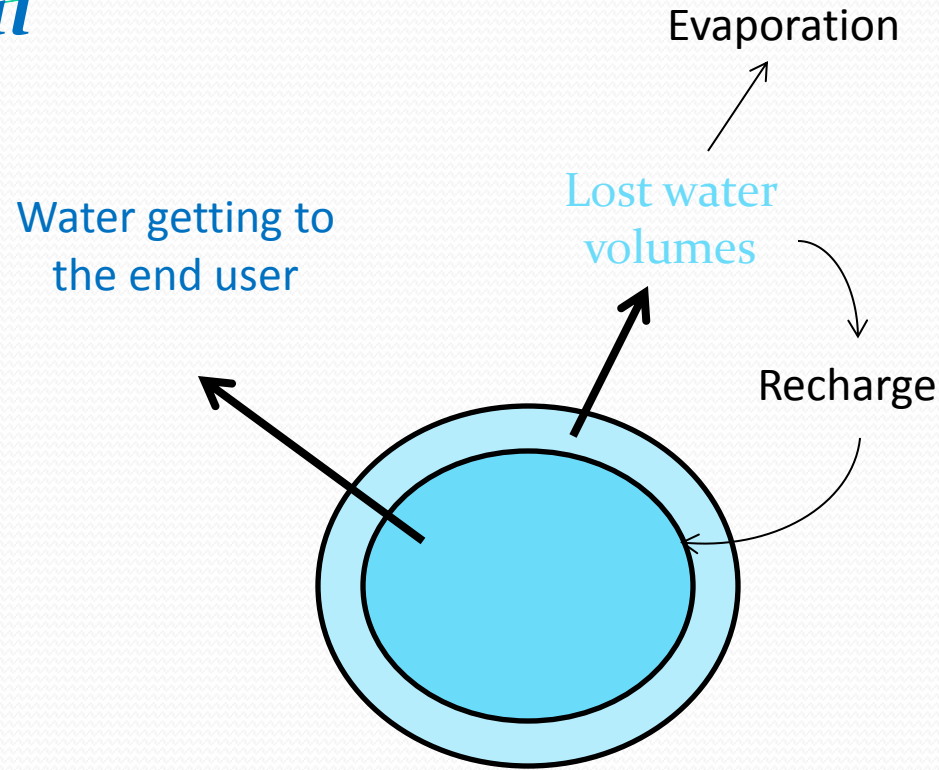


## *The Status Quo*

*“The engineers’ focus” is on available water, or water that has been mobilised from the natural resource. However, this actually has two components.....*

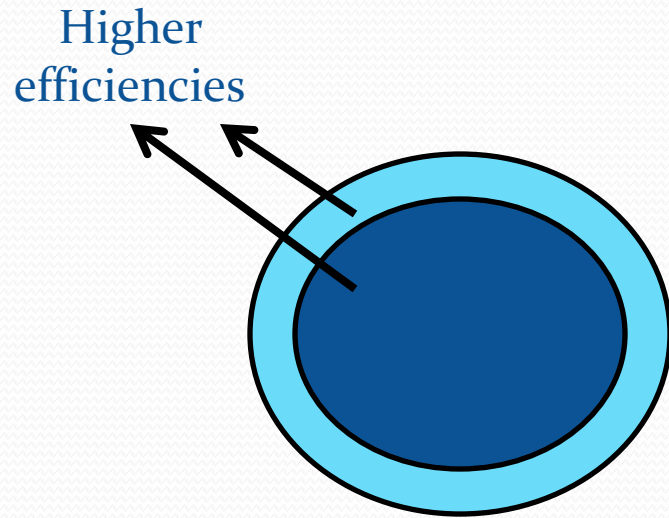
*National and Regional*





**Step 1: Recognise reality, and reduce losses**  
*“The engineers’ focus” is on available water as noted, but losses from the system are often ignored. Reducing losses (UfW, leakage, etc.) enhances the water volumes getting to the end user.*

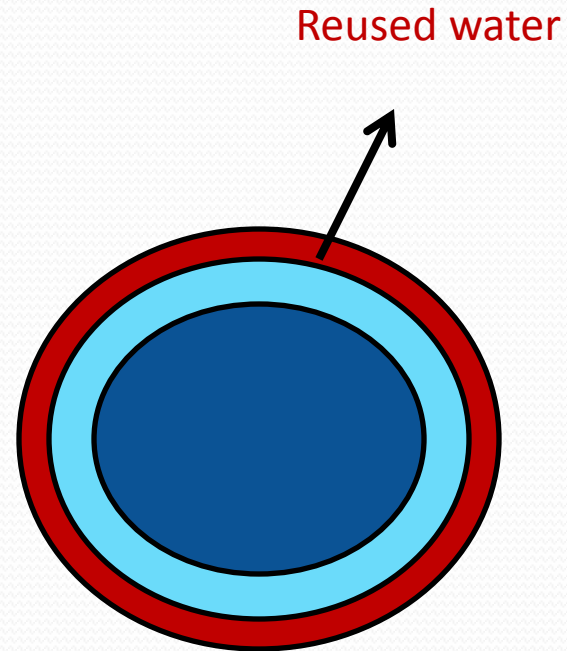
National: Irrigation Efficiency, flood management, drought management, etc..



## Step 2: Water Demand Management

*WDM is another focus of recent efforts, especially where water is scarce. This essentially addresses the efficiency of water use, seeking to improve efficiencies.*

# National and Regional



## Step 3: Introduce reuse of the available supplies

*The reuse of water is possible in many fashions, only some of these involving treatment between the different forms of use. Reuse effectively expands the water volume that is available to end users.*

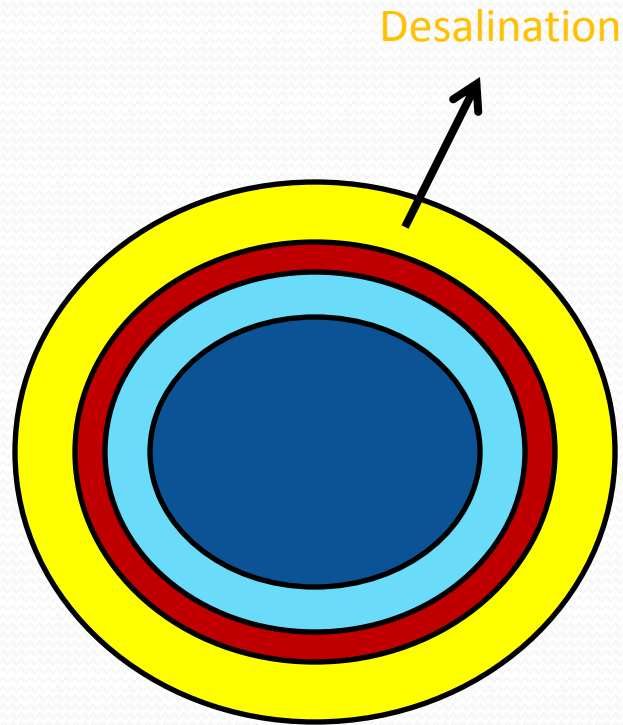
### New Technologies:

- Ultrafiltration (UF) & membrane bioreactor technologies to remove particulates and macromolecules from WW
- Use of RO after filtration to achieve drinkable water quality: Sulaibia WWTP/Kuwait

# MENA Wastewater Status

- Total Volume of WW generated by domestic and industrial sectors in MENA estimated at 13 billion m<sup>3</sup>/year
- Only 6 billion m<sup>3</sup> are treated ( Water Scarcity in MENA, 2014)
- 57% of WW is only partially treated or not at all.
- Shafdan- Israel treats 95% of WW and re-uses it/ Has 230 reservoirs for treated WW storage

# National and Regional



## Step 4: Introduce desalination

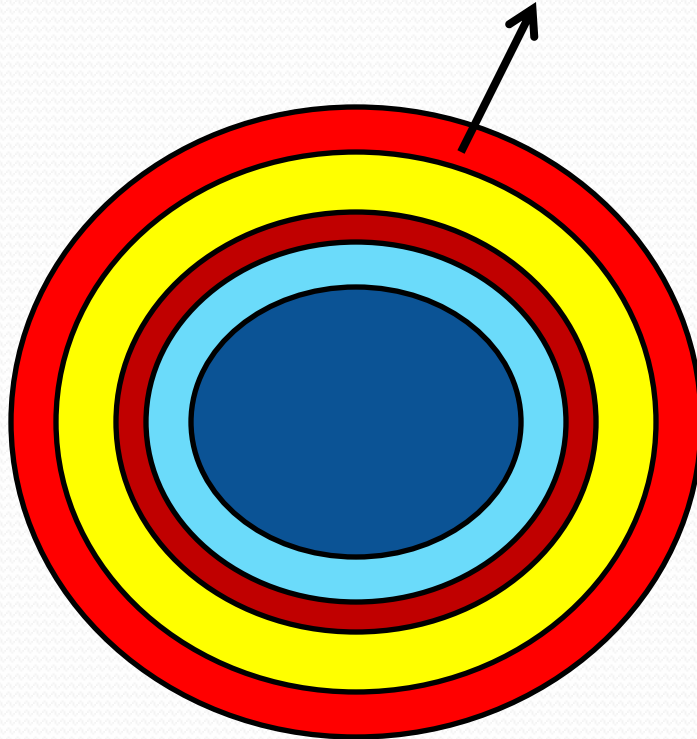
*The costs of desalination have reduced significantly in the last two decades, implying that this is now affordable in many circumstances. This changes the preferred strategies for water supply in many scenarios.*

### New Technologies:

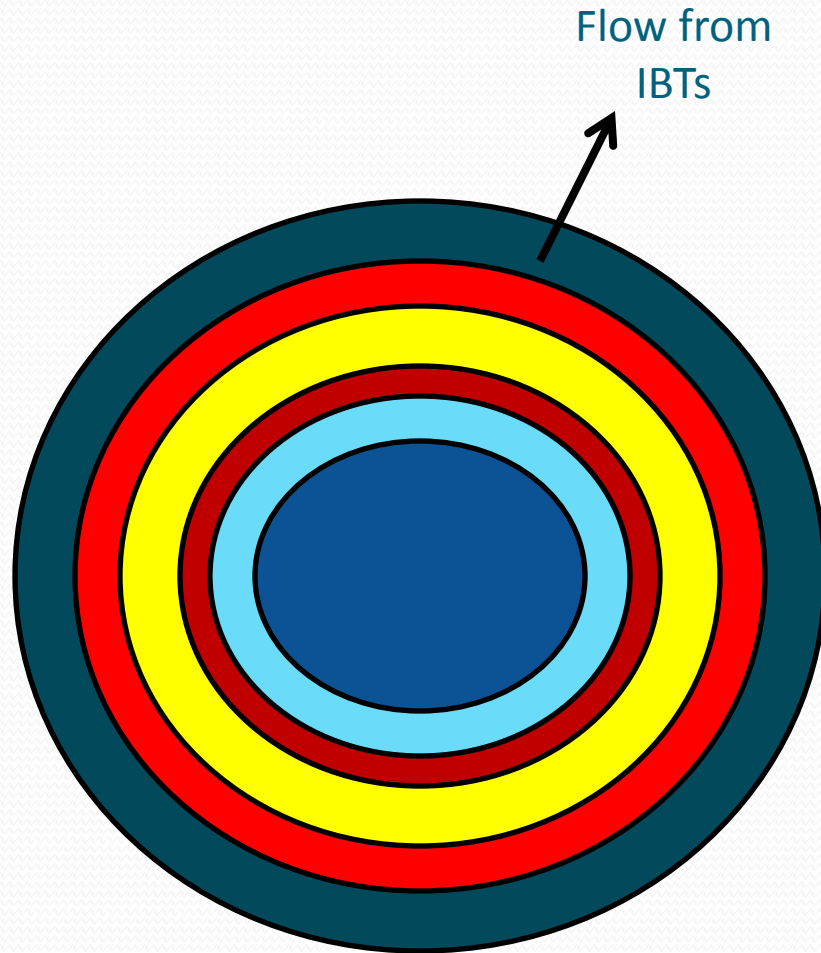
- Use of deploying concentrated solar power
- Use of Photovoltaic PV solar installation for brackish water treatment and powering water pumping stations
- Use of clean energy in rural off grid areas for soil fumigation and for drying animal feed

## National and Regional

Reuse of desalinated flows after treatment



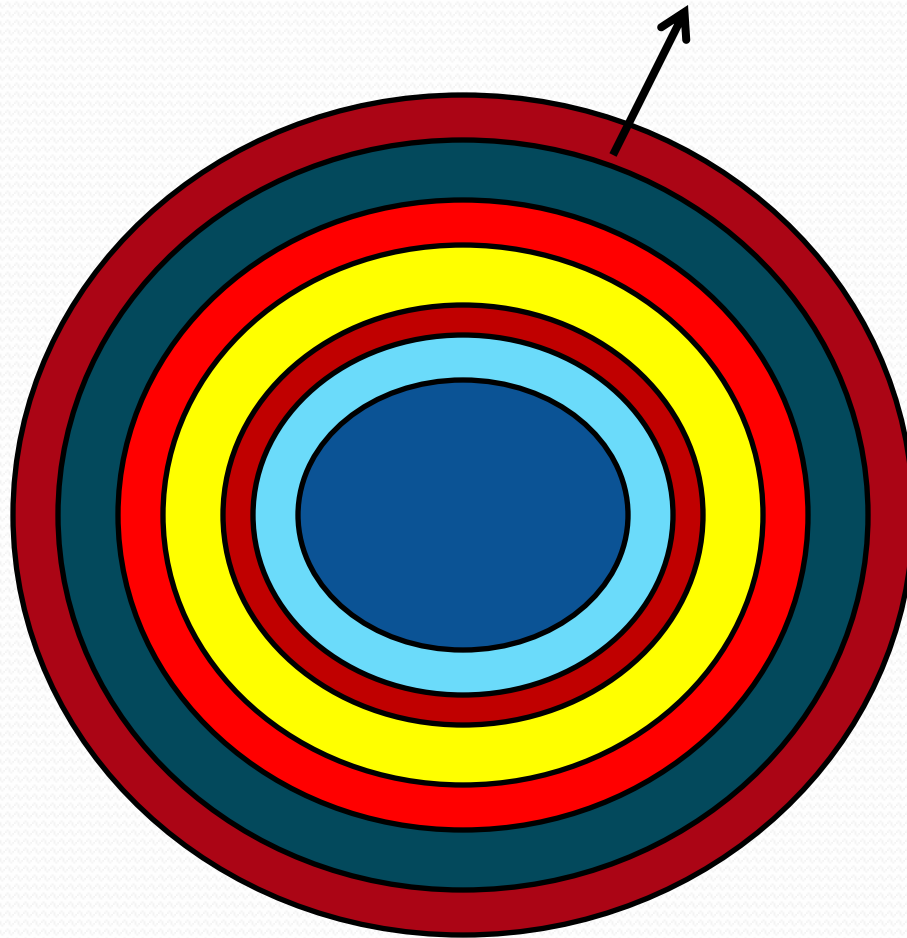
**Step 5: Reuse the desalinated supply**  
*Desalinated flows are generally used as domestic supply. Up to 70% of domestic wastewater flows can be reused after treatment, as little contamination by metals/trace organics eventuates.*



**Step 6: Introduce inter-basin transfers**

*In basins where particular water scarcity exists, IBTs may be used to bring water from elsewhere. This is especially common in some regions, and has great potential in the Middle East.*

**Basin-wide agreement needed**



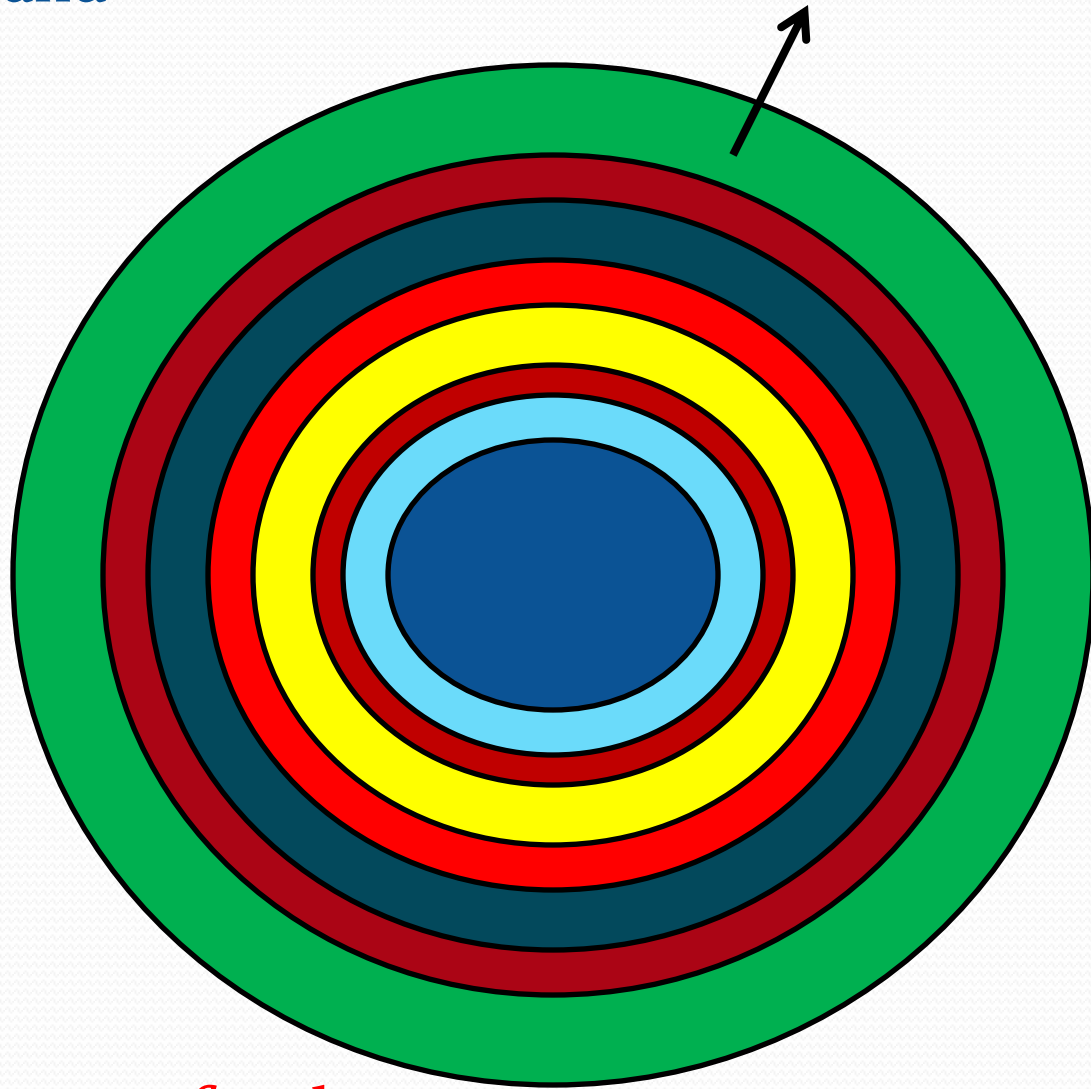
**Step 7: Reuse the IBT flows**

*Flows that are transferred into water-scarce basins through IBTs can also be reused, enhancing the overall efficiency of water use.*



National and  
Regional

Green Water



**Step 8: Use Green  
Water better**

*Green Water (soil water) volumes can be considerably greater than those of Blue Water. Greater attention to the Green Water/Blue Water interface can enhance agricultural outputs very considerably.*

Water- energy- food-  
soil nexus

# Nexus research at universities

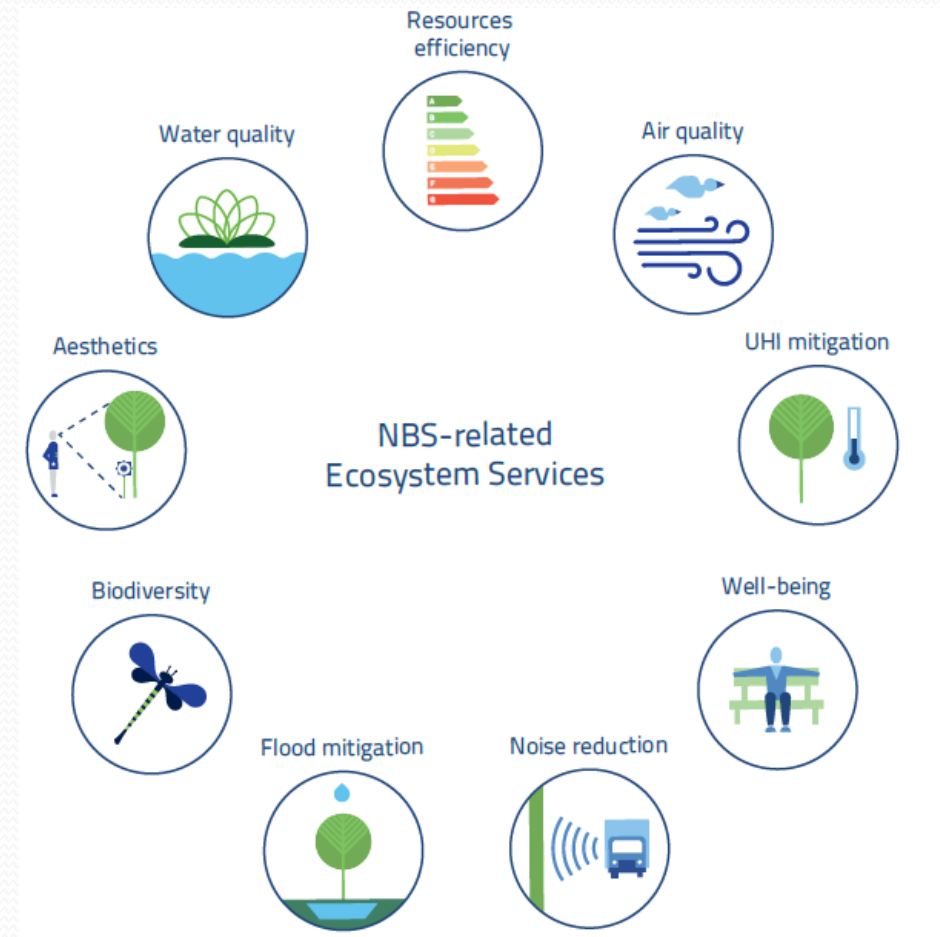
- Ongoing tradeoff analysis using nexus platform including elements of water quality, water saving , productivity technology, cost, soil heath and human risk
- Tools have been developed
- Filed and laboratory measurements

# Blue Green Solutions- Private Sector

- Nature Based Solutions (NBS) – green infrastructure installations such as green roofs, tree pits and swales – can yield multiple urban benefits. These include reduction of water and air pollution, mitigation of flood risk and heat islands, as well as provision of areas for recreation and urban agriculture.
- <https://www.youtube.com/watch?v=7bgp3EogUAQ>

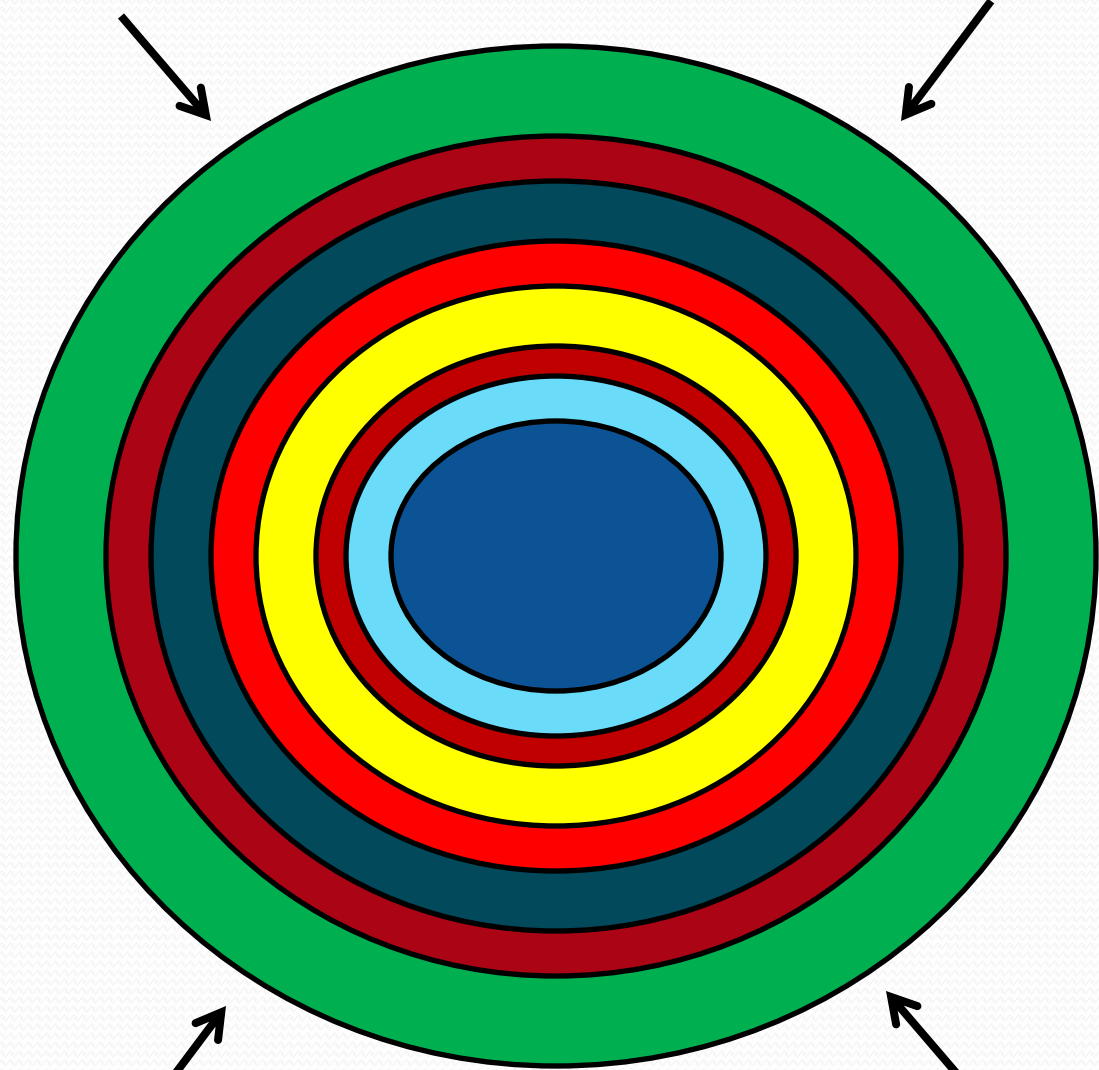
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Virtual Water

Virtual Water



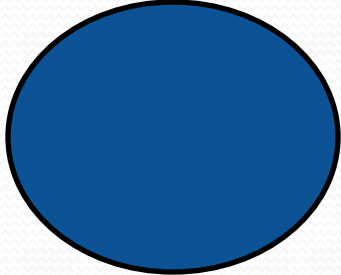
Virtual Water

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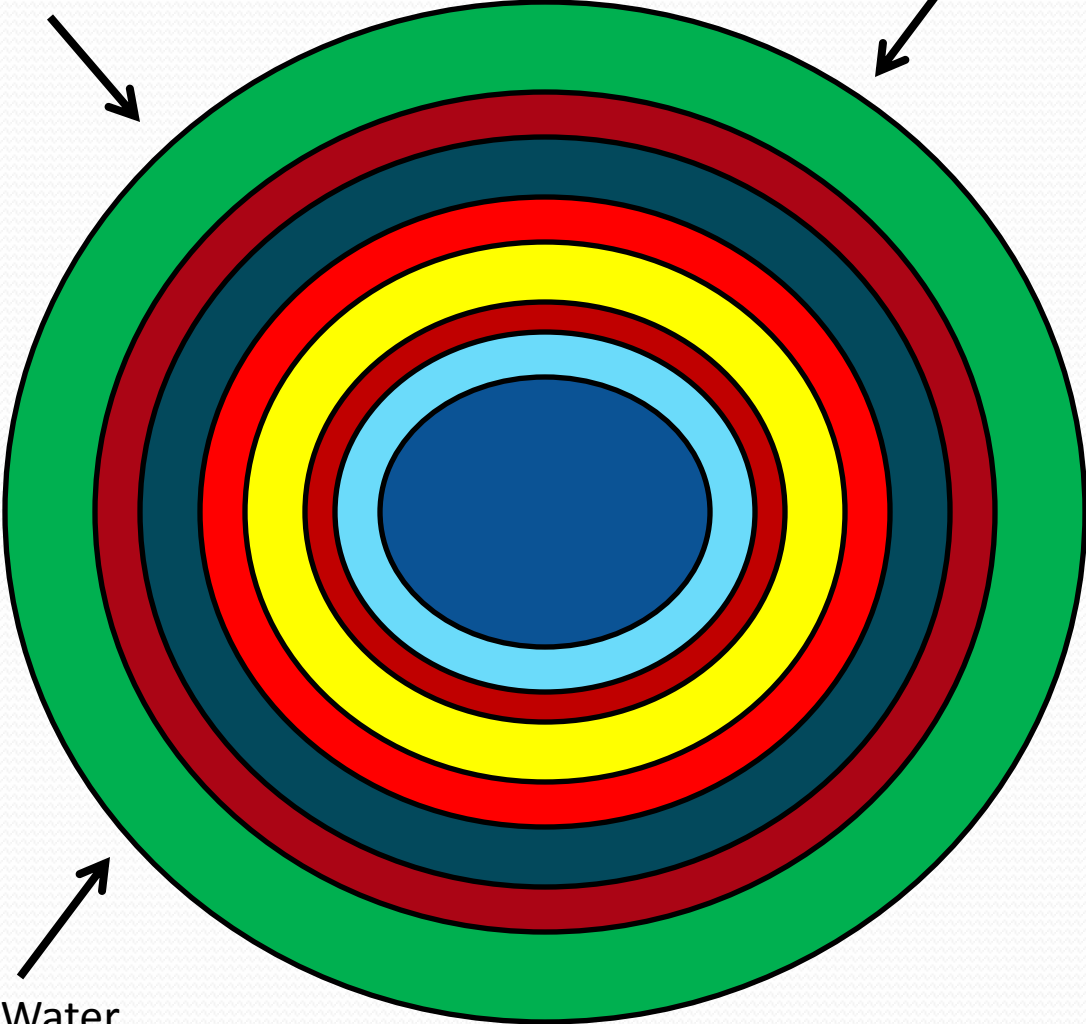
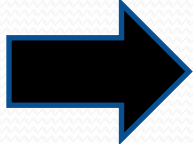
## Step 9: Consider Virtual Water

*Trade in agricultural and industrial products determines Virtual Water flows. Water-scarce countries can address their problems through this (e.g. Israel; Egypt). Many countries are ignorant of this possibility, however.*

Making the pie bigger...



*The status quo*



Virtual Water

*The potential end point*

# Preliminary mapping of Country expertise

Country	Expertise vis-à-vis component of “New Water”
UAE	Brackish and seawater desalination
Jordan	Water saving technologies/re-use of WW
Israel	Seawater desalination and wastewater re-use
Palestine	Water demand management, desalination young expertise
Morocco	Privatization of urban water utilities, developing potential for use of solar energy in desalination
Egypt	Managing complex irrigation networks WDM
Chile	
Canada	
Indonesia	
Belgian	
Switzerland	

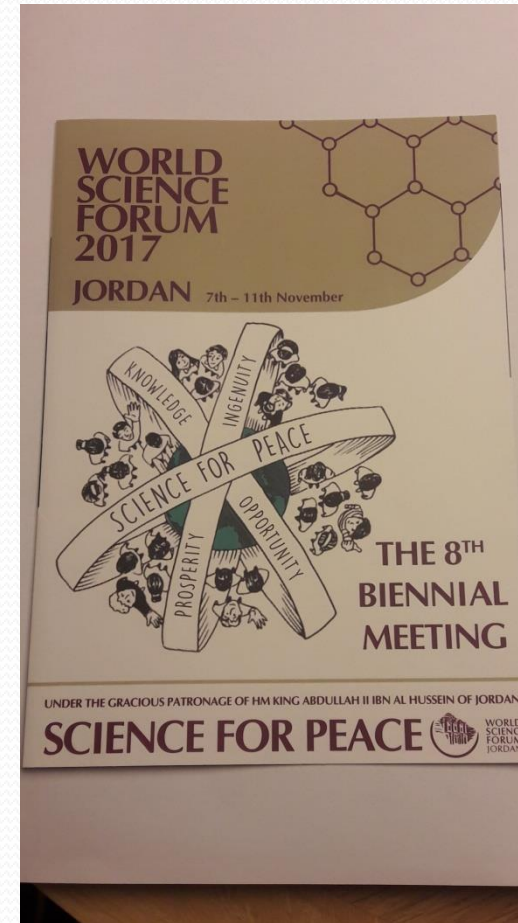
# Opportunities

- National Strategy Plans on IWRM
- SDGs and Commitment of UN member states
- Young creative scientists thinking “out of the box”
- Successful and workable regional initiatives/organisations
- Technological advances
- Women, water and peace
- Emerging paradigms: Water-Energy Nexus, Water-energy-food nexus, Blue –Green Paradigm, etc..
- Role of research institutions
- Private sector partnerships



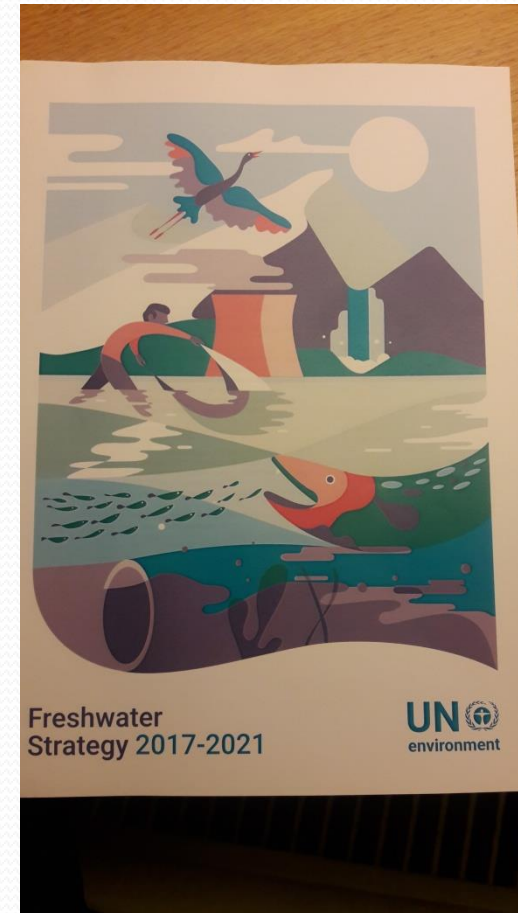
# Opportunities: WSF

- World Science Forum 2017 ,8<sup>th</sup> biennial meeting , 7<sup>th</sup> to 11 November , Dead Sea Jordan – “Scienc for Peace”
- Discover the latest developments in policy and hard science
- Define a policy agenda to support Agenda 2030
- Engage with old and new networks of scientists and policy makers who share a belief in the power of science



# Opportunity : UN Environment

- UN Environment Freshwater Strategy 2016-2021
- The achievement of freshwater related SDGs falls under mandate of UN Environment
- SDG 6.3 Meeting the global water quality challenge
- SDG 6.5 Advancing the IWRM Approach
- SDG 6.6 Protecting and restoring freshwater ecosystems



# Opportunity: MEDRC



- MEDRC Water Research was established to deal with two of the most pressing global and regional grand challenges; water and peace. It is a unique international organization where ten co-equal partners work together on solutions to fresh water scarcity by supporting research, training, knowledge exchange and capacity building

# Opportunity: Global High Level Panel on Water & Peace

- Global Conservatory for Water and Peace
- Extensive expertise





# Opportunity: CERN

# What next?

## For DISCUSSION

- Proper mapping of country expertise
- Thorough mapping of how to make use of existing regional initiatives/institutions
- Projects?