

# Water Engineering & Environment WEE Program

Cairo University, Faculty of Engineering  
Credit –Hour System

Sunday: June 2<sup>nd</sup>, 2019

What is WEE ?

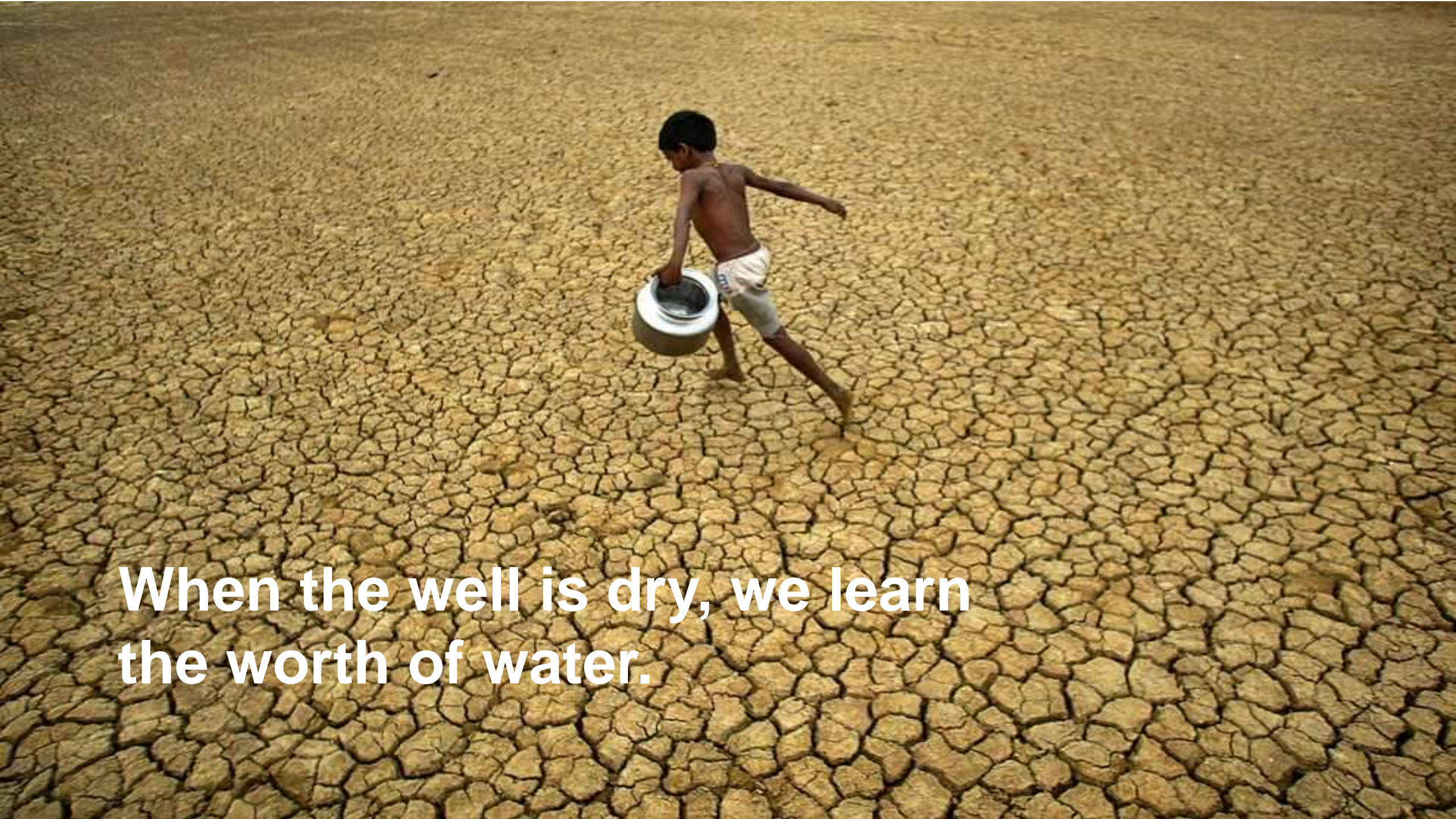


WEE are Civil Engineers !!!

with emphasis on the water subjects  
& consciousness of the Environment







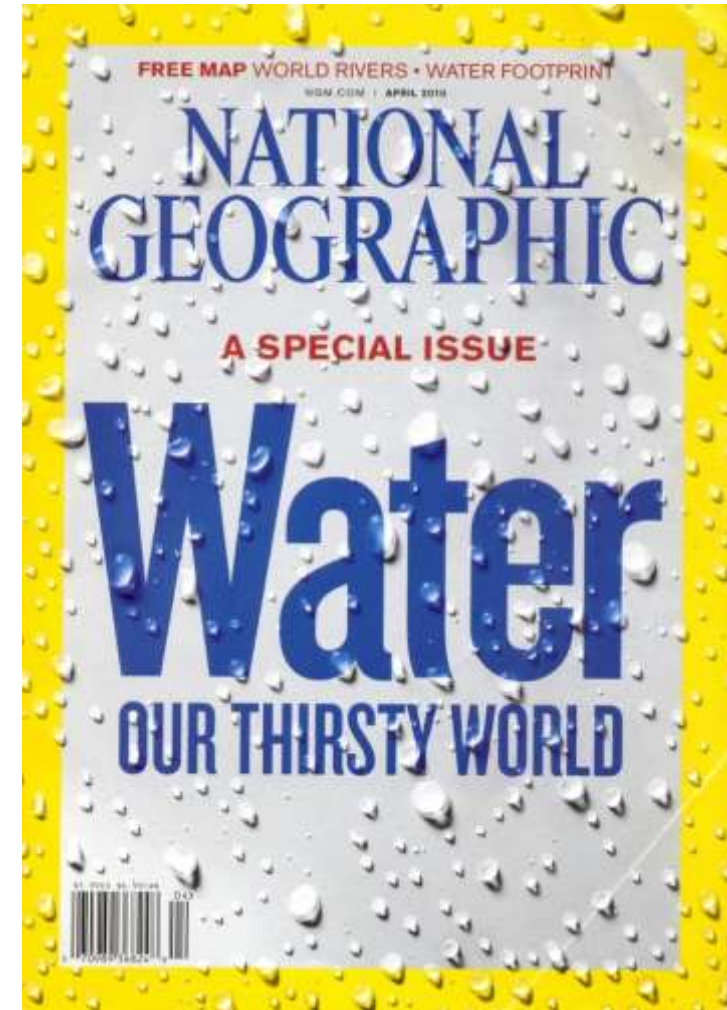
**When the well is dry, we learn  
the worth of water.**



# Water Challenges & Environmental Concerns

## Water Scarcity (National, Regional and Global)

- Limited Freshwater Resources
- Increased Demands
  - Population Growth and Aspiration for better standards of Living
- Transboundary Issues
- Climate Change
- **Pollution of Resources**



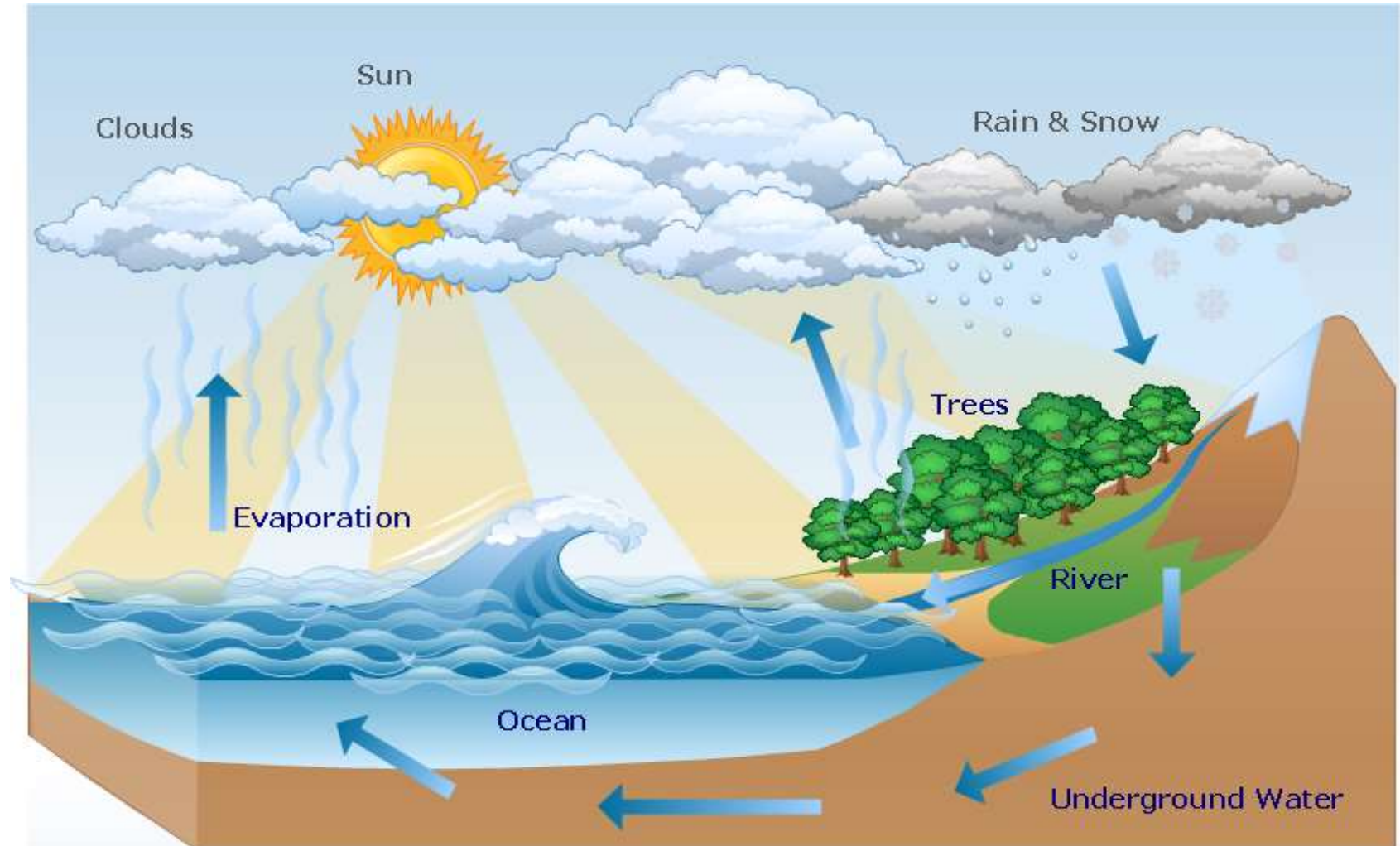
# What Do Water Engineers Do ?

Rains  
Rivers  
Lakes  
Oceans  
Groundwater

Human  
Animals  
Plants

Quantity  
Quality

Economics  
Laws,  
Regulations  
Social Aspects





# What Do Water Engineers Do ?

## Wadi Studies, Flash Flood Protection



Yes it does happen!!

Egypt, Oman, Saudi Arabia, Jordan, Yemen, ....etc.

# What Do Water Engineers Do ?

## Hydraulic Structures (Dams)

Dam Site  
Dam Type  
Dam Size  
Spillways

Hydropower  
Generation

Environmental  
Impacts





# What Do Water Engineers Do ??

## Water Conflicts !!



# What Do Water Engineers Do ?

## Water Conveyance

- Canals
- Pipelines
- Pumping Stations

For

- Domestic
- Industrial
- Agricultural Uses





# What Do Water Engineers Do ?

## Water Distribution Networks & Treatment Facilities and Desalination Plants





# What Do water Engineers Do ?

## Coastal Management, Ports, Marinas & Inland Navigation



Alamein New Developments





# What Do Water Engineers Do ?

## Land Reclamation, Irrigation & Drainage



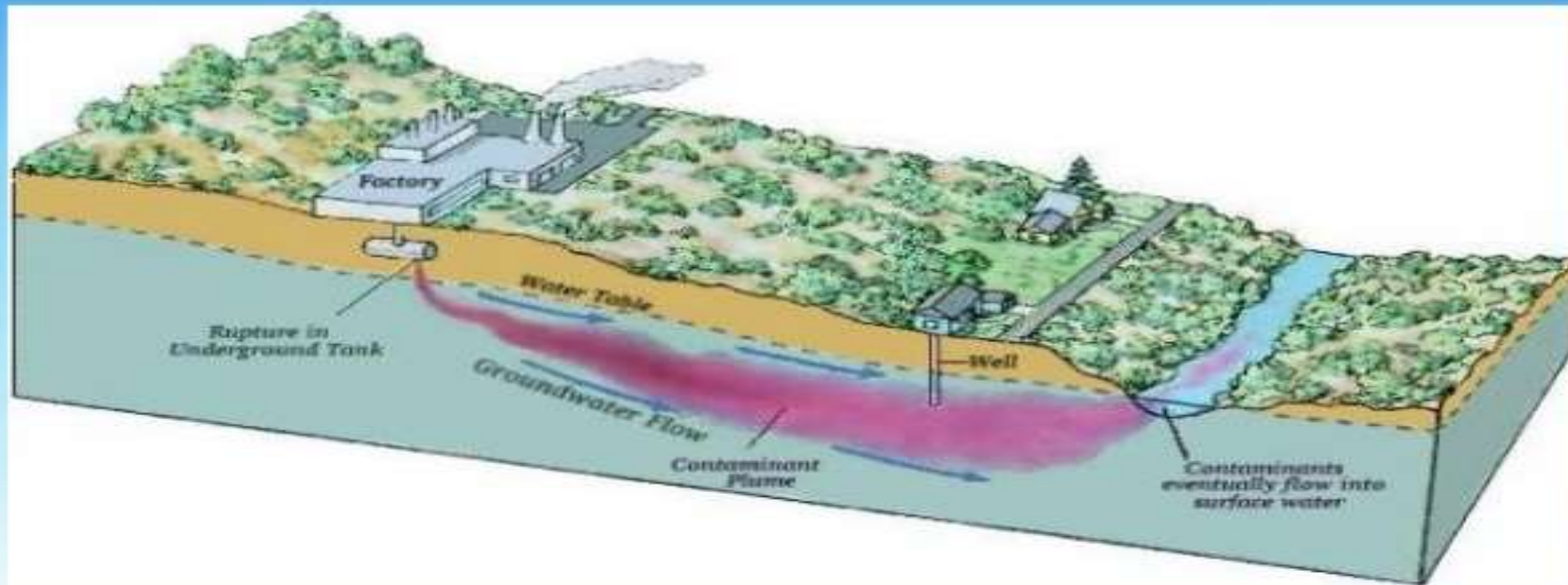
Water Requirements  
Water Application

Is there enough water?

# What Do Water Engineers Do ?

## Contaminant Transport (Surface & Groundwater)

### Typical Problem of Groundwater Contamination





# What Do Water Engineers Do ?

## Contaminant Transport (Oil Spills)



# What Do Water Engineers Do ?

## Waste Management, Pollution Control

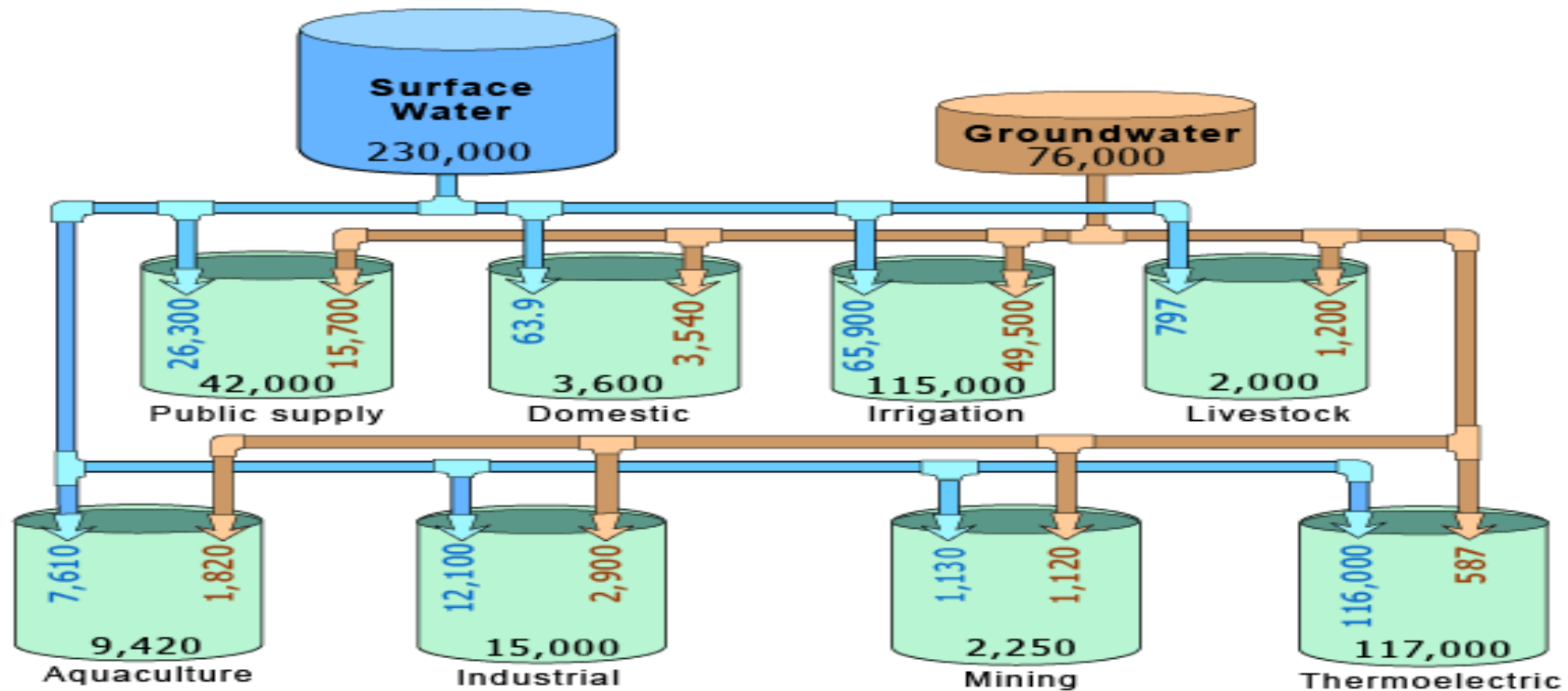




# What Do Water Engineers Do ?

## Strategic Water Allocation

Source and use of freshwater in the United States, 2010



↘ 230,000 Surface water  
↘ 76,000 Groundwater  
 306,000 Total water use  
 Data are in million gallons per day  
 (Data are rounded)

# Preparation of WEE Students Curriculum

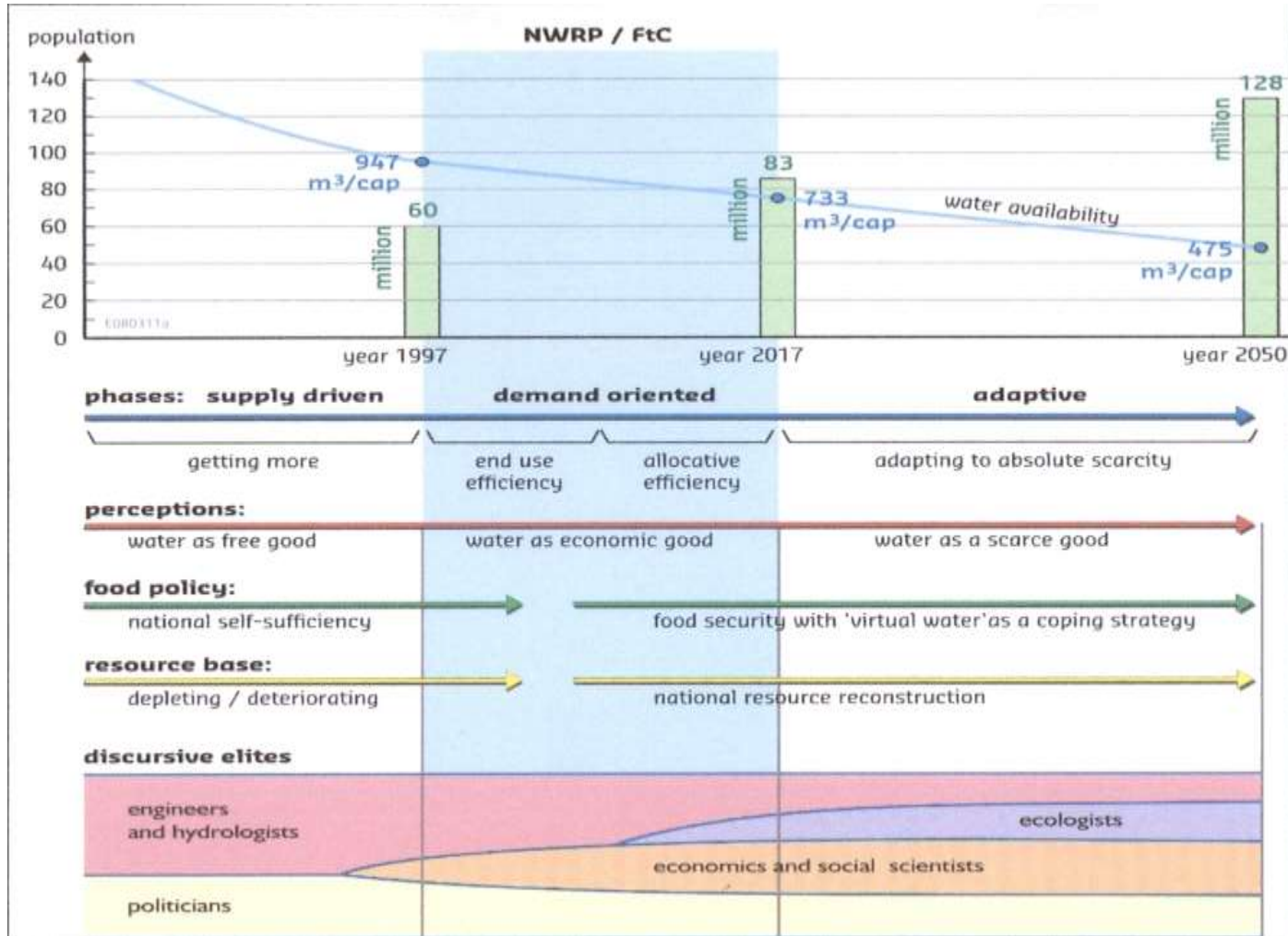
(70-75) % of the courses are shared with other Civil Engineering Programs

Univ. requirements are very much welcomed in the WEE program

Cr Hrs	Freshman	Sophomore	Junior	Senior I	Senior II	
1	University Requirement 6 cr hrs	University Requirement 4 cr hrs	University Requirement 8 cr hrs	University Requirement 6 cr hrs	College Requirement 6 cr hrs	
2						
3						
4						
5						
6						
7	College Requirement 30 cr hrs	College Requirement 13 cr hrs	College Requirement 10 cr hrs	College Requirement	Civil Engineering Requirement 6 cr hrs	
8						
9						
10						
11						
12						
13		Civil Engineering Requirement 16 cr hrs	Civil Engineering Requirement 13 cr hrs	Civil Engineering Requirement 13 cr hrs	Water Eng & Environment Requirement 14 cr hrs	Water Eng & Environment Requirement 25 cr hrs
14						
15						
16						
17						
18						
19						
20	Water Eng & Environment Requirement	Water Eng & Environment Requirement 5 cr hrs	Water Eng & Environment Requirement 14 cr hrs	Water Eng & Environment Requirement 14 cr hrs	Water Eng & Environment Requirement 25 cr hrs	
21						
22						
23						
24						
25						
26	Water Eng & Environment Requirement	Water Eng & Environment Requirement 5 cr hrs	Water Eng & Environment Requirement 14 cr hrs	Water Eng & Environment Requirement 14 cr hrs	Water Eng & Environment Requirement 25 cr hrs	
27						
28						
29						
30						
31						
32	Water Eng & Environment Requirement	Water Eng & Environment Requirement 5 cr hrs	Water Eng & Environment Requirement 14 cr hrs	Water Eng & Environment Requirement 14 cr hrs	Water Eng & Environment Requirement 25 cr hrs	
33						
34						
35						
36	Water Eng & Environment Requirement	Water Eng & Environment Requirement 5 cr hrs	Water Eng & Environment Requirement 14 cr hrs	Water Eng & Environment Requirement 14 cr hrs	Water Eng & Environment Requirement 25 cr hrs	
37						



# Preparation of WEE Students Curriculum



After Turton, 1999

# Preparation of WEE Students Curriculum

## Sample (Required Courses)

- Water Resources Engineering
- Integrated WR Management
- River Engineering
- Coastal/ Harbor Engineering
- Irrigation and Drainage
- Field Methods & Measurements
- Water Chemistry & Microbiology
- Environmental Hydraulics
- Environmental Impact assessment
- Water & WW Networks
- International Law (Water & Environment)

## Sample (Elective Courses)

- Non-Conventional Water Resources
- Design of Pipelines & PS
- Water & WW Treatment Plants
- Remote Sensing & GIS
- Operations Research



# Preparation of WEE Students

## Site Visits



# Preparation of WEE Students

## Field & Laboratory Measurements



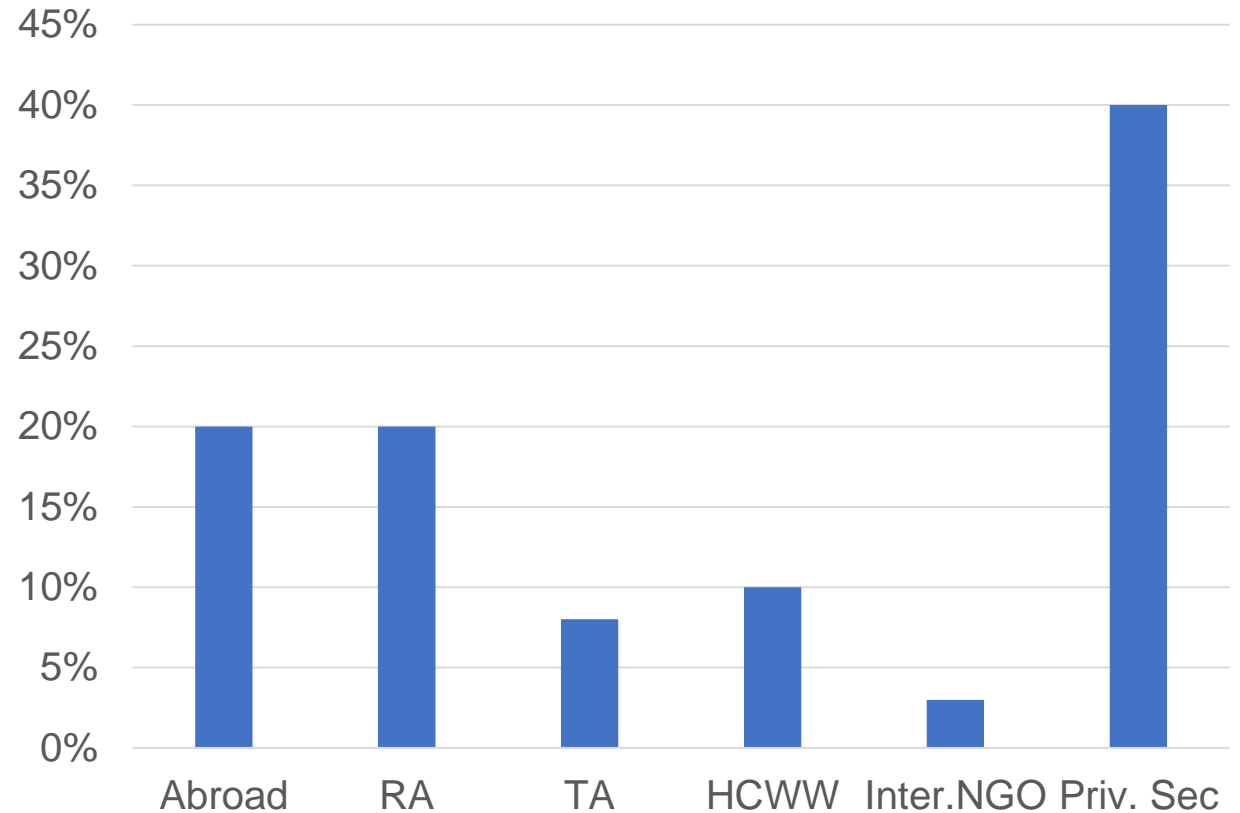


# Preparation of WEE Students Seminars & Conferences



# Job Opportunities (WEE Graduates)

- Consulting Firms
- Holding Company for Water and Wastewater
- MWRI (Research Institutes)
- Graduate Schools (Higher degrees)
- Teaching Assistants (National & Private Universities)
- Donors and International Organizations
- NGO's







WEE Ambassadors Abroad (PhD in Canada)

# Why Should I Join the WEE Program ?

- Facing the Challenges (Water & Environment)
- Civil Engineering (Stable career)
- Balanced Curriculum (Deep and/ or Broad)
- Small Numbers (Close attention, Hands on)
- Surrounded by serious, motivated colleagues
- Job Opportunities (Secured)
- HCWW Scholarships (Available)





# WEE are Civil Engineers !!!

## With two ribbons of excellence

Water

Environment

# For More Information

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