

`Water Pollution

Today we start with a topic that is a very important part of the environment, it is essential for the whole world especially for Jordan, why, what's the problem of water in Jordan? – Jordan suffers from water shortage: we are the 4th poorest country in the world in water, so we have to give water a lot of attention.

*Why is water important for our health, why can't we live without it?

1- There are certain characteristics in water that gives it its uniqueness first, it's a universal solvent, which means that it dissolves many things (bile in our body helps the fat emulsify in water and then we can absorb it)

if a patient had a problem with his gallbladder or with the excretions of the bile and he ate eggs or any fatty material he will have severe pain, because he's not capable to absorb fats, and this fat will be sorted out with his stool.

The major functions of water in our body: **dissolving** substances → **absorption** → **transportation** to the liver → provides a **medium** for metabolism in the liver → **transportation** of metabolites toward the cells → **excretion** of material

2- It regulates body temperature through sweating (cooling effect of water)

3- It helps in the excretion of toxic materials outside the body

4- It gives the body its texture (once the body starts losing its water it shrinks and wrinkles)

so there are many functions for the water in the body beside that it constitutes about 55% of total body weight .

*How much water do we have to drink daily?

- Generally 2-3 liters, but sometimes it's variable and depends on the situation of the patient.

PS. - Animals take up larger amounts of water than humans -

When we look at our planet from outer space it looks blue (they call it the blue planet) because almost 75% of it is covered with water, yet we say that water is a problem in the world!!

Well to be accurate, fresh water is the actual problem
and **by fresh water we mean low-saline water, usable water.**

**Maldistribution is a worldwide water problem. Water is not distributed evenly between countries, some have more than they need while others have less, and we (Arab countries) are among the 2nd category.

In the 1950's, Amman used to drink water from its own wells, they were enough for the population at that time. But this is beyond our imagination, nowadays , there's no way to have enough water in the city and we have to bring it from other cities ... West Amman takes water from Al-Yarmouk river in the northern part of the country passing in King Abdullah canal and it moves 60 km down until it reaches an area where it is pumped 1 km up towards a region called Zay where it is cleaned in a water treatment station, then it goes to Dabouq (there's a huge reservoir there) and then distributed outside .

South Amman takes their water from Madaba.

And now the last resource we're using is Al-Disi reservoir in the southern part of Jordan, where the water moves almost 394 km down to Amman.

What do we want from all of that?? ... Getting water from long-distant places means money! It costs a lot! And who's paying for that? People... but not people alone, they are supported by the government

* check the water bill: 1-amount of water you spend... 2-how much you pay... 3-how much the government pays

* water is a limiting factor for development... industry and agriculture are based on water

Most of the wars nowadays that's happening in the third world countries are to control the oil sources, but in the future wars will be over water resources (actually it started already, five months ago when there was a meeting in Egypt, the Egyptian government was concerned about how to stop Uganda from building a major dam which will affect Sudan and Egypt negatively and deprive them from their water. Also Turkey is limiting the amount of water going to Dijla and Furat rivers and this will affect Syria and Iraq.)

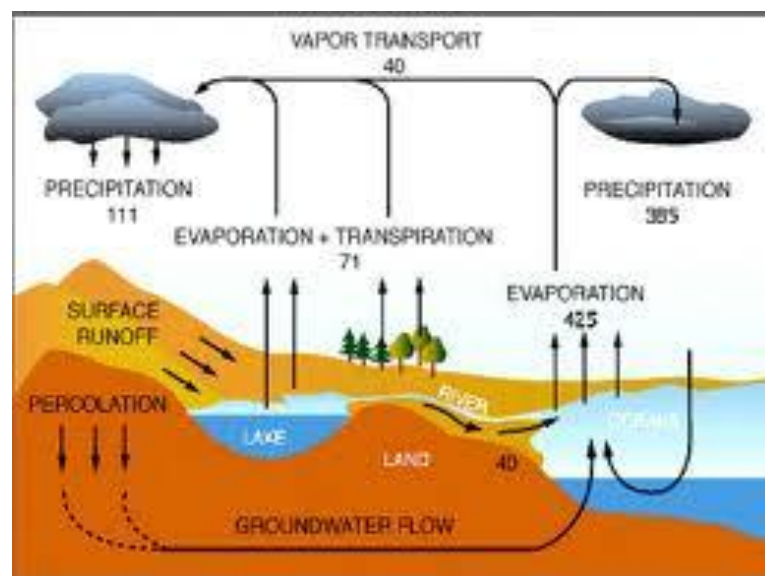
Arabs are not lucky when it comes to water sources; most of our major water sources are not Arabic in origin.

Water cycle: the way water moves in the atmosphere to the ground... in the environment. This cycle is in the form of a loop and it is continuous.

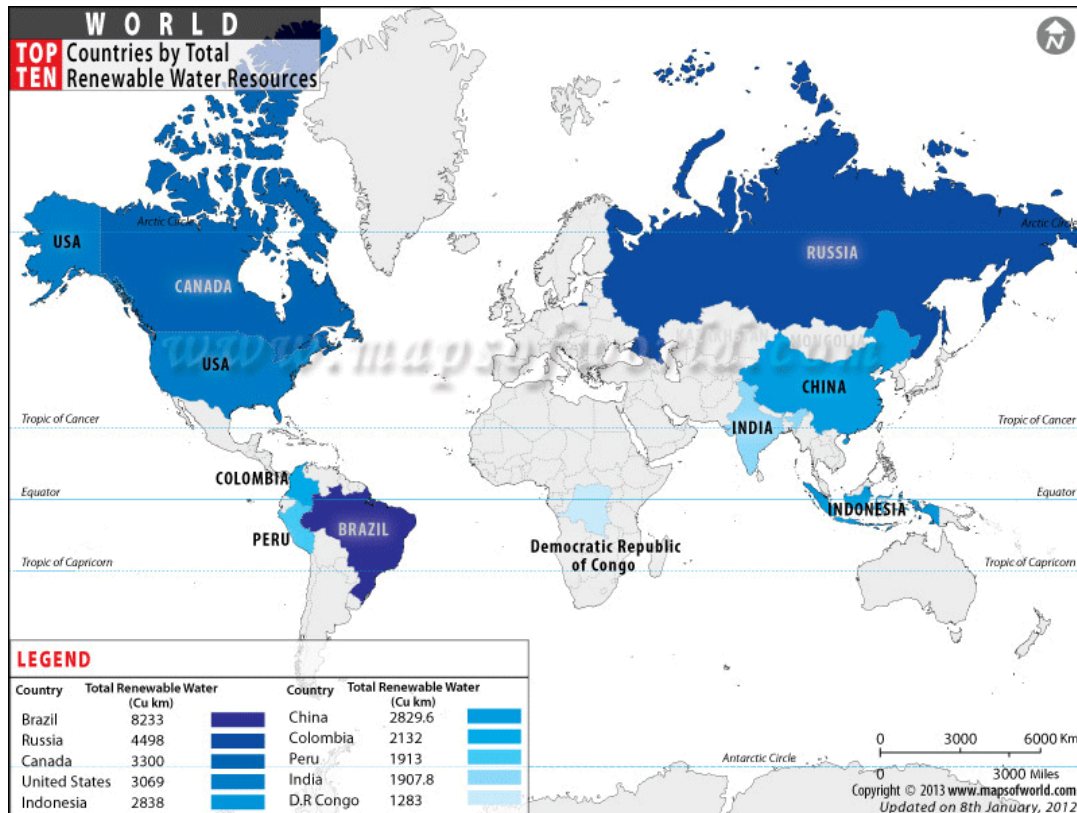
The amount of water is steady (always the same) ... then why do we say that this year Jordan had a shortage in rain supply? It went somewhere else to another country... (at that year another country will have more rain than they are used to and Jordan will have less), therefore Jordan was one of the first to use synthetic rain.

and that's the problem in Jordan that we don't have a steady resource to rely on.

Scientists were able to calculate the amount of precipitation of rain, amount of evaporation; amount of runoff...



This figure shows the misdistribution of water resources and rain worldwide



south America has water the most (brazil, argentine)
 far east also have good amount of water (Indonesia ...)

middle east don't have good amount of water
 southern parts of Saudi Arabia , some parts of Yemen , northern parts of morocco
 , a bit in Algeria and few places in Lebanon and Syria .. these are the places that
 have good amounts of water (rain) in the middle east

Classification of water:

- 97% of water is saline, desalination costs! we can't afford it only few countries can (Saudi Arabia and some gulf countries)
- desalination includes : evaporating water → condensation → separating salts (and this process needs oil)

Once Saudi Arabia tried something: they thought of bringing an iceberg (pulled it on the surface of water, and melt it) but the moment they reached to Saudi Arabia, the amount of water left wasn't worth the effort.

- 3% fresh water... 69% of this 3% is in the form of snow and icebergs
the fresh water that can be used is only 0.008%

If we take the total water in this planet and make it in the form of one cubic meter, what we use as human beings is one teaspoon of each one cubic meter of water

... the problem is that this water is not distributed equally and we are damaging these resources and polluting it.

***surface water: rivers and lakes**

-how many lakes do we have in Arab countries ?
(past question)

*Tabaria is not anymore a lake; it is a reservoir
(collects water mainly from yarmouk river)

reservoirs were know
long time ago (سد مئرب)

example: 20 years ago there was a major problem of water in Jordan, Jordan had 5 consecutive years without enough rain and they reached to a point that they either give that water to irrigation or to people, it was a very bad situation, but the country managed it by help from neighboring countries. (they came into agreement with Israel about our right in part of Tabaria's water .. but it was the worst water we've ever received and they were not capable of purifying it , it was full of algae and precipitates , has bad smell , bad taste ..)

-back to lakes , we don't have much , we have a synthetic lake (built behind Al-Sad al-3ali)

a lake in Ban Ghazi ,Some lakes in Morocco

In Canada there are thousands of lakes, in Sweden hundreds

Arabs are not lucky even in lakes

*How about rivers? as we mentioned earlier the main three rivers in Arab countries aren't Arabic in origin (Nile, Dija and Furat)

-the internal rivers found in Syria (Asia river) and in morocco, those are small not major rivers.

-last thing left : **ground water (also called underground water) : water collected with time** like Al-Disi

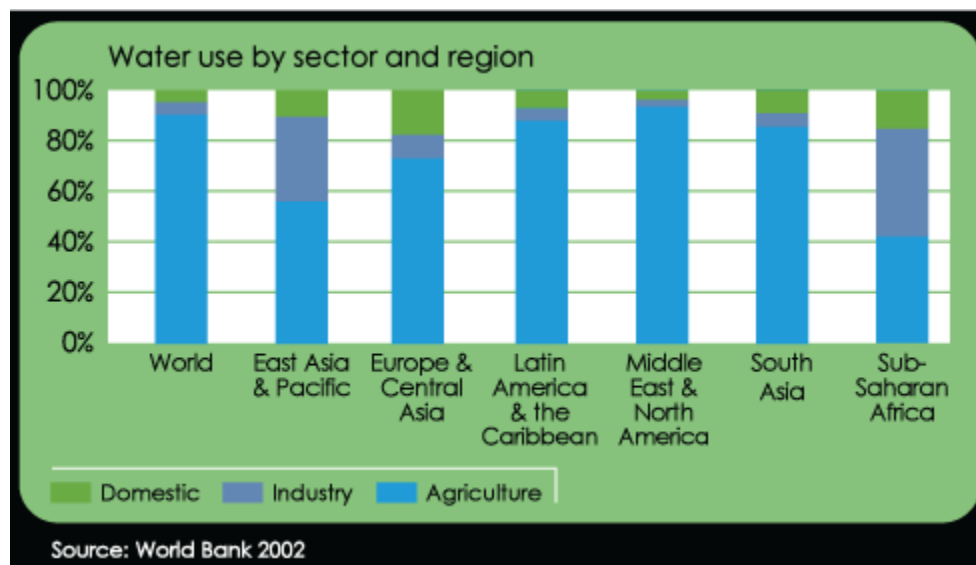
Al-Disi is a very old water , it has been collected through thousands of years, one thing dangerous about it ; is that it will end . There isn't much recharge (little rain); they said it might last for a maximum of 100 years.

Where is water spent?

- 1- Domestic water 8%
- 2- Industrial water 23%
- 3- Agricultural water 70%

But this doesn't mean that in each country in the world we have the same pattern of use, that's a general statistics.

the variation between different continents in water uses:



North and central America: good amount in both industry and agriculture
Africa: good agriculture only

The strength of America comes from its organized way in balancing between using water for agriculture and industry; it has enough amounts of both. it controls the world through food, it has extra amount of maize and wheat.

Good Luck.

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