Water scarcity

- Water scarcity is water poverty issue.
- Water scarcity is lack secure access to safe and affordable water to consistently satisfy their need for food production, drinking, washing, or livelihoods.



Water scarcity

- Water stress is defined as an annual water supply below 1,700 m³/person.
- 'Water scarcity' exists when annual water supply is below 1,000 m³/person.
 absolute scarcity' when it is below 500 m³/person



- Population in mid 2018 = 100 millions.
- Annual freshwater resources in Egypt:
 - Nile: 55.5 billion m³
 - Rainfall: about 0.5 billion m³
- Total annual water budget = 56 billion m³ = 56000 million m³
- Water per person = water budget / population
- = 56000 / 100 = 560 m³/capita/ year

Desertification

- 1. What is desertification?
- 2. Is there a connection between the scarcity of water and desertification?
- 3. Can we eliminate/reduce desertification?

Different categories of drylands

- Hyper-arid regions:
 - Rainfall is less than 100 mm/year.
- Arid regions:
 - Generally rainfall 100- 200 mm/year.
- Semi-arid regions:
 - Rainfall does not exceed 500 mm/year in areas of winter rains or 800 mm/year in areas of summer rains.
- Dry sub-humid regions:
 - Rainfall cycles are highly seasonal.



What is Desertification?

- a process of land degradation in arid, semi-arid and dry sub-humid areas, resulting from various factors including climatic variability and human activities"
- a process in which some of the productive lands change into desert or non productive lands.

Causes and factors of desertification

- I. Natural Causes
 - 1. Sand encroachment





28,50

28',4

























Kharga Oasis





- I. Natural causes
- **II. Human activities:**
- 1. Overcultivation

- **II. Human Activities:**
- 1. Overcultivation Intense Farming

Growing crops for cash too fast makes the soil break down.

Causes of desertification

II. Human Activities:

- 1. Overcultivation
- 2. Overgrazing

It occurs when plants are exposed to intensive grazing for extended periods of time, or without sufficient recovery periods.





Overgrazing of livestock in buffalo zone of National Park. Ranthambore National Park; Rajastan; India.

II. Human Activities:

- 1. Overcultivation
- 2. Overgrazing
- 3. Deforestation

Deforestation is the destruction of trees and other vegetation.

Trees provided protection for the soil from wind and rain.

People who need fuel, need timber for houses, want to sell timber for profit, or who hope to be able to clear new farmland.







II. Human Activities:

- 1. Overcultivation
- 2. Overgrazing
- 3. Deforestation
- 4. Poorly drained irrigation



II. Human Activities:

- 1. Overcultivation
- 2. Overgrazing
- 3. Deforestation
- 4. Poorly drained irrigation
- 5. Urbanization on a fertile lands





Desertification in Egypt

- Egypt as located in the arid and hyper arid zones.
- About 1 million Acre or Fadden (16%) of the total cultivated lands were lost due to urbanization.
- More than 30% of the irrigation farmlands are salt affected.
- Water pollution as a result of agriculture, industries, domestic uses has led to serious impacts on public health and environmental risk.
- 45% of the total range lands areas (4 million ha, 10 million Fadden) are severely degraded.
- Sand dunes cover about 16% of the total country area.
- About 5% of such dunes are active and seriously affected some cultivated lands in the vicinities of Nile Valley and delta and High Dam Lake.