



# **WATER SHORTAGE ITS CAUSES, IMPACTS AND REMEDIAL MEASURES**

1

# A REFERENCE FROM THE HOLY QURAN

- اولم ير الذين كفروا ان السماوات والارض كانتا رتقا 21:30 ففتقناهما وجعلنا من الماء كل شئ حي افلا يؤمنون
- Have not those who disbelieve known that the heavens and the earth were joined together as one united piece, then We parted them? And We have made from water every living thing. Will they not then believe?

# Topics to be presented

- Abstract
- Importance
- Materials
- Indus Water Treaty
- Impacts of Water Shortage
- Remedial measures
- Effective management
- Recommendations

# ABSTRACT

with two thirds of the earths surface covered by water, it is evidently clear that water is one of the most important elements responsible for life on earth. It is not only vital for sustenance of life but equally essential for the socioeconomic development. The global fresh water shortage and food security issues related to teeming billions of population necessitated the shifting of fresh water from agriculture to other more pressing uses. The country is facing the worst ever crises of water shortage for last many years, as water available for any given use has become increasingly scarce.

# IMPORTANCE

- Agriculture is important sector in the development of country, taking broader perspective on contribution of agriculture to gross domestic production and including associated support services, the agriculture actually accounts the major portion of total economy.
- 70% of the population depends directly upon agriculture.
- Food and fibre is the basic need of our country.
- It makes possible in foreign exchange earning and job employment.

# IMPORTANCE

- Improvement in agriculture productivity is must for food security, at present from 80 Mha geographical Area, 29.6 Mha is suitable for agriculture and from that 13.3 Mha is canal irrigated and 3.5 is rain fed.
- Agriculture acts as an industry and it is gaining recognition for its importance in combating wide spread rural poverty and acts as stabilizing factor in the national economy. It is clear from the above facts that it becomes indispensable to manage water resources and agriculture properly.

# MATERIALS

- Very less downpour, the hydrological cycle determines the set of processes that maintain the flow of water through the system. The hydrological cycle depends upon evaporation, due to high contamination of wet lands, oceans, rivers the process is affected badly. Cutting of large area of jungle according to UN report in Pakistan from 7000 to 9000 hectares jungle is removed yearly and now it is only 5% instead of 25% of total land.

# INDUS WATER TREATY

Soon after 1947, the dispute of water distribution arose between india and pakistan.

The treaty was signed through World bank in 1960.

According to this treaty all waters of eastern rivers (Ravi-Beas and Sutlej) shall be un-restricted use of india.

Total water sold 24 MAF, irrigating some area of 8 MA of land.

The IWT took place in 62 million pounds.



# IN-SUFFICIENT WATER STORAGES

- Canada \_\_\_\_\_ 694 MAF
- U.S.A. \_\_\_\_\_ 1420 MAF
- China \_\_\_\_\_ 2280 MAF
- India \_\_\_\_\_ 245 MAF
- Pakistan \_\_\_\_\_ 16.12 MAF due to silting up of reservoirs.

- Warsak \_\_\_\_\_ 0.0495 MAF
- Rawal \_\_\_\_\_ 0.0475 MAF
- Mangla \_\_\_\_\_ 5.6000 MAF
- Tarbella \_\_\_\_\_ 10.2000 MAF
- Khan pur \_\_\_\_\_ 0.0590 MAF
- Tanda \_\_\_\_\_ 0.0788 MAF
- Hub \_\_\_\_\_ 0.0924 MAF

16.1272 MAF

# TOTAL AVAILABLE SURFACE WATER AND LOSSES IN PAKISTAN

142 MAF from all surface sources

50 MAF losses River and Sea

92MAF

29 MAF from canals

63 MAF

30 MAF addition from tube wells

93 MAF

37 MAF losses from W.Cs

56 MAF

14 MAF losses from lands

42 MAF Net uses

# IMPACTS OF WATER SHORTAGE

- Shortage in cropped lands (out of 80 Mha, 29 Mha land is cultivable but only 17 Mha is hardly canal irrigated yet), therefore import of food grains put additional stress on economy.
- Hydro Power. Pakistan has an estimated potential of 40,000 MW of hydro power in the upper Indus region; we have tapped only 13%.at present Pakistan has a power generation capacity of 19246 MW. Out of which only 30% is from hydel and nuclear where as 70% is from thermal. WAPDA has projected a power requirement of 75149 MW by year 2025, which can only be achieved by constructing additional storage dams.

○ Effects of urbanization / Industries. Water shortage in turn is also affecting:-

- Availability of water for urban use.
- Industrial use.
- Flow downstream Kotri.

### Ground Water

- Surface water has put tremendous pressure on ground water. Over drawing of ground water by users to compensate the shortage. In turn reduced recharging owing to less percolation. This has result rising of saline water lens nearer to the ground surface.

# REMEDIAL MEASURES

1. Increase in water storage reservoirs.
2. Preparation of effective water policies.
3. Planning and preparation of water budget.
4. Management for harvesting seepage as well
5. runoff.
6. Proper use of irrigation water.
7. Re-use of waste water for irrigation.

# EFFECTIVE MANAGEMENT

The water resources development is embedded in the socio-economic environment. The effective development depends upon:

- Development policies be prepared by the state.
- population growth.
- Economic frame work, considering the agriculture as industry.
- Availability water resources and effective harvesting methods of runoff.
- Water wastage through entire system, percolation, evaporation and methods of irrigation.
- Crop patronage, seasons, duration and effective rainfall.

- Food and fibre demand and future requirement, considering the growth rate of population.

More specific identification of issues will help in preparing various models for quality & quantity studies.

# RECOMMENDATIONS

- Food and fibre is the pressing need of every one, there fore proper management of water resources is necessary.
- Statistics of yearly water budget will help in effective planning of water resources.
- A one century old irrigation system is now posing the serious problem of water wastage through seepage, it requires proper rehabilitation at required level.
- The water users be aware properly about the importance, availability and effective use of water through social mobilization.



- Institutional management, effective planning and wise use of water is the requirement of time.
- Furrow as method of cultivation and trickle as method of irrigation be implemented effectively.
- Water rights, rules and policies be framed to control wicked problems like tampering of modules, water theft and pilferage etc.
- Instead of land tax, now Tax be fixed on water quantity

Thanks for your  
Kind Attention