


## Message from Vice-Chancellor on “World Water Day” 22<sup>nd</sup> March, 2021

- Water is a primary natural resource, a basic need for all forms of life on earth and a precious but finite national asset. Drinking water is the most essential requirement, even more than food, for sustaining human life.
- The total global water availability is estimated as 1.39 billion km<sup>3</sup>, 97.3% of this is saline and thus only 2.7% is fresh water. In fact, all the fresh water on earth can be captured in a cube with sides of 330 km.
- Although India has 16% of the world's population, it is endowed with only 4% of the total available fresh water in the world. While the total fresh water availability in the country remains constant, the per capita availability of water has been steadily declining since 1951 due to population expansion.
- The per capita availability, which was 5,200 m<sup>3</sup> in 1951, declined to 2,200 m<sup>3</sup> in 1991 and 1,820 m<sup>3</sup> in 2001. It is estimated to further decline to 1,340 m<sup>3</sup> in 2025 and 1,140 m<sup>3</sup> by 2050.
- Per capita availability of less than 1,700 m<sup>3</sup> is termed as water stress condition, while if it falls below 1,000 m<sup>3</sup>, it is termed as water scarce condition. Therefore, India is heading towards water scarce condition by 2050.
- Agriculture is entirely dependent on availability of fresh water. In fact, because of dependence of agriculture on fresh water availability, all ancient civilizations evolved near river basins like the Mesopotamian civilization on the banks of the Euphrates and the Tigris, the Egyptian civilization on the banks of the Nile, the Indus valley civilization on the bank of the Indus etc.
- A lion's share of fresh water in India is used for irrigation purpose. In fact, India ranks first in the world in terms of irrigated farmland, which is nearly 60 m ha now. Irrigation consumed 541 billion m<sup>3</sup> of the total available 634 billion m<sup>3</sup> fresh water i.e. 85% in the year 2000.
- By the year 2025, the projected annual requirement for irrigation is 910 billion m<sup>3</sup> that is 83% of the total requirement of 1,092 billion m<sup>3</sup>. By the year 2050, the total requirement is estimated to rise to 1,447 billion m<sup>3</sup>, of which 1,072 billion m<sup>3</sup>, 74% will be required for irrigation.
- Beside irrigation, fresh water is also required for drinking, domestic uses, industrial uses, hydropower, navigation and recreational purposes. Moreover, a minimum flow of fresh water is required from environmental and ecological considerations.
- With the growing economy, there will be huge demand of fresh water for non-agricultural purposes. Therefore, a severe competition for water is imminent in near future making it less available for agricultural purpose. This necessitates adoption of efficient irrigation technologies and to discourage unsustainable use of irrigation water.

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- A hand holding a glass of water with a rainbow in the background. The background is a soft-focus image of a hand holding a glass of water, with a rainbow visible in the distance. The text is overlaid on this image.
- On the contrary, the water systems all over the world are under severe stress. Many rivers no longer flow all the way to the sea; 50% of the world's wetlands have disappeared and major groundwater aquifers are being mined unsustainably, with water tables in parts of Mexico, India, China, and North Africa declining by as much as 1 m/year.
  - Decline in ground water table is forcing the farmers to pump water from deeper layers thus increasing the risk of soil contamination with heavy metals and salts.
  - Therefore, increased food production must largely take place on the same land area while using less water. The need for land and water for food production must compete with demands for ecosystem preservation and biomass production.
  - Hence, there is an urgent need to review our water programmes in order to propose a more effective and more strategic response to the growing issue of water scarcity.
  - FAO recommends that the promotion of realistic and responsible approaches to water management plays a proactive and effective role in combating global freshwater scarcity. This involves assessing the efficient use of water at field, irrigation scheme and river catchment scales.
  - Technological innovations are necessary to address the fundamental problem of water crisis that will have a major impact on agriculture. Fortunately, an array of technologies as mentioned below is now available to rationalize use of water in agriculture.
    - \* Diversification to more hardy crops in place of water expensive crops like paddy, wheat, maize etc.
    - \* Drought tolerant varieties of crops.
    - \* Conservation agricultural practices like zero tillage, mulching, etc for cultivation.
    - \* Micro-irrigation techniques like drip irrigation, sprinkler irrigation for water conservation.
    - \* Aeroponics, hydroponics for cultivation of vegetables.