

7 th. World Water Summit 2023









Climate is changing...

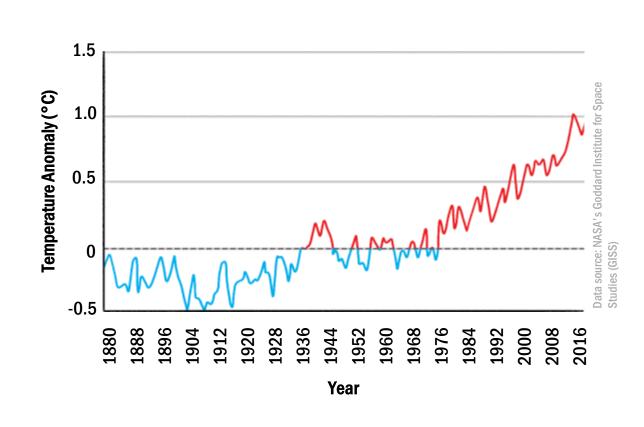


Climate change is a change in the average temperature and cycles of weather over a long period of time

Since 1880, scientists have kept thermometer-based records of the global surface temperature

What is happening to the global temperature?

The planet is becoming warmer; the climate is changing























Sustainable Development Goals and Water





In 2015, at COP21 in Paris, the nations signed an agreement to set out the ambitious plan to tackle the Climate Change

The same year, 17 **Sustainable Development Goals (SDGs)** were adopted by all United Nations
Member States

The 17 goals set out all of the things that need to be achieved to protect the planet and ensure that all people enjoy peace and prosperity

The 2030 Agenda contains a dedicated goal on **Water** – SDG 6.



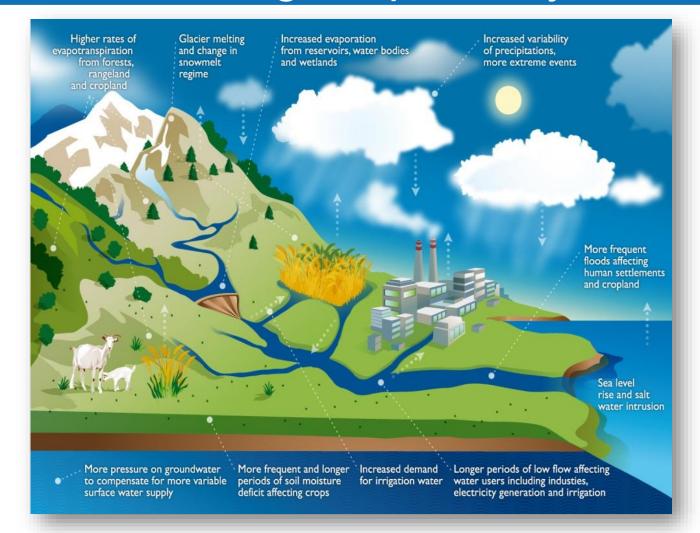






Climate change is primarily a Water crisis...





Climate change is primarily a **water crisis** and impacts thru' worsening floods, rising sea levels, shrinking ice fields, wildfires and droughts

- •Climate change is primarily a water crisis and Water and climate change are inextricably linked
- •Water becoming more scarce, more unpredictable, more polluted
- •Water threaten sustainable development, biodiversity, and people's access to water and sanitation
- •Worsening floods, rising sea levels, shrinking ice fields, wildfires and droughts
- •Volatility in the cryosphere **affect the regulation of freshwater resources** for vast numbers of people in lowland areas
- •Droughts and wildfires are **destabilizing** communities and triggering civil unrest and **migration** in many areas
- •Destruction of vegetation and tree cover exacerbates **soil erosion and reduces groundwater recharge**, increasing water scarcity and food insecurity
- •Growing demand for water increases the need for **energy**intensive technologies

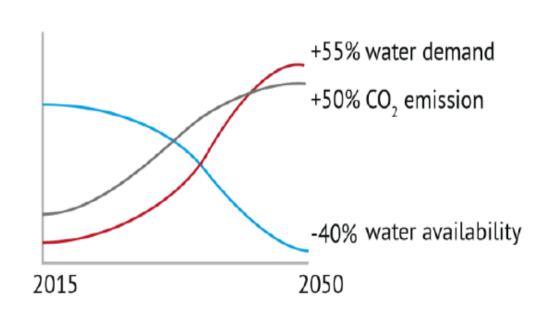
Climate change amplifies risks for Water...



Climate change **amplifies risks** we already face, and have faced for many years

- Drought
- Flood
- Water supply shortages and distribution
- Poor water quality
- Disrupted watershed processes
- and so, on

Climate Change increases the risks, problems and stakes.



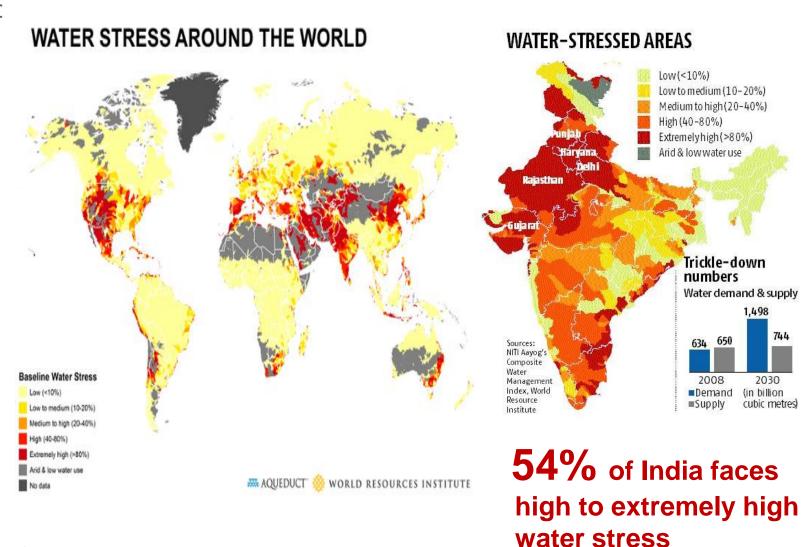
Water Demand is Increasing



Trend in Water 2050....

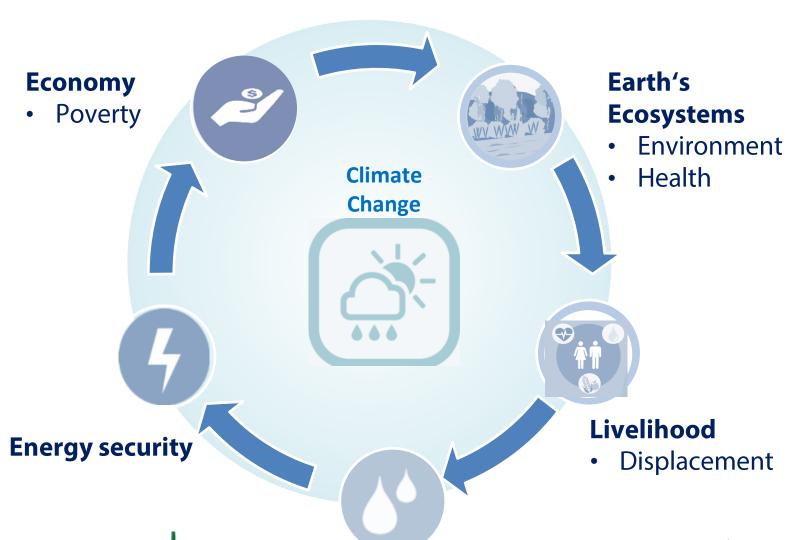


- According to the World Economic Forum, Water crises are ranked among the top 10 risk to humanity
- About one third of the world's population lives in water stressed areas (36%) now (2.8 billion people)
- In 2050, half (50%) of the world's population will live in water stressed regions
- Climate change poses an threat to water security



Impact on environment, society at large...









Who can fix it.....

Governments can make laws and policies that reduce the amount of greenhouse gas emissions



Businesses can change their processes to run more sustainably



We can all make choices in our own lives that reduce our carbon footprint



Industry major consumer of water after Agriculture

As per National Commission Of Integrated Water Resource Development, Water requirement of Industry 2050 with high usage scenario ~1180 BCM (against 695 **BCM** now)



Drivers of water Efficiency and Innovative Technology

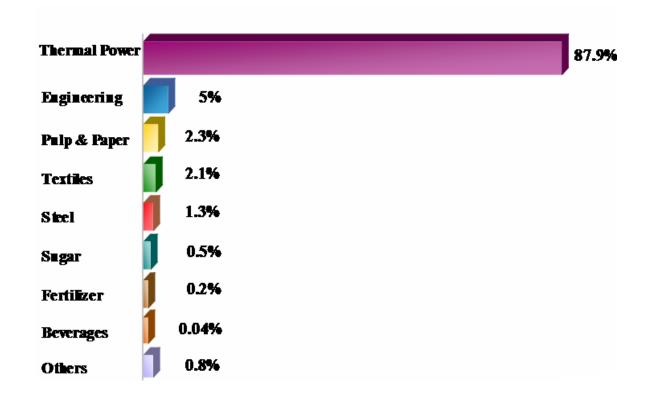






Power plant as dominant consumer of water...

















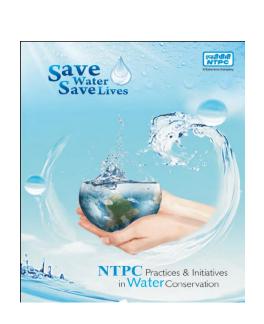


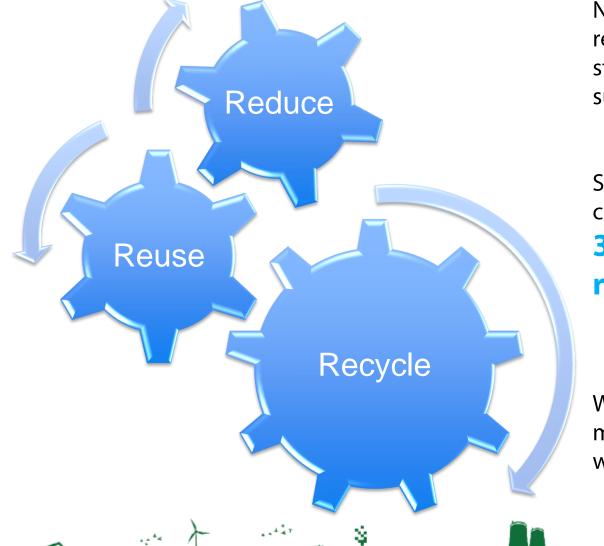




NTPC - Initiatives in Water Conservation...







NTPC recognizes water as a vital resource for life and maintains a steadfast commitment to its sustainable utilization

Strive to optimize water consumption using the 3R principle of reduce, reuse, and recycle

Water efficiency and innovative measures to reduce the specific water consumption

NTPC -Water Conservation strategy...





Liquid Wastewater Treatment Plant





Increase COC

Water

Conservation

strategy



Air Cooled Condenser



Treatment and usage of STP Water



Zero Liquid Discharge

Optimization of water consumption through advanced technologies and process reengineering

NTPC is a signatory to the CEO Water Mandate

Implementation of "Water Policy" and "Rainwater Harvesting Policy"

Implementation of "Zero Liquid Discharge (ZLD)" at all stations

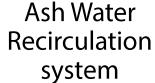
Ensuring good quality freshwater availability around plant locations through community investments and capacity building

Installation of Air-Cooled Condensers having potential to save 75% of water

Cycles of Concentration (CoC) is being increased at all stations for reducing freshwater intake

Water Dashboard: Providing real-time updates on water consumption across NTPC plants.

























NTPC -Commitment to sustainability...



The commissioning of an Air-Cooled Condenser (ACC) in the 660 MW first unit of NTPC North Karanpura on 01 March 2023, marks a significant step towards sustainability

This innovative project is designed to replace conventional water-cooled condensers (WCC) with ACC technology, resulting in a **remarkable reduction in water consumption**

Compared to units equipped with WCC, the ACC system has a water footprint that is approximately one-third

This transition to ACC is expected to save an estimated 30.5 million cubic meters (MCM) of water annually, equivalent to fulfilling the water needs of approximately 1.5 million people in the region each year

Overall, this implementation will decrease the water requirement by an impressive 55%. By adopting ACC

technology



Rain water harvesting & Floating solar...



Dedicated **Rainwater Harvesting policy**, constructing rainwater harvesting systems across all stations, thereby **reducing our reliance on freshwater resources**

These systems encompass rainwater harvesting, which enables us to **replenish groundwater** and store water at the surface, utilizing a combination of these methods.

Successfully collected and utilized rainwater at our plants to support our operational needs

Floating solar in Reservoir to reduce the water losses





Water positive townships...



NTPC Khargone in MP is **Water positive** township

- Rain water harvesting
- Storm water collection
- Hydrogeological investigation
- Assess recharge possibility to ground water
- Improvement in ground water level
- 44 recharge structures
- ZLD, STP water Reuse
- Drip irrigation and water sprinkler

Water consumption -0.3 MCM

Rain water harvesting -0.4 MCM



Reduce water usage by Dry Ash disposal and HCSD ...



Adoption of Dry bottom Ash handling system

· High concentration slurry disposal system





Reuse of STP water ...



·STP water Reuse





· STP





Recycle, Reuse Water-Solar Thermal and FG based desalination...



- •Flue gas based Sea Water **Desalination Plant**
- ·Solar Thermal Sea Water **Desalination Plant**
- ·Sea Water Reverse Osmosis plant



























Afforestation...







New Normal "Water resilience"...



- The days of plentiful water supply have past
- We must adapt to Water scarcity
- "Water scarcity" must become "Enough water"
- Opportunity to build a New relationship with water
- Rethink our over reliance on Surface water and seek to build a
 "Water Sensitive City"
- Time is to **build Resilience**, Our Collective Responsibility
- We need to formulate new relationship with Risk as Climate
 Change adds significant uncertainty
- We need to make difficult Choices for our future prosperity

















