VISVESVARAYA TECHNOGICAL UNIVERSITY

"Jnana Sangama", Belagavi, Karnataka, INDIA

ASSIGNMENT ON
"Addressing the Present Water Crisis"

SUBJECT: ENVIRONMENTAL STUDIES

SUBJECT CODE: 21CIV57

Submitted by

VARUN KULKARNI [1DT21CS176]

Under the guidance of
Mr. Sridhara S
Asst. Professor

Department of Computer Science and Engineering
(Accredited by NBA)

DAYANANDA SAGAR ACADEMY OF TECHNOLOGY AND MANAGEMENT
Udayapura, Kanakapura Road, Bangalore-560082
2023-24

Table of contents

Sl. No	Title	Pg. No
1.	Introduction	1
2.	Causes of Water Pollution	2
3.	Present Water Crisis	3-4
4.	Proposed Solutions	5
5.	Conclusion	6

Introduction

Water scarcity has emerged as one of the most significant challenges of the 21st century, threatening the well-being of communities, ecosystems, and economies worldwide. The current water crisis, characterized by dwindling freshwater resources and escalating demand, demands urgent attention and concerted action at local, national, and global levels. With billions of people already affected by water stress and millions more at risk of facing severe shortages in the coming years, addressing this crisis has become an imperative for sustainable development and human security.

In this report, we delve into the severity of the present water crisis, examining its multifaceted impacts on societies and ecosystems. Furthermore, we propose a comprehensive solution framework that integrates various strategies, ranging from water conservation measures to policy reforms and community empowerment initiatives. By implementing these solutions collaboratively, we aim to mitigate the adverse effects of water scarcity and pave the way towards a more resilient and equitable water future.

Causes of Water Pollution

Water pollution arises from a variety of sources, each contributing to the degradation of water quality. Here are several key causes of water pollution:

1. **Industrial Discharges**: Industries release pollutants such as heavy metals, chemicals, and toxins into water bodies through wastewater discharge. This pollution can originate from manufacturing processes, chemical spills, and inadequate waste management practices.

2. **Agricultural Runoff**: The use of fertilizers, pesticides, and herbicides in agriculture can lead to runoff of harmful chemicals into rivers, lakes, and groundwater. Excessive nutrients from fertilizers, such as nitrogen and phosphorus, contribute to nutrient pollution, leading to algal blooms and oxygen depletion in water bodies.

3. **Urbanization and Stormwater Runoff**: Urban areas generate pollutants such as oil, grease, heavy metals, and debris from streets, parking lots, and rooftops. During rain events, stormwater runoff carries these pollutants into waterways, contributing to urban water pollution. Additionally, inadequately managed sewage systems in urban areas can result in raw sewage discharge into water bodies during heavy rainfall or sewage system failures.

4. **Improper Waste Disposal**: Improper disposal of solid waste, including plastics, household chemicals, and electronic waste, can contaminate water bodies. Leachate from landfills can seep into groundwater, carrying pollutants such as heavy metals and organic compounds.

5. **Oil Spills**: Accidental or intentional discharge of oil into water bodies, whether from transportation vessels, offshore drilling rigs, or industrial facilities, poses a significant threat to water quality. Oil spills can coat aquatic habitats, harm wildlife, and disrupt ecosystems, leading to long-term environmental damage.

6. **Mining Activities**: Mining operations release pollutants such as heavy metals, sulfur compounds, and sediment into water bodies through runoff, leaching, and discharges from mining sites. These pollutants can contaminate surface water and groundwater, posing risks to aquatic life and human health.

7. **Wastewater and Sewage Discharges**: Inadequately treated or untreated sewage and wastewater from domestic, commercial, and industrial sources can introduce pathogens, nutrients, and organic pollutants into water bodies, increasing the risk of waterborne diseases and impairing water quality.

8. **Marine Dumping and Ship Pollution**: Disposal of garbage, plastics, and hazardous materials from ships, contribute to marine pollution. These activities can harm marine ecosystems, endanger marine species, and degrade coastal water quality

Present Water Crisis

1. Climate Change:

- **Droughts:** Increased frequency and intensity of droughts due to rising temperatures are reducing water availability in many regions.
- **Floods:** While some areas experience water shortages, others face destructive floods due to erratic weather patterns, impacting water infrastructure and quality.
- **Sea level rise:** Intrusion of saltwater into coastal freshwater aquifers, salinating them and rendering them unusable.

2. Growing Water Demand:

- **Population growth:** Increasing populations put greater pressure on existing water resources.
- **Urbanization:** Rapidly expanding cities lead to higher water consumption and strain on sanitation systems.
- **Industrial and agricultural growth:** These sectors often water-intensive, contribute to over-exploitation of resources.

3. Water Pollution:

- **Industrial waste:** Untreated industrial discharge contaminates rivers and groundwater, making them unusable for drinking and irrigation.
- **Agricultural runoff:** Pesticides, fertilizers, and other agricultural chemicals pollute water bodies, harming ecosystems and human health.
- **Inadequate sanitation:** Untreated sewage and wastewater contaminate freshwater sources, increasing the risk of waterborne diseases.

4. Poor Water Management:

- **Aging infrastructure:** Leaky pipes and inefficient irrigation systems lead to significant water loss.
- **Lack of awareness:** Insufficient education and understanding of water conservation practices can lead to wasteful habits.
- **Weak governance:** Ineffective policies and regulations regarding water management exacerbate the crisis.

The recent scenario took place in Bangalore where there was a shortage of water and the supply of water was cut off in various cities of Bangalore.

Bengaluru

Bengaluru Water Crisis: BWSSB Announces 24-Hour Water Supply Cut; Check List Of Areas To Be Affected

By Gaurav Sharma

Published: Sunday, February 25, 2024, 22:13 [IST]

People living in Karnataka's capital Bengaluru may face some hard times this week as water supply in several areas is expected to get disrupted. According to an advisory shared by the Bangalore Water Supply and Sewerage Board (BWSSB), a 24-hour water supply cut is scheduled from February 27, 6 am to February 28, 6 am due to essential maintenance work.

Proposed Solutions

- Install Water-Meters such that the people will be cautious about the usage of water.
- The waste water generated from the aqua guards can be used for watering the plants.
- Encourage responsible water usage through public awareness campaigns and educational programs.
- Implement efficient irrigation techniques in agriculture to minimize water wastage.
- Develop and maintain water infrastructure, including dams, reservoirs, and pipelines, to enhance water storage and distribution capacity.
- Encourage shorter showers by setting timers or using water-efficient showerheads. Cutting down shower time by just a few minutes can save several gallons of water per shower.
- Install rain barrels or tanks to collect rainwater for outdoor irrigation purposes. This harvested rainwater can be used to water gardens, lawns, and plants, reducing the need for potable water for irrigation.
- Regularly check faucets, toilets, and pipes for leaks and promptly repair any leaks detected. Even minor leaks can waste significant amounts of water over time.
- Invest in water-efficient appliances such as washing machines and dishwashers, which use less water per cycle compared to older models. Look for products with the Water Sense label, indicating they meet EPA water efficiency standards.
- Turning off the tap while brushing teeth, shaving, or lathering hands with soap can save gallons of water per day.
- Collecting water used for rinsing fruits and vegetables or waiting for the shower to warm up can be reused for watering plants or flushing toilets.
- Instead of using a hose to clean driveways, patios, or sidewalks, using a broom or leaf blower can save a significant amount of water.

Conclusion

In conclusion, the present water crisis demands urgent action and collective efforts to mitigate its far-reaching impacts on communities, ecosystems, and economies worldwide. Through this report, we have explored the severity of water scarcity and highlighted various real-life examples of its manifestations, from dwindling water reservoirs to contaminated drinking water and conflicts over transboundary water resources. However, amidst these challenges lie opportunities for positive change.

By embracing water conservation measures in our daily lives, implementing sustainable practices across sectors, and fostering collaboration at local, national, and global levels, we can address the present water crisis effectively. From residential water-saving habits to agricultural and industrial innovations, there exists a myriad of solutions that, when implemented collectively, can make a significant difference in safeguarding water resources for future generations.

Furthermore, it is essential to recognize the interconnected nature of the water crisis and its implications for social equity, environmental sustainability, and economic development. Therefore, holistic approaches that prioritize equitable access to clean water, ecosystem protection, and water governance reforms are crucial for achieving long-term water security. As we navigate the complexities of the present water crisis, let us remain committed to sustainable water management practices, resilience-building initiatives, and inclusive decision-making processes. By working together with determination and innovation, we can overcome the challenges posed by water scarcity and pave the way for a more sustainable and water-secure future for all.