

# Audit of Water Issues

Issues compiled by  
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# Water Issues: Some facts

- ▶ About 80 % of the world's population lives in areas with high levels of threat to water security
  - ▶ The most severe threat category encompasses 3.4 billion people, almost all in developing countries
  - ▶ The number of drought and flood disasters, total affected area, number of people affected, and damages have increased since the 1970
- ▶ Challenges to fresh and marine waters
  - ▶ Water quality: A persistent and widespread problem, specially in developing countries
  - ▶ More than 2.6 billion people still lack access to improved sanitation facilities, with poor, rural populations being most affected, especially in Africa, South Asia and the South Pacific (WHO 2011a).
  - ▶ Pathogen contamination of surface and groundwater remains a critical threat to human health in many areas, with human and animal faeces being the primary pathogenic water contamination source
  - ▶ Public health issue

# Water issues: Some facts (cont..)

- ▶ Contaminants continue to threaten human health and aquatic ecosystems
  - ▶ Concentrations of persistent toxic chemicals in animal tissues
  - ▶ Emerging contaminants- pharmaceuticals, nano particles which pose threat to human health
- ▶ Climate change issues
  - ▶ Traditional energy production produces increased greenhouse gas (GHG) emissions, with related climate change contributing to water scarcity, extreme climatic events, sea level rise, and loss of glaciers and Arctic sea ice

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# Water: General audit issues

- ▶ Availability of safe drinking water
- ▶ Competing demands for limited water supplies
- ▶ Drought
- ▶ Flooding
- ▶ Quality of surface waters
- ▶ Marine environment
- ▶ Planning and financing for water infrastructure
- ▶ Implementation and enforcement of water laws
- ▶ Challenges of managing water resources shared by multiple nations
- ▶ Adequacy of water-related data
- ▶ Impacts of climate change on water resources

# Drinking water

- ▶ Drinking water sources are limited and at risk for contamination
- ▶ Ensuring the provision of safe drinking water is a critical responsibility of most governments
- ▶ 780 million people around the world do not have access to safe sources of drinking water
- ▶ Population growth and economic development have increasingly strained available water resources in many locations.
- ▶ Use of finite water supplies must be balanced between the needs of various interests, including private consumers, industry, agriculture, energy development, and environmental protection.

# Drought

- ▶ Severe droughts can produce wide ranging negative impacts, including economic, social, and environmental harm.
- ▶ Drought contributes to desertification and land degradation
- ▶ Climate change is expected to exacerbate existing drought problems in many parts of the world

# Flooding

- ▶ Floods threaten human life, property, and the environment
- ▶ The frequency and severity of damaging floods has increased in many countries in recent years
- ▶ Climate change may produce even more frequent and severe floods in the future

# Quality of rivers lake and other surface waters

- ▶ Surface water contamination can harm human health and aquatic life, and can reduce the amount of water available for agriculture and recreation.
- ▶ Many countries have struggled with the tradeoff between using and protecting their freshwater resources
- ▶ Surface water pollution comes from many sources, some of which are difficult to prevent

# Marine Environment

- ▶ The long-term sustainability of some fish and other marine wildlife are threatened by over-fishing and pollution in the marine environment.
- ▶ Coastal zones are also at risk from pollution in the marine environment, which can destroy coastal ecosystems and habitats.

# Planning and Financing Water Infrastructure

- ▶ Drinking water systems and wastewater treatment facilities are critical elements of the infrastructure in most nations
- ▶ Governments often invest large sums of money to construct and maintain these facilities
- ▶ 2.5 billion people do not have access to adequate sanitation facilities

# Implementation and enforcement of water laws

- ▶ Laws to ensure water resources are protected and allocated fairly only work if they are properly enforced
- ▶ Governments use various approaches to enforce water laws, including issuing fines or withholding public funds from violators
- ▶ Corruption often limits the ability of governments to effectively implement and enforce water laws and policies

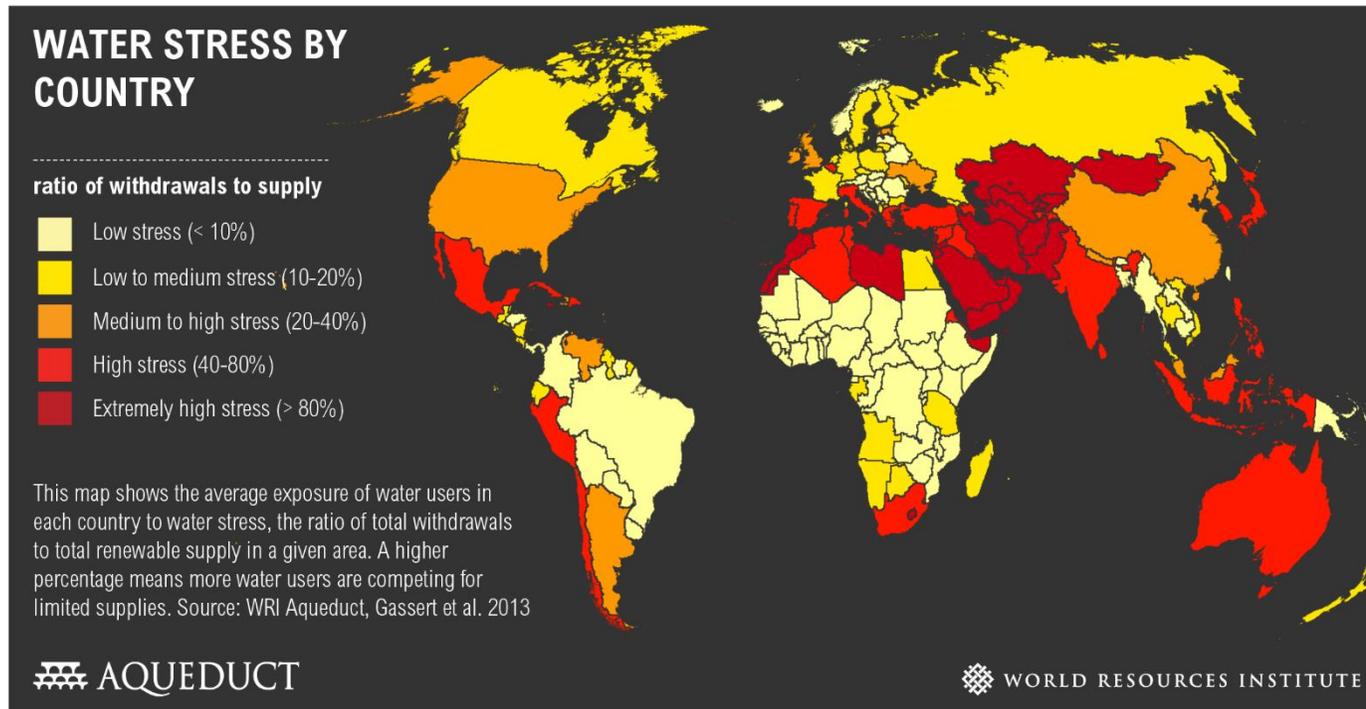
# Managing water resources shared by multiple nations

- ▶ There are hundreds of water basins that cross the political boundaries of two or more countries
- ▶ Waters that span national borders may produce different incentives and risks for upstream and downstream users
- ▶ Cooperation between governments is key for effectively managing shared water resources and addressing problems

# Impact of climate change on water resources

- ▶ Anticipated water-related impacts of climate change are expected to be widespread and significant
- ▶ Climate change is expected to amplify many existing water-related challenges, such as flooding and drought
- ▶ Some countries have begun to implement adaptation measures in response to threats posed by climate change

# Map showing water stress by country



# Choosing audit topic



# Audit Objectives

- 1) Inventory of water sources has been prepared and whether the overall status of quality of water in rivers, lakes and groundwater has been adequately assessed in India;
- 2) Risks of polluted water to health of living organisms and the impact on environment have been adequately assessed;
- 3) Adequate policies, legislations and programmes have been formulated and effective institutions been put into place for pollution prevention, treatment and restoration of polluted water in rivers, lakes and ground water;

# Audit Objectives (cont..)

- 4) Programmes for pollution prevention, treatment and restoration of polluted water in rivers, lakes and ground water have been planned, implemented and monitored efficiently and effectively;
- 5) Funds were utilized in an efficient and economic manner to further the aim of reduction of water pollution;
- 6) Programmes for the control of pollution had succeeded in reducing pollution levels in ground water and surface water and restoring water quality.

# Sources of Audit Criteria

- ▶ The Water (Prevention and Control of Pollution) Act, 1974
- ▶ Agenda 21 document of the World Commission on Sustainable Development of the United Nations Conference on Environment and Development, held in Rio in June 1992
- ▶ Guidelines for implementation and monitoring of National River Conservation Plan and National Lake Conservation Plan
- ▶ National Water Policy, 2002
- ▶ National Environment Policy 2006
- ▶ Implementation guidelines for Integrated Water Resources Management, specifically Integrated River Basin Management and Integrated Lake Basin Management
- ▶ Guidelines of United Nations Environment Programme (UNEP)

# Major audit findings

- ▶ **All India Review:**
- ▶ **Preparation of Inventory**
  - ▶ No survey by MoEF to identify all rivers and lakes
  - ▶ only 56 % states carried out district-wise assessment of ground water resources
  - ▶ Identification/quantification of contaminants like nutrients, acids, salinity, pathogenic organisms etc., not undertaken
  - ▶ Effect of human activities affecting the quality of water like agriculture, industrial activities mining, uncontrolled disposal of human waste etc., not been done for any river/lake in India

# Major audit findings (cont..)

- ▶ Identification of risks to environment
  - ▶ Major aquatic species, birds, plants and animals facing risks not identified
- ▶ Risks to human health
  - ▶ Risks to human health from water borne diseases assessed by only 28 % states
  - ▶ Risks to human health from arsenic, zinc, iron, mercury, copper, chromium, cadmium, lead, persistent organic pollutants etc assessed only partly by only 8 % states
  - ▶ No assessment by MoEF

# Major audit findings (Cont..)

## ▶ Existence of policy

- ▶ A separate policy for addressing water pollution formulated by only 4 states
- ▶ No programmes introduced for tackling agricultural non-point pollution of rivers and lakes by measures like promoting the use of organic manure, crop rotation, banning use of synthetic pesticides and fertilizers, integrated pest management etc.

## ▶ Adequacy of institutions

- ▶ No agency given responsibility for pollution issues for ground water

# Major audit findings (cont..)

- ▶ Planning, implementation and monitoring were weak
  - ▶ Projects not completed on time and failed to meet their objectives
  - ▶ Performance of projects unsatisfactory
  - ▶ Not monitored as envisaged
  - ▶ Paucity of network for tracking pollution of rivers, lakes and ground water
  - ▶ Inadequate number of monitoring stations, no real- time monitoring of water quality was taking place and the data on water quality had not been disseminated adequately

## Major audit findings (cont..)

- ▶ Majority of rivers remain polluted by high levels of organic pollution, low level of oxygen availability for aquatic organisms and bacteria, protozoa and viruses which have faecal-origin and which cause illnesses
- ▶ Most lakes were choking up from the weeds proliferating in the nutrient-rich water

# Main audit findings (Gujarat)

- ▶ Keystone species (critical to river-eco system that its removal could destroy the system) not identified. Required under United Nations Agenda 21 to which India is a signatory.
- ▶ Level of contamination levels in lake not done.
  - ▶ Reply by the govt: Discharge of industrial effluents in lake banned and drinking water was supplied from rivers and ground water, there was no need to check lake contamination.
  - ▶ On our audit findings later directed the GPCB to check.

# Main audit findings (Gujarat)

- ▶ National environment policy 2006 stipulates that environmental standards cant be universal and each state must formulate environmental standards based on local consideration.
  - ▶ States like Rajasthan, Karnataka and Madhya Pradesh have formulated guidelines (which are stricter than the NEP 2006).
  - ▶ Gujarat not done it.
  - ▶ Reply: We cannot formulate stricter guidelines for it might lead to internal competition with other states which have more relaxed guidelines and may affect our industrialization.

# Main audit findings (Gujarat)

- ▶ Identification of risks to environment not calculated:
  - ▶ Govt had not identified major aquatic species, birds, plants and animals facing risks due to pollution of rivers. Could result in the loss of habitat.
  - ▶ Only partial survey of wetlands had been done. (Survey of only 7 out of 831 wetlands in Gujarat done.)
- ▶ Assessment of risks to public health not done
  - ▶ NEP 2006 provides that risks to human health from water pollution be assessed.
    - ▶ No assessment of the presence of minerals (zinc, lead, mercury etc) and arsenic was done.
    - ▶ Collection of data on water borne disease from Director of Health, Govt of Gujarat showed incidence of water borne disease high in the state.

# Main audit findings (Gujarat)

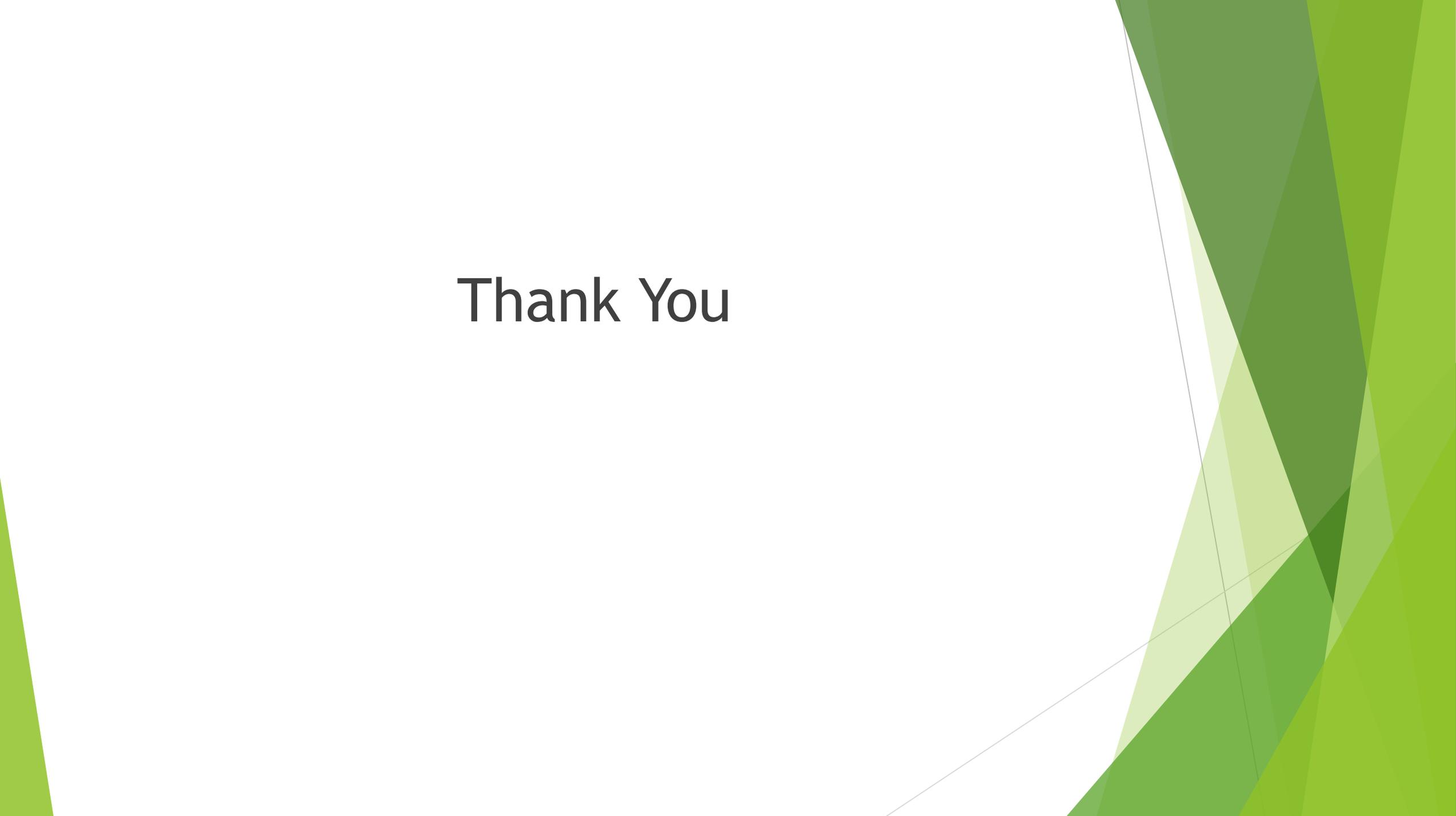
- ▶ Sewage treatment
  - ▶ 158 (out of 170) Urban local bodies had no facility for the treatment of sewage
  - ▶ 10 municipalities discharging untreated sewage in lakes
- ▶ Common Effluent treatment Plants
  - ▶ Gujarat has 83 industrial clusters and in 2010 had 9000 large scale and 3.13 lakh small scale industries.
  - ▶ None of the 13 sampled CEPTs discharged treated effluent as per norms prescribed by GPCB
  - ▶ Sludge from the CETPs were deposited outside in bags which risked contaminating ground water.

# Main audit findings (Gujarat)

## ▶ Monitoring

- ▶ Adequate meetings of the Water Quality review committee (nodal agency for compilation of reports, convening meetings of implementing and testing agencies) not done.
- ▶ Ground water testing labs were set up.
  - ▶ Of the 443 monitoring wells 86 had dried up.

Thank You

The background features abstract, overlapping geometric shapes in various shades of green, ranging from light lime to dark forest green. These shapes are primarily located on the right side of the frame, creating a modern, layered effect against the white background.