

BIODIVERSITY AND CONSERVATION

Aqueduct Water Risk Atlas

- **In News**-New data from the Aqueduct Water Risk Atlas of World Resources Institute (WRI) has been released.

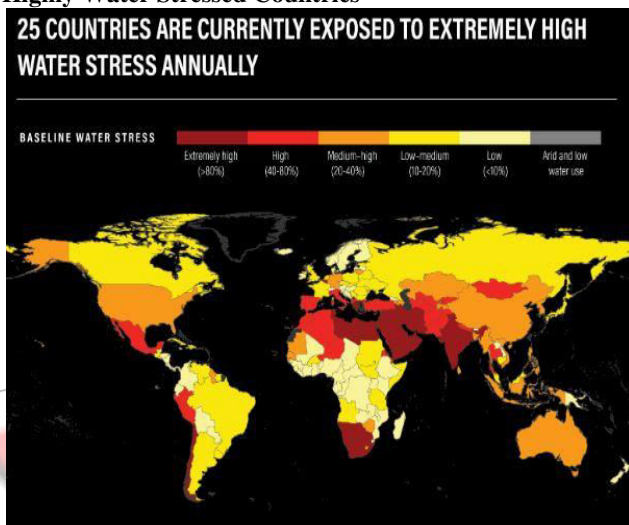
About

- The World Resources Institute is a global research non-profit organization established in 1982.
- It uses research-based approaches to work globally and in focus countries to meet people’s essential needs; to protect and restore nature; and to stabilize the climate and build more resilient communities.
- It aims to fundamentally transform the way the world produces food, uses energy and designs its cities to create a better future for all.
- Aqueduct's global water risk mapping tool helps companies, investors, governments, and other users understand where and how water risks and opportunities are emerging worldwide.

What is Water Stress?

- Water stress is the ratio of water demand to renewable supply, measuring the competition over local water resources.
- A country facing “extreme water stress” means it is using at least 80% of its available supply, “high water stress” means it is withdrawing 40% of its supply.

Highly Water Stressed Countries



- 25 countries — housing one-quarter of the global population — face extremely high water stress each year, regularly using up almost their entire available water supply.
- Even a short-term drought puts these places in danger of running out of water and sometimes prompts governments to shut off the taps.
- At least 50% of the world’s population — around 4 billion people — live under highly water-stressed conditions for at least one month of the year.
- The five most water-stressed countries are Bahrain, Cyprus, Kuwait, Lebanon, Oman and Qatar.
- The most water-stressed regions are the Middle East and North Africa, where 83% of the population is exposed to extremely high water stress, and South Asia, where 74% is exposed.

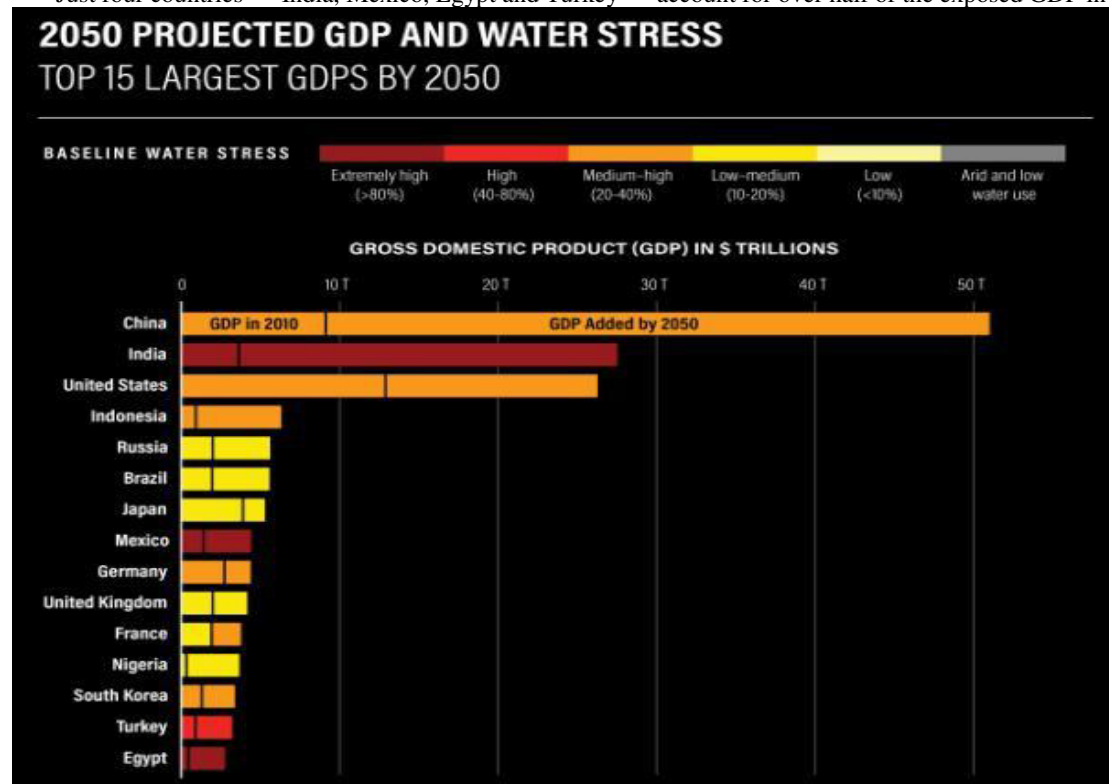
Causes of Global Water Stress

- Across the world, demand for water is exceeding what’s available. Globally, demand has more than doubled since 1960.
- Increased water demand is often the result of growing populations and industries like irrigated agriculture, livestock, energy production and manufacturing.
- Meanwhile, lack of investment in water infrastructure, unsustainable water use policies or increased variability due to climate change can all affect the available water supply.

Concerns

- By 2050, an additional 1 billion people are expected to live with extremely high water stress, even if the world limits global temperature rise to 1.3 degrees C to 2.4 degrees C by 2100.
- Global water demand is projected to increase by 20% to 25% by 2050.
- For the Middle East and North Africa, this means 100% of the population will live with extremely high water stress by 2050.
- The biggest change in water demand between now and 2050 will occur in Sub-Saharan Africa.
- By 2050, water demand in Sub-Saharan Africa is expected to skyrocket by 163% — 4 times the rate of change compared to Latin America.

- According to data from Aqeduct, 31% of global GDP will be exposed to high water stress by 2050, up from 24% of global GDP in 2010.
- Just four countries — India, Mexico, Egypt and Turkey — account for over half of the exposed GDP in 2050.



- Water shortages can lead to industrial interruptions, energy outages and agricultural production losses.
- Failing to implement better water management policies could result in GDP losses in India, China and Central Asia of 7% to 12%, and 6% by 2050.
- Global food security is also at risk.
- Already, 60% of the world’s irrigated agriculture faces extremely high water stress — particularly sugarcane, wheat, rice and maize.
- By 2050, the world will need to produce 56% more food calories than it did in 2010 — all while dealing with increasing water stress as well as climate-driven disasters like droughts and floods.

What can be done?

- Water stress doesn’t necessarily lead to water crisis. For example, places like Singapore and the U.S. city of Las Vegas prove that societies can thrive even under the most water-scarce conditions by employing techniques like removing water-thirsty grass, desalination, and wastewater treatment and reuse.
- Solving global water challenges will cost the world about 1% of GDP, or 29 cents per person, per day from 2015 to 2030.
- Policy Initiatives: Countries can improve their water governance, incentivize water efficiency in agriculture, adopt integrated water resource management, and enhance water infrastructure through nature-based solutions and green infrastructure.
- Policymakers in water-stressed countries should prioritize water-prudent energy sources like solar and wind to avoid power shutdowns caused by water shortages.
- Strategic Debt Relief Programs: International development banks and other lenders should consider strategic debt relief programs, like debt relief in return for a commitment to invest in biodiversity or resilient infrastructure, such as mangrove restoration or wetland conservation.
- These nature-based solutions can achieve positive climate and water outcomes in countries unable to afford improved water management on their own.
- Cities should develop urban water resilience action plans, learning from the group of six African cities already piloting such approaches.
- Farmers should use more efficient water measures, such as switching to water-efficient crops or using methods like sprinkler or drip irrigation versus flooding fields.
- Companies should set science-based water targets, which are in line with what the science says is “enough” to stay within Earth’s limits and meet society’s needs, learning from a growing number of businesses that have already set such targets.

INDIAN ECONOMY

RBI's new pilot for frictionless credit

- **Context:** The RBI commenced a pilot programme endeavoring to evaluate the feasibility and functionality of the 'Public Tech Platform for Frictionless Credit'.

Need for the platform:

- The suggested platform would strive to enable delivery of frictionless credit by facilitating seamless flow of required digital information to lenders.
- Digital delivery of credit (delivering credit/loans through digital means) or any loan is preceded by a process of scrutiny known as credit appraisal.
- The process attempts to evaluate and accordingly predict the prospective borrowers' ability for repayment of credit/loan and adhering to the credit agreement.
- This pre-disbursal process is particularly important for banks since it would in turn determine their interest income and impact on the balance sheet.
- The central banking regulator has observed that the data required for the process rests with different entities like central and state governments, account aggregators, banks, credit information companies, and digital identity authorities.
- Thus, being in separate systems, it creates hindrances in frictionless and timely delivery of rule-based lending.
- This new platform would bring all of it together in a single place.
- To facilitate frictionless and timely delivery of loans, the central banking regulator had instituted a pilot project for the digitalisation of Kisan Credit Card (KCC) loans, of less than Rs.1.6 lakh.
- It tested end-to-end digitalisation of the lending process in a paperless and hassle-free manner.
- It provides for doorstep disbursement of loans in assisted or self-service mode without any paperwork.

More about the platform:

- The platform is premised around the learnings from all the ongoing programmes, and further expands the scope to all types of digital loans.
- The public platform will be developed by its wholly owned subsidiary, the Reserve Bank Innovation Hub (RBIH).
- The proposed end-to-end platform will have an open architecture, open Application Programming Interfaces (API) and standards, to which all financial sector players would be able to connect seamlessly in a 'plug and play' model.
- With the participation from certain banks, the platform would extend its focus also towards dairy loans, MSME loans (without collateral), personal loans and home loans.
- It is expected to link with services like:
 - ✓ Aadhar e-KYC,
 - ✓ Aadhar e-signing,
 - ✓ land records from onboarded State governments,
 - ✓ satellite data,
 - ✓ PAN validation,
 - ✓ transliteration,
 - ✓ account aggregation by account aggregators (AAs),
 - ✓ milk pouring data from select dairy co-operatives, and
 - ✓ House/property search data.
- Thus, it would cover all aspects of farming operations (essential to understand the exposure and default risk for loans of the nature) alongside those necessary for ascertaining financial profiles.

Significance of the project:

- **Access to information:** Improved access to information provides the basis for fact-based and quick credit assessments.
- **More coverage:** It ensures that credit is extended to a larger set of borrowers with good credit history.
- The borrowers too would benefit by the resulting lower cost of accessing capital, which would translate into productive investment spending.
- The lending platform would bring about reduction of costs, quicker disbursement and scalability.

PRELIMS FACT

1. Pradhan Mantri Jan Dhan Yojana (PMJDY)

- **In News** -As per the latest reports submitted by banks the total number of Jan Dhan accounts have crossed 50 crore as on 9th August 2023.
- Out of these accounts 56% accounts belong to women and 67% accounts have been opened in rural / Semi-urban areas.

About Pradhan Mantri Jan Dhan Yojana (PMJDY)

- It is National Mission for Financial Inclusion to ensure access to financial services, namely, basic savings & deposit accounts, remittance, credit, insurance, pension in an affordable manner.
- It was launched on 28th August 2014.

- Under it, a basic savings bank deposit (BSBD) account can be opened in any bank branch or Business Correspondent (Bank Mitra) outlet, by persons not having any other account.

Features

- One basic savings bank account is opened for unbanked people.
- There is no requirement to maintain any minimum balance in PMJDY accounts.
- Interest is earned on the deposit in PMJDY accounts.
- RuPay Debit card is provided to the PMJDY account holder.
- Accident Insurance Cover of Rs.1 lakh (enhanced to Rs. 2 lakh to new PMJDY accounts opened after 28.8.2018) is available with RuPay card issued to the PMJDY account holders.
- An overdraft (OD) facility up to Rs. 10,000 to eligible account holders is available.
- PMJDY accounts are eligible for Direct Benefit Transfer (DBT), Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY), Pradhan Mantri Suraksha Bima Yojana (PMSBY), Atal Pension Yojana (APY), Micro Units Development & Refinance Agency Bank (MUDRA) scheme.

Objectives

- The major objective of the scheme is to provide universal access to banking facilities to every household, and access to credit, insurance and pension facilities to every adult individual.

Achievements

- It has been successful in changing the financial landscape of the country and has brought near saturation in bank accounts for adults.
- It has been the foundation stone for people-centric economic initiatives.
- It has completed almost 9 years and the deposits in PMJDY accounts are above Rs. 2.03 lakh crore and about 34 crore RuPay cards have been issued in these accounts free of cost.
- The average balance in PMJDY accounts is Rs. 4,076 and more than 5.5 crore PMJDY accounts are receiving DBT benefits.
- PMJDY has brought the unbanked into the banking system, expanded the financial architecture of India and brought financial inclusion to almost every adult.

Issues and Challenges

- There are certain challenges hindering the growth in access to banking services, especially in rural areas which include large number of dormant accounts, lack of training to banking correspondents, lack of knowledge about functioning of ATMs, e-banking and government schemes among customers, poor digital infrastructure, risk of cyber frauds, data privacy, etc.

2. Sadbhavana Diwas

- **In News-** The birth anniversary of India's sixth Prime Minister Rajiv Gandhi is observed as Sadbhavana Diwas or Harmony Day every year on August 20 in the country.

About

- 'Sadbhavana' in English means goodwill.
- It is dedicated to the cause of encouraging peace, national integration, and communal harmony among all religions in the country.
- The day was first observed in 1992, more than a year after Rajiv Gandhi was assassinated in a suicide bomb attack in Tamil Nadu.
- Rajiv Gandhi became the youngest Prime Minister of India when he assumed the post at the age of 40.
- He was posthumously awarded country's highest civilian honour, Bharat Ratna in 1991.

Rajiv Gandhi National Sadbhavana Award

- The All India Congress Committee established the Rajiv Gandhi National Sadbhavana Award in 1992.
- This award is given to people who have done exemplary work in establishing peace in society.

3. Bio-Trace Minerals Project

- **Context-Recently**, the Technology Development Board under Department of Science and Technology (TDB-DST) collaborated with M/s Chemlife Innovations pvt ltd. for innovation in the Bio-Trace Minerals Project.

About the Project

- The mission aims to enhance livestock productivity, optimize feed and fodder resources and infuse technology into livestock management.
- It will enhance animal nutrition, transform livestock and poultry & dairy production, and set new eco-friendly manufacturing benchmarks.
- As per the 'Accelerated Natural Bio Transformation' (ANBioT) technology, the project introduces a proprietary nutrient that facilitates chelation reactions under milder conditions, aligning with environmental sustainability.
- This project contributes to the circular economy by repurposing silkworm pupae meal and mitigating waste generated by the silk industry.
- Innovative products like MinBioZen address the need for bio trace minerals in optimizing livestock health and growth. It integrates bioavailability and stability, symbolizing their dedication to innovation and environmental stewardship.

Role of Micro Minerals/Trace Minerals in Livestock Health

- They are found in low concentrations in the body or are required in lower amounts in the animal's food.
- Chromium, cobalt, copper, fluorine, iodine, iron, manganese, molybdenum, selenium, and zinc are examples of micro minerals.
- They play an important part in a variety of metabolic, enzymatic, and biochemical activities.
- A lack of these essential micronutrients would result in deficient disorders, poor development, reduced egg production, and poor feed efficiency
- They are important for the metabolic activities of livestock and poultry.

4. Kalka-Shimla Railway (KSR)

- Context: The over 120-year-old Kalka-Shimla Railway (KSR), a UNESCO World Heritage Site, has been severely damaged by heavy rainfall and landslides in Himachal Pradesh.

About KSR:

- The Kalka-Shimla railway line (about 96km line; built between 1898-1903 under the direction of Herbert Septimus Harington and dedicated by Lord Curzon), designated a UNESCO world heritage site in 2008 under "Mountain Railways of India," has been a popular tourist attraction. This railway network includes two other scenic routes:
 - ✓ Darjeeling Himalayan Railway in West Bengal
 - ✓ Nilgiri Mountain Railways in Tamil Nadu.
- The Indian Railways introduced a luxurious seven-coach Vistadome train named Him Darshan Express in 2019 on the historic Kalka-Shimla route.

ANSWER WRITING

Q. Genetically Modified crops play a significant role in enhancing productivity, fight against hunger and malnutrition. Critically analyze? (250 words)

- Genetically Modified Organisms (GMO) are defined as organisms including plants, animals, and micro-organisms in which the genetic material (DNA) is altered in a way that does not occur naturally by mating or natural recombination.
- Benefits of GM crops in increasing agricultural output and removing hunger, malnutrition
- **Climate resilient:** Sometimes it is necessary to develop crops that can sustain in adverse climatic conditions. This will enable farmer to save himself from losses that occur due to crop losses. Ex: Water resistant paddy can tackle incessant rain.
- **Increase farm output:** New crops developed using biotechnology have the capacity to produce more output per area compared to conventional species. This means that more production from small land and subsequent increase in profits.
- **Increase nutrient value of crops:** The GM crops are drought tolerant and can develop nutrient efficient varieties. Further, it can help produce foods with better shelf life, taste and texture. Further, crops can even be engineered to be more nutritious, providing critical vitamins to populations that struggle to get specific nutrients needed for healthy living.
- **Reduce pesticides:** Pests are major threat to farm economy than other sources. To eliminate major threats to crops, scientists have come up with innovative methods using biotechnology to help in elimination of pests.

Challenges of GM crops

- **Allergic Reactions:** It states that genetic modification often adds or mixes proteins that were not indigenous to the original animal or plant, which might cause new allergic reactions in our body.
- **Cross-pollination:** Cross-pollination can cover quite large distances, where new genes can be included in the offspring of organic, traditional plants or crops that are miles away. This can result in difficulty in distinguishing which crop fields are organic and which are not, posing a problem to the task of properly labeling non-GMO food products.
- **Potential adverse impact on human health:** The impact of growing GMO crops like GM mustard on the health of the population, the environment (the soil on which it is grown), the food chain, the groundwater, etc., is still unknown.

Conclusion

- GM crops can help India to improve their living standards which will reflect in human development. It will also help India to ensure food security, decreasing hunger and malnutrition to fulfill its international obligation of achieving sustainable development goals and increase farmer's income and agricultural export, but there is need for proper research on its adverse impact on human and environment health on the basis of scientific evidence. Therefore, there is a need for participatory approach in order to bring together all stakeholders to develop regulatory protocols.

MCQS

- With reference to *Haliaeetus leucogaster*, consider the following statements
 - It is a White-Bellied Sea Eagle that is found throughout Southeast Asia.
 - They exhibit sexual dimorphism, with females being slightly larger than males.
 - White-bellied Sea Eagles are primarily piscivorous, meaning they primarily feed on fish.

4. It is categorized as 'Least Concern' in the IUCN red list.
How many of the above statements are correct?
a) Only one b) Only two
c) **Only three** d) All four
2. With reference to Megaliths, consider the following statements
1. These were constructed either as burial sites or commemorative memorials.
 2. In India, archaeologists trace the majority of the megaliths to the Iron Age(1500 BC to 500 BC).
 3. In India, these are concentrated in the states of Maharashtra, Karnataka, Tamil Nadu, Kerala, Andhra Pradesh and Telangana.
- How many of the above statements is/are correct?
a) Only one b) Only two
c) **All three** d) None
3. With reference to Land Subsidence, consider the following statements
1. It is the downward, vertical movement of the Earth's surface, which can be brought both by natural and human forces.
 2. Mining and extraction of excessive groundwater can be the reasons of land subsidence.
- Which of the above statements is/are correct?
a) 1 only b) 2 only
c) **Both 1 and 2** d) Neither 1 nor 2
4. With reference to Remission of Duties and Taxes on Exported Products (RoDTEP) scheme, consider the following statements
1. It was launched in 2021 by the Ministry of Commerce and Industry.
 2. Under this scheme, the exports will get the refund of embedded central, state, and local duties or taxes that were not rebated or refunded yet.
- Which of the above statements is/are incorrect?
a) 1 only b) 2 only
c) Both 1 and 2 d) **Neither 1 nor 2**
5. NBRI-Nihar is recently mentioned in news, is related to which of the following category?
a) A variety of Lotus developed by CSIR.
b) **A variety of Aloe Vera.**
c) A variety of transgenic plant.
d) A plant derived Vaccine.
6. Consider the following pairs
- | Moon mission | Country |
|---------------------|----------------|
| SMART-1 mission | Europe |
| Chang'e mission | Japan |
| Chandrayaan mission | India |
| Beresheet mission | Israel |
- How many pairs given above are correctly matched?
a) Only one pair b) Only two pairs
c) **Only three pairs** d) All four pairs
7. Consider the following pairs:
- | Site of Ashoka's rock edicts/ Pillar | Location in the State of |
|---|---------------------------------|
| 1. Topara | Delhi |
| 2. Erragudi | Andhra Pradesh |
| 3. Jaugada | Odisha |
| 4. Kalsi | Karnataka |
- How many pairs given above are correctly matched?
a) Only one pair
b) Only two pairs
c) **Only three pairs**
d) All four pairs
8. Which of the following countries are India's Free Trade Agreements (FTAs) trading partners
1. Thailand
 2. Nepal
 3. Singapore
 4. United Kingdom
- Select the correct answer from the codes given below:
a) **1, 2 and 3 only**
b) 1 & 2 only
c) 1 & 3 only
d) 2 and 4 only
9. With reference to the Genetically Modified GM Mustard Hybrid DMH 11 developed in India, consider the following statements:
1. It has the genes of a soil bacterium that give the plant the property of pest-resistance to a wide variety of pests.
 2. GM mustard has the gene that make it herbicide tolerant.
 3. GM mustard has been developed jointly by the IARI and Punjab Agricultural University.
- Which of the statements given above is/are incorrect?
a) 1 only b) **1 & 3 only**
c) 2 only d) 1, 2 & 3
10. Consider the following statements about Safe limit on consumption of turmeric:
1. The European Food Safety Authority has set an acceptable daily intake of 180 mg of curcumin per day for a 60 kg adult as the safe level of consumption.
 2. A World Health Organization/Food and Agricultural Organisation advisory recommend 3 mg/kg of body weight.
 3. India's Food Safety and Standards Authority of India have standards that packaged turmeric must comply with but nothing on the recommended dietary allowance.
 4. Statistically, on an average about 200 to 500mgs is consumed on a daily basis in Indian households.
- How many pairs given above are correctly matched?
a) Only one pair
b) Only two pairs
c) Only three pairs
d) **All four pairs**