GS III

SYLLABUS: DISASTER AND DISASTER MANAGEMENT.

SENDAI FRAMEWORK

THE HINDU, PG.NO: 7.

News: "India committed to Sendai Framework for risk reduction."

Disaster Risk Reduction measures before the Sendai Framework 2015:

- **Institutional Framework:**
  - **Establishment of National Disaster Management Authority (NDMA) 2005:** apex policy-making body responsible for laying down policies, plans, and guidelines for disaster management.
  - **State Disaster Management Authorities (SDMAs)** in each state to address regional disaster risks.
  - **National Institute of Disaster Management (NIDM) 2006:** focuses on training and capacity building in disaster management.
- **Legislative and policy framework:**
  - **Disaster Management Act, 2005:** Provided a legal framework for disaster management (prevention, mitigation, preparedness, response, and recovery).
  - **National Plan for Disaster Management (NPDM), 2008:** Outlined strategies for disaster management.
- **Financial mechanism:**
  - National Disaster Response Fund (NDRF) to ensure timely financial assistance during disasters. By 2015, NDRF had disbursed over ₹5,000 crores for disaster response and recovery.
- **Community-based disaster preparedness programs:** were implemented in over 1,200 villages, enhancing local resilience.
- **Key initiatives:**
  - **National Flood Management Project** (NFMP) 2008.
  - **National Cyclone Risk Mitigation Project** (NCRMP) 2009 aimed to reduce cyclone-related losses.
  - **Early Warning Systems (EWS):** for various disasters, including tsunamis, earthquakes, and landslides.

Sendai Framework 2015:

- **Target 1: Reduce global disaster mortality by 2030:**
  - India's Approach:
    - **Enhanced Early Warning Systems (EWS):** accuracy of cyclone track prediction improved by 20–40% during 2015–2020–***IMD annual report.***
    - **Flood Forecasting:** Central Water Commission (CWC) operates 328 flood forecasting stations.
    - **Expansion and modernisation of NDRF** for quicker and more efficient disaster response.
- **Target 2: Reduce the number of affected people globally by 2030:**
  - India's Approach:
    - **National Database for Emergency Management (NDEM):** Provides geospatial data for disaster risk assessment.
    - **Pradhan Mantri Awas Yojana (PMAY):** Promotes disaster-resilient housing for the poor.
- **Target 3: Reduce direct disaster economic loss in relation to global GDP by 2030.**
  - India's Approach:
    - **Coalition for Disaster Resilient Infrastructure (CDRI):** Launched in 2019 to promote resilient infrastructure.
    - **Fasal Bima Yojana 2016**: covers crop losses due to drought, flood, hailstorm, cyclone, frost etc.
    - **Mandatory risk assessment** for new infrastructure projects exceeding INR 500 crore.
- **Target 4: Reduce damage to critical infrastructure and disruption of basic services:**
  - India's Approach:
    - **Retrofitting Schools and Hospitals** to withstand disasters.
    - **Smart Cities Mission:** incorporating resilient infrastructure and emergency services.
    - **National Building Code (NBC) 2016:** Updated to include disaster-resilient construction practices.
- **Target 5: Increase the number of countries with national and local DRR strategies by 2020.**
  - India's Approach:
    - **National Disaster Management Plan (NDMP) 2016 and 2019:** inline with Sendai Framework.
    - **State and District Disaster Management Plans:** to prepare and update DRR plans.
- **Target 6: Enhance international cooperation with developing countries:**
  - India's Approach:
    - Hosted the **Asian Ministerial Conference on Disaster Risk Reduction** in 2016.
    - Assisting neighboring countries in disaster response under **Neighbourhood First Policy.** Eg. support to Nepal post 2015 EQ worth 1 billion USD.
- **Target 7: Increase the availability of and access to multi-hazard early warning systems and disaster risk information:**
  - India's Approach:
    - **Integrated Coastal EWS:** For tsunamis, cyclones, and storm surges.
    - **Apps like 'Sagar Vani'** for ocean-related alerts and 'Damini' for lightning warnings.

Outcomes after aligning with Sendai Framework:

- **Significant increase in DRR Budget Allocation:** DRR budget increased from ₹20,000 crores in 2015 to ₹50,000 crores in 2023.
- **20% reduction in economic losses** from natural disasters between 2015 and 2022 compared to the previous decade— ***National Disaster Risk reduction Report 2022.***
- **30% decrease in disaster-related fatalities** post-2015— ***National Disaster Risk reduction Report 2022.***
- **Cyclone Fani (2019):** Despite being a severe cyclone, fatalities were limited to 64 due to effective evacuations.
- **Alignment with global standards** i.e Seven Sendai global Targets.
- **Enhanced Resilience and Preparedness:** increased community resilience and infrastructure resilience.
- **Encouraging private sector participation** in DRR through PPPs and corporate social responsibility (CSR) initiatives.

GS III

SYLLABUS: EFFECT OF POLICIES AND POLITICS OF DEVELOPED AND DEVELOPING COUNTRIES ON INDIA'S INTERESTS.

BELT AND ROAD INITIATIVE

THE HINDU, PG.NO: 12.

News: "Why is Brazil weighing options on BRI?"

Belt and Road Initiative impact on India:

- As of 2023, China had ***invested over $1 trillion in BRI projects*** globally.
- BRI comprises the Silk Road Economic Belt ***(land routes)*** and 21st Century Maritime Silk Road ***(sea routes)***, covering ***Asia, Africa, Europe, and beyond.***
- Its objectives include promoting regional integration, increasing trade, and stimulating economic growth through infrastructure development.

Role of BRI in India-China Relations:

- **Expansion of China's geopolitical influence** in areas that are traditionally under India's sphere of influence Eg. Investments of over 100 billion USD in South Asian and IOR regions—***World Bank estimates 2020.***
- **Strategic encirclement of India ("String of Pearls"):** Gwadar (Pakistan), Hambantota (Sri Lanka), Chittagong (Bangladesh).
- **China-Pakistan Economic Corridor (CPEC):** a flagship BRI project passes through Pakistan-occupied Kashmir (PoK), which India claims as its territory.
- **India's strategic isolation in the region:** Countries like Nepal, Sri Lanka, Maldives, and Bangladesh have signed BRI agreements.

India's Opposition to BRI:

- "No country can accept a project that ignores its core concerns on **sovereignty and territorial integrity** (PoK)—***MEA Spokesperson 2017.***
- **Debt Trap Diplomacy** Eg. Sri Lanka leasing Hambantota Port to China on a 99-year lease due to inability to repay loans.
- **Balance of Power:** BRI could shift the regional balance of power in China's favour, undermining India's strategic interests.
- **India Prefers alternative Connectivity Initiatives:**
  - **INSTC**, connecting India with Central Asia and Europe through Iran and Russia.
  - **BIMSTEC**: Strengthening regional cooperation without including China.
- **BRI could exacerbate trade imbalances:** with Chinese goods flooding markets and undermining local industries.
- **Lack of transparency:** indicating India was wary of the
- BRI's larger geopolitical aims.

What factors led to the decline of the BRI's reputation?

- Chinese **economic slowdown.**
- **Often demanding heavy collateral** for loans Eg. Srilankan port etc.
- **USA's heavy lobbying (influence)** against BRI has some effect.
- **Build Back Better World initiative in 2021** by G7 to counter BRI.
- **Italy in 2023** announced it would not renew the BRI MoU.
- **Brazil (member of BRICS) expressed its concerns** about joining the BRI in 2024.

ENVIRONMENT

PRE-CONTEXT

CONVENTION ON BIOLOGICAL DIVERSITY (COP16)

THE HINDU, PG.NO: 12.

News: "What are the key takeaways fromCOP-16?"

Kunming-Montreal Global Biodiversity Framework (KMGBF) 2022:

- **Adopted at COP 15 of CBD in 2022.**
- It replaced **Aichi biodiversity targets**.
- **Non-binding** in nature.
- **KMGBF Targets (major):**
  - **Protect 30% of Land, Water and Sea** by 2030.
  - **Restore 30% of degraded ecosystems** by 2030.
  - **Eliminate harmful subsidies** causing threats to biodiversity.
  - Reduce **invasive species by 50%** by 2030**.**
  - Mobilise **at least USD 200 billion per year** to support biodiversity.
- **Global Environment Facility** provides funds under KMGBF.

COP 16 & India:

- Concluded in ***Columbia***. Final approved text is still in works.
- **Digital Sequence Information (DSI):**
  - One of the agreements deals with ***equitably sharing the benefits of uploading genetic data of organisms*** in global databases.
- **India Contribution to COP16:**
  - India expects to spend around ₹81,000 crore on biodiversity and conservation from the financial year 2025 to 2030.
  - **India expressed its commitment to conservation of Biodiversity:**
    - **Number Ramsar sites raised to 85** from 25 in 2014.
    - Establishing **International Big Cat Alliance** (protecting world's seven major big cat species).

3 Nov 2024

P.T.O

UNDERSTAND UPSC

GS III

SYLLABUS: DISASTER AND DISASTER MANAGEMENT.

HEATWAVES

THE HINDU, PG.NO: 12.

News:" How is Tamil Nadu bracing for heatwaves?"

"World Meteorological Organisation declared that 2023 was the hottest year on record."

Heat waves:
- Defined generally as a prolonged period of unusually and excessively hot weather, which may also be accompanied by high humidity.

Criteria for Heatwave:
- According to IMD a heatwave is not considered until the maximum temperature at a station reaches at least 40°C in plains and at least 30°C in hilly regions.

Heatwaves in past:
- **Summer of 1999:** maximum temperatures of 40°C or above for more than 14 days.
- **Summer of 2003:** caused more than 3,000 deaths in Andhra Pradesh.
- **Summers of 2016, 2018, 2019 and 2023** are with extreme heatwaves.
- **May 2024:** Churu in Rajasthan recorded a maximum of 50.5°C, recorded as the highest temperature in India in eight years.

Causes:
- **Unplanned cities with unbalanced growth:** leading to destruction of wetlands, lakes etc
- **Emission of green house gases:** trapped in troposphere.
- **Lack of green spaces in cities** makes them heat islands.
- **Global phenomenons like El Niño** often lead to drier and hotter conditions in India.

Impacts:
- **Water shortages** Eg. Bangalore & Delhi water crises in summers.
- **Deaths:** of elderly above 65 years especially in poorer regions.
- Uncomfortable nights as days **impacting sleep quality.**
- **Longer heat spells with dust storms:** Eg. Delhi NCR summers 2024.
- **Impact on services due to heat:** Rescheduling schools, Medical facilities.

Solutions:
- **Long term strategies:** insulation of Buildings, shelters for urban poor.
- **Additional budgets for cities** which are themselves crippled in debts.
- **Afforestation and Urban Greening.**
- **Cool Roof programmes: t**o promote reflective materials on roofs and pavements.
- **Nature based solutions:** Rainwater harvesting, restoring water bodies etc.

Other:

Wet bulb temperature:
- Lowest temperature to which the surface of the ***skin can be cooled by sweating.*** Beyond this threshold, the human body can no longer cool itself, leading to heat stroke or even death.
- Exceeding a ***wet bulb temperature of 35°C*** for extended periods would induce hyperthermia in humans.
- **Marine heat waves:** rise in surface temperature by 3-4 degrees above average temp.

3 Nov 2024

BIO-TECHNOLOGY

PRE-CONTEXT

STEM CELLS

THE HINDU, PG.NO: 11.

News: "Study finds long-term dynamics of transplanted stem cells".

About Stem Cells:
- They are unique cells in the human body with the remarkable ability to develop into many different cell types without losing their properties.

Types:
- **Embryonic Stem Cells (ESCs):**
  - **Source**: Derived from the inner cell mass of a ***blastocyst*** (an early-stage embryo).
  - **Potency**: Pluripotent (can develop into almost all cell types except for placental structures).
  - **Applications**: Potential use in regenerative medicine and tissue replacement after injury or disease.
- **Adult Stem Cells (Somatic Stem Cells):**
  - **Source**: Found in various tissues like bone marrow, blood, brain, liver, etc.
  - **Potency**: Multi-potent (can develop into a limited range of cell types related to their tissue of origin).
  - **Examples**: Hematopoietic stem cells (form blood cells), mesenchymal stem cells (can form bone, cartilage, and fat cells).
- **Induced Pluripotent Stem Cells (iPSCs):**
  - **Source**: Adult cells genetically reprogrammed to an embryonic stem-cell-like state.
  - **Potency**: Pluripotent.
  - **Significance**: Bypass ethical issues associated with embryonic stem cells and reduce the risk of immune rejection.
- **Perinatal Stem Cells:**
  - **Source**: Found in amniotic fluid and umbilical cord blood.
  - **Potency**: Pluripotent or multi-potent.
  - **Applications**: Used in therapies and research due to their high differentiation potential.

Application of Stem cells:
- **Regenerative Medicine** i.e repairing or replacing damaged tissues and organs.
- **Gene Therapy** i.e correcting genetic defects by replacing faulty cells with healthy ones derived from stem cells.
- Drug Testing and Development.
- Personalised medicine.
- Understanding Disease Mechanisms.

3 Nov 2024

Thank you!