VISIONIAS INSPIRING INNOVATION
NEWS TODAY
9TH APRIL, 2024

Global Leaders Group (GLG) on Antimicrobial Resistance (AMR) released a report "Towards Specific Commitments and Action in Response to AMR"

- Report aims to inform outcomes of the **2024 United Nations General Assembly High-level Meeting on AMR,** to be held in September 2024.
- **Recommendations for consideration by UNGA meeting on AMR:**
  - Convene an **Independent Panel on Evidence for Action against Antimicrobial Resistance by 2025,** in a One Health context.
  - **Expansion of existing financing instruments** such as Green Climate Fund, Global Environment Facility to include AMR.
  - Quadripartite organizations (FAO, UNEP, WHO, WOAH) should urgently **update the 2015 Global Action Plan on AMR** to ensure One Health response.
  - Report quality assured **AMR surveillance data** through global surveillance systems (GLASS, ANIMUSE and InFARM).
- **Proposed targets (to be achieved by 2030):**
  - **Reduction in global deaths** caused by bacterial AMR by 10%.
  - **Access group antibiotics** comprise at least **80% of overall human antibiotic consumption.**
    - Access group is one of the groups under **WHO AWaRE classification** along with Watch and Reserve Groups.
  - **Reduce quantity of antimicrobial** used in agri-food system globally by at least 30-5-% from current level.
- GLG on AMR was established in 2020 following the recommendation of the **Interagency Coordination Group on AMR (IACG)** to advocate for political action for mitigation of drug-resistant infections.

Escalating impact of AMR:

- **Leading cause of death globally** and will reduce life expectancy globally by 1.8 years by 2035.
- **Compromising food security** due to impact on livestock production and global food chain.
- **AMR is closely linked to triple planetary crisis** of climate, biodiversity loss, and pollution and waste.
- **Greater health expenditures** with treatment expenses reaching US$ 412 billion annually up to 2035

World Economic Forum (WEF) report title 'Space: The $1.8 Trillion Opportunity for Global Economic Growth' released

- **Key findings**
  - **Space economy** is expected to reach **$1.8 trillion by 2035,** from $630 billion in 2023.
  - Space's impact will increasingly **go beyond space itself,** e.g., benefits to non-traditional players such as ride-hailing apps etc.
  - **Five industries** will generate **more than 60% of increase** in space economy by 2035. **These are:**
    - supply chain and transportation; food and beverage; state-sponsored defence; retail, consumer goods and lifestyle; and digital communications:
  - **Space's return on investment will be more than financial, e.g.,** mitigating world challenges, such as disaster warning & Improved humanitarian response etc.
- **Main drivers of increasing Space prevalence**
  - **Decrease in launch costs:** fell by over 10- fold over last 20 years.
  - Commercial innovation **(e.g., components and software)**
  - **Diversification of investment and applications,** with private sector participation.
  - Cultural **awareness and enthusiasm**
- **Key Recommendations**
  - **Non-space industry leaders:** Partner and invest with tech innovators.
  - **Space industry leaders: Explore a "space for non-space" approach.**
    - **Co-create protocols** and standards
  - **State-sponsored leaders**: Enact legislation, standardization and policies
    - Build partnerships across state-sponsored agencies

India's Space economy

- **Current size:** Around $8.4 billion (around 2-3% of global space economy).
- **Target:** About 44 billion USD by 2033.
- **FDI:** 100% allowed.
- **Recent initiatives**
  - **Indian Space Policy 2023** was announced.
  - **Indian National Space Promotion and Authorization Centre (IN-SPACe)** was created as independent nodal agency under Department of Space.
  - **New Space India Limited was created,** for private sector participation.

MNRE's Approved List of Models and Manufacturers (ALMM) comes into effect after being held up for a year

- **Approved Models and Manufacturers of Solar Photovoltaic Modules Order, 2019** by Ministry of New and Renewable (MNRE) requires makers of solar modules (SM) to **voluntarily submit to an inspection.**
  - Inspection is done by **National Institute of Solar Energy,** MNRE affiliated body.
- Being on list as an **'approved' manufacturing facility,** certifies **a company as legitimate manufacturer of solar panels** and not a mere importer or assembler.
- **Benefits:**
  - **Only** models and manufacturers included in list are **eligible for use in Government Projects** and Government Schemes etc.
  - Reduce **dependency on imports from China** (which controls **80% of global supply**).
  - Ensure **livelihood generation and manufacturing** at local level.
- India's solar modules manufacturing capacity is around **50 GW** and installed capacity of **solar cell** manufacturing is around **6 GW.**
  - Around **11.17 billion USD of solar cells** and **modules** have been **imported into the country in last five years.**
  - **China produced 57% to 100% of Indian imports** of products including modules, cells, wafers and solar glass (since 2021).
- **Reasons for import dependence:** Insufficient domestic manufacturing capacity; high costs of domestic solar PV panels, India has limited production of wafers or polysilicon etc.

Initiatives facilitating domestic solar module manufacturing

- **Production Linked Incentive (PLI) Scheme** for High Efficiency Solar PV Modules.
- **Domestic Content Requirement (DCR)** under some of the current schemes of the MNRE.
- **Customs duty of 40%** on solar modules and **25% on solar cells** from 2022.

'Iseult' the World's most powerful MRI scans the first images of the human brain

- Iseult' can help refine our understanding of **anatomy of brain.**
  - It could also shed light on diseases like **Alzheimer's** or psychological conditions like **depression or schizophrenia.**
- **About Iseult**
  - Iseult has **power of 11.7 teslas** which enables it to **scan images with 10 times more precision** than commonly used MRIs.
    - Tesla is a measure of **strength of magnetic field** that surrounds a patient when they're in MRI machine.
- **Magnetic resonance imaging (MRI) Technology**
  - MRI is **non-invasive medical imaging test** that produces detailed images of almost every internal structure in human body.
  - They use **large magnet and radio waves.** No ionizing radiation is produced during an MRI exam, unlike **X-rays.**
  - Magnetic field inside **works with radio waves and hydrogen atoms** in body to create cross-sectional images.
- **Applications**
  - Images produced by an MRI scan can show o**rgans, bones, muscles and blood vessels.**
  - MRI is widely used in **medical diagnosis and treatment planning** for brain disorders, cardiovascular diseases, cancer, etc.
  - **Functional MRI (fMRI),** a special type of MRI **produces images of blood flow to certain areas of brain** which **help in brain surgery.**

Research papers Published by Dark Energy Spectroscopic Instrument (DESI) reveals the most precise measurement of the universe's expansion

- **Key Highlights:**
  - It found that the **universe is expanding at a rate of 68.5 (±0.6) kilometers per second per megaparsec** (a million parsec; 1 parsec equals 3.2616 light years).
    - In a first, scientists have measured expansion history of the young universe with a **precision better than 1%.**
  - To study **dark energy's effects** over past 11 billion years, DESI has created **largest 3D map of the universe.**
- According to leading model of the universe called the **Lambda CDM (Cold Dark Matter),** both **matter and dark energy shape how the universe** expands – but in opposing ways.
  - **Matter and dark matter slow** the expansion down, while **dark energy speeds it up.**
- **Dark Energy & Dark Matter** both make up the majority (around 95%) of the universe.
  - **Dark Energy,** making up 68% of universe, is an unknown form of energy that is causing the universe to expand at an accelerated rate.
  - **Dark Matter** is a hypothetical form of matter that **cannot be directly observed,** but its existence is inferred from its gravitational effects on visible matter and background radiation in the universe.
    - It makes up about **27% of the universe.**

Dark Energy Spectroscopic Instrument (DESI)

- DESI is the product of an **international collaboration** that brings together researchers from more than 70 institutions (including from India).
  - It is a **ground-based dark energy experiment which measures the effect of dark energy on universe expansion.**
- DESI is located on the Mayall 4-meter telescope at **Kitt Peak National Observatory (USA).**

Russian-controlled Zaporizhzhia nuclear reactor damaged following drone attack, raising questions on nuclear security

- **Zaporizhzhia, the largest nuclear plant in Europe,** is located in **southeast Ukraine,** on the **banks of the Dnipro or Dnieper river** (drains into the **Black Sea**).
  - It is currently **under the control of the Russian forces.**
- **Nuclear security** is the prevention of, detection of, and response to, criminal or intentional unauthorized acts involving or directed at nuclear material, other radioactive material, or associated facilities.
  - **International Atomic Energy Agency (IAEA)** highlighted **'seven indispensable pillars of nuclear safety and security' (See box).**
- **International regulations for Nuclear Security:**
  - 1979 Convention on the Physical Protection of Nuclear Material and Nuclear Facilities (CPPNM)
  - United Nations Security Council Resolution 1540 (2004)
  - 2005 International Convention for the Suppression of Acts of Nuclear Terrorism (ICSANT)

The seven indispensable pillars of nuclear safety and security

1. The physical integrity of the facilities-whether it is the reactors, fuel ponds or radioactive waste stores- must be maintained.
2. All safety and security systems and equipment must be fully functional at all times.
3. The operating staff must be able to fulfil their safety and security duties and have the capacity to make decisions free of undue pressure.
4. There must be secure off-site power supply from the grid for all nuclear sites.
5. There must be uninterrupted logistical supply chains and transportation to and from the sites.
6. There must be effective on-site and off-site radiation monitoring systems and emergency preparedness and response measures.
7. There must be reliable communications with the regulator and others.

- **Five elements of India's Nuclear Security:**
  - **Governance:** Atomic Energy Act 1962, Rules on Safe Disposal of Radioactive Waste (1987) and Radiation Protection (2004).
  - **Institutions:** Atomic Energy Regulatory Board (AERB).
  - **Nuclear Security Practice & Culture:** National Design Basis Threat Document, Central Industrial Security Force etc.
  - **Technology:** Closed fuel cycle with **'reprocess to reuse' of plutonium.**
  - **International cooperation:** Party to **all 13 anti-terrorism conventions** including CPPNM and ICSANT.

Also in News

GPS Jamming

- **Cargo ships** transiting the Mediterranean and the Black Sea are faced with **growing incidents of GPS jamming wherein ship navigation data is manipulated or interfered** with near conflict zones.
- **About GPS (Global Positioning System) Jamming**
  - It is the act of **using a frequency transmitting device** to intentionally block or interfere with GPS signals that are used for positioning, navigation and timing.
  - GPS jammers emit radio frequency **signals of the same frequency as GPS signals.**

UN Membership Procedure

- UN Security Council refers **Palestinian application to become full UN member** to committee.
- **About UN Membership procedure**
  - State accepts Charter commitments **by submitting an application to Secretary-General**
  - UNSC **requiring affirmative votes from 9 out of 15 members and no vetoes** by 5 permanent members.
  - **If recommended**, it's presented to General Assembly, **which requires a two-thirds majority vote.**
  - Membership becomes **effective upon resolution adoption**

Credit Deposit Ratio (CDR)

- Indian banks are **battling the worst deposit crunch in 20 years** and at 80%, the credit-deposit ratio is at its highest since 2005.
- **About CDR:**
  - It is the ratio of how much a **bank lends out of the deposits it has mobilised.**
  - A higher CDR suggests that a **significant portion of the bank's resources are allocated to loans.**
    - It could potentially **stimulate economic growth** but also implies **higher risk.**
  - Regulators often **monitor CDR** to ensure banks maintain a **prudent balance between lending and risk management.**

National Pharmaceutical Pricing Authority (NPPA)

- NPPA **revises ceiling prices** of over 900 scheduled drug formulations.
- **NPPA:**
  - **About:** It was constituted in 1997, as an **independent Regulator** for pricing of drugs.
  - **Ministry:** Attached office of Department of Pharmaceuticals, **Ministry of Chemicals & Fertilizers.**
  - **Role:** It **fixes/ revises prices of controlled bulk drugs** and formulations.
    - Enforce prices and availability of the medicines under Drugs (Prices Control) Order, 2013.
    - **Monitors prices of decontrolled drugs** in order to keep them at reasonable levels.

Suvidha Portal

- Over 73,000 applications received on Suvidha portal since the announcement of Lok Sabha elections.
- **Suvidha Portal**
  - Developed by **Election Commission of India to ensure a level playing field** upholding the democratic principles of free, fair, and transparent elections.
  - It streamlined the process of obtaining and acting upon requests for permissions and facilities from political parties and candidates during election period.
    - Caters to **permissions for organizing rallies, helicopters, vehicle permits, temporary party offices** etc.
  - The portal can help to scrutinize election expenditures, contributing to greater **accountability and integrity in** the electoral process.

Mg-Cu/CuO Fuel Cell

- Researchers at the University of Kerala developed an **Air-breathing Magnesium-Copper / Cupric Oxide (Mg-Cu/CuO) Fuel Cell.**
- **About Mg-Cu/CuO fuel cell**
  - It is a variation of the Mg-C fuel cell, but uses a **copper-based cathode which can be reused** unlike carbon-based in Mg-C fuel cell.
    - It is operationally **more stable** than Mg-C fuel cell.
  - It is an **eco-friendly fuel cell** that generates power mainly using **air and seawater.**
  - The cell **produces only electricity and heat** during its operation and **emits water.**
- Technology is expected to be as **disruptive as Lithium-ion batteries.**

Gudi Padwa

- President conveyed her greetings on eve of **Gudi Padwa,** and other festivals of welcoming spring season and Indian New Year.
- Gudi Padwa is observed on **first day of Chaitra month.**
  - It indicates **arrival of spring** and marks start of **new year in Maharashtra.**
- **Other Spring festivals across India:**
  - **Ugadi:** Andhra Pradesh, Karnataka, Telangana.
  - **Cheti Chand:** Celebrated by Sindhis.
  - **Navreh:** celebrated in Jammu and Kashmir.
  - **Sajibu Cheiraoba:** Manipur.

Ural River

- **Rise in water level** of Ural River due to snow melting affected over 10,000 Homes across **Russia.**
- **Ural River**
  - It is 2,428 km long river that flows through **Russia** and **Kazakhstan** along the continental boundary between **Europe** and **Asia.**
  - Originates in **Ural Mountains** and empties into **Caspian Sea.**
  - It is **Europe's third-longest river** after **Volga** and **Danube** rivers.
  - **Melting snow** constitutes about 60% to 70% of the river's water source.

Place in News

Mozambique (Capital: Moputo)

- More than **94 people died** after a ferry capsized off Mozambique coast.
- **Political features**
  - **Bordering countries:** Tanzania (north), Malawi & Zambia (north-west), Zimbabwe (west), South Africa & Eswatini (south-west)
  - **Surrounding water bodies:** Indian Ocean, Lake Malawi,Nyasa, Chiuta, Chilwa
  - Mozambique Channel separates it from **island of Madagascar.**
- **Geographical features**
  - **Highest Peak:** Mount Binga
  - **Major rivers:** Zambezi and Limpopo (both empty into Indian ocean), Ruvuma etc.