NEXT IAS

SUMMARY OF DOWN TO EARTH

[16 – 30 June, 2024]

DEBT VS DEVELOPMENT

Context

- According to the **Institute of International Finance,** debt servicing is a key expenditure for many nations, keeping them from funding developmental activities like education and health.

Growing Debt Landscape

- According to the **Institute of International Finance**, the global debt (including borrowings of households, businesses and governments) has reached **US $315 trillion in 2024**.
  - It is **three times the global Gross Domestic Product (GDP),** and a significant leap from the pre-financial-crisis levels of 2007–2008.
- While debt, or borrowing, is an **established way to fund personal, institutional and national expenditures**, it has reached an unmanageable level where the borrowers divest much of the revenues for **just servicing their debt, primarily the interest**.
- Of the total global debt, **business debt** at $164.5 trillion; **public debt** (government borrowings) at $91.4 trillion, and **household debt** stands at $59.1 trillion.
- **Global public debt** (both domestic and external borrowing by governments) saw a steep hike of $5.6 trillion from the 2022 levels to reach $97 trillion in 2023.
- **Developing countries share 30% of the total global debt**. But the debt growth rate of developing countries is twice that of developed countries.

Key Findings of 'A World of Debt 2024' (UNCTAD)

- **Record High Global Public Debt:** As of 2023, global public debt reached a staggering US$ 97 trillion. While developed countries contribute a significant portion, developing economies have seen their debt grow at an alarming rate.
  - Since 2010, public debt in developing countries has increased twice as fast as in developed economies, reaching US$ 29 trillion.
- **Regional Disparities**
  - Developing regions exhibit stark contrasts in debt burden: Asia and Oceania hold 27% of global public debt; Latin America and the Caribbean account for 5%; Africa carries 2% of the burden.
  - The ability to repay this debt is further complicated by inequality embedded in the international financial system.
- **High Cost of External Debt:** Developing countries face a growing and costly burden of external debt.
  - In 2022, debt service on external public debt amounted to US$ 365 billion, equivalent to 6.3% of export revenues.
  - Borrowing costs for developing regions are 2 to 4 times higher than those for the United States and 6 to 12 times higher than those for Germany.
  - This high cost makes it challenging for these countries to finance essential investments.
- **Net Resource Outflow**
  - In 2022, developing countries paid US$ 49 billion more to external creditors than they received in fresh disbursements, resulting in a negative net resource transfer.
  - It exacerbates development challenges and affects people's well-being.

Core Challenges to Debt Sustainability

- Debt and development—two seemingly disparate concepts—are intricately linked in the global economic landscape.
- As countries strive for progress, they often find themselves grappling with the dual challenge of financing development initiatives while managing their debt burdens.
- **Debt-Driven Growth Dynamics:** Borrowing can fuel economic growth, but it's a delicate balancing act. When debt accumulates faster than a country's ability to generate income, it becomes unsustainable.
  - Developing nations often face this challenge as they seek to accelerate development through infrastructure projects, education, and healthcare.

- **Continued International Financial Integration:** Globalisation has interconnected economies like never before.
  - While this integration facilitates capital flows, it also exposes countries to external shocks. A crisis in one part of the world can reverberate globally, affecting debt markets and financial stability.

Mitigating Debt Vulnerabilities

- **Debt Crisis Prevention:** Early detection of unsustainable debt levels is crucial. Developing countries need robust debt management frameworks, transparent reporting, and risk assessment tools.
  - By identifying red flags early, they can take corrective measures before a crisis erupts.
- **Responsible Financing:** Both borrowers and lenders play pivotal roles. Responsible borrowing ensures that funds are channelled into productive investments.
  - Meanwhile, lenders must consider the long-term impact of their loans on development outcomes.
- **Sovereign Debt Crisis Resolution:** When crises do occur, effective resolution mechanisms are essential.
  - Cooperation between creditors and debtors becomes critical.
  - Transparent negotiations, debt restructuring, and fair burden-sharing are vital components.

Impact on Development

- The increase in interest rates globally directly affects public budgets.
- Developing countries' net interest payments on public debt surged to US$ 847 billion in 2023, a 26% increase compared to 2021.
- Unfortunately, this means that in some countries, interest payments exceed spending on education or health.

Roadmap for Change

- The United Nations emphasises the need for multilateral actions to address the global debt burden and achieve sustainable development.

FOREST FIRES IN INDIA

Context

- According to data on the Forest Survey of India's dashboard, Uttarakhand reported 457 widespread forest fires in May 2024 which is a massive jump from 34 such incidents in the corresponding month last year.

About

- Forest fires have been a recurring challenge in India, affecting both ecological balance and human livelihoods. These fires occur due to a combination of natural and anthropogenic factors.
- **District-wise Analysis of recent Uttarakhand Fires:** According to the **Indian Institute of Remote Sensing (IIRS)**, **Nainital district** recorded the maximum forest fire incidents. It was approximately five times more than the previous year's count. Other districts significantly affected include Champawat, Almora, Pauri, and Pithoragarh.

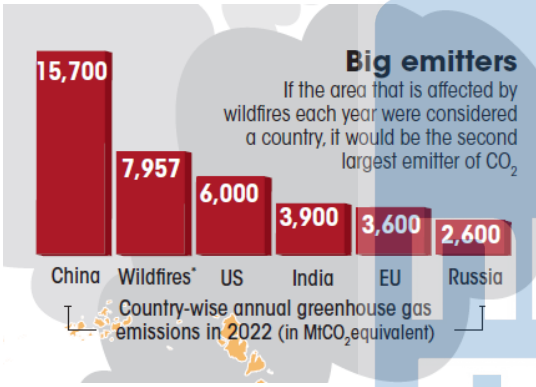
Causes of Forest Fires

- **Natural Factors**
  - **Climate Conditions:** Dry and hot weather, especially during summer, increases the risk of forest fires.
  - **Lightning Strikes:** Lightning can ignite dry vegetation, leading to fires.
  - **Natural Decay:** Dead leaves, branches, and other organic matter accumulate on the forest floor. When these dry out, they become highly flammable.
- **Human-Induced Factors**
  - **Agricultural Practices:** Slash-and-burn agriculture, where farmers clear land by burning vegetation, often leads to uncontrolled fires.
  - **Deforestation and Land Use Changes:** Fragmentation of forests and land-use changes increase fire vulnerability.
  - **Industrial Activities:** Industrial processes and construction near forests can cause accidental fires.

Impact of Forest Fires

- **Ecological Impact**
  - **Loss of Biodiversity:** Fires destroy habitats, endangering plant and animal species.
  - **Soil Erosion:** Burned areas are susceptible to erosion, affecting soil fertility.
  - **Air Quality:** Smoke from forest fires contributes to air pollution.
- **Economic and Social Impact**
  - **Livelihoods**: Forest-dependent communities suffer when their resources are destroyed.
  - **Tourism**: Forest fires deter tourists and affect local economies.
  - **Health**: Smoke inhalation poses health risks to nearby communities.

Mitigation Strategies



- **Early Detection and Monitoring:** India's Forest Survey of India (FSI) has developed the **Forest Fire Alerts System (FAST) 3.0.** It uses satellite data **(MODIS and SNPP-VIIRS)** for near real-time monitoring of forest fires.
  - The Large Forest Fire Monitoring Programme, part of **FAST 3.0**, provides crucial data to forest departments.
- **Community Awareness and Training:** Educating local communities about fire prevention and firefighting techniques is essential.
  - Training forest personnel and volunteers helps in timely response.
- **Firebreaks and Controlled Burns:** Creating firebreaks (cleared areas) can prevent fire spread.
  - Controlled burns during cooler months reduce fuel load and prevent intense fires.
- **Legislation and Enforcement:** Strict enforcement of laws against illegal activities like stubble burning and unauthorised land clearing is crucial.
  - Collaborative efforts between state forest departments and local communities are essential.

Forest Fire Alerts System 3.0

- The Forest Survey of India (FSI) operates the **Forest Fire Alerts System**, which disseminates information about forest fire locations detected by satellite sensors.
- Since 2004, FSI has been alerting State Forest Departments and other registered users about fire locations detected by the MODIS sensor onboard Aqua and Terra Satellites of NASA.
- **FSI covers ten states** (Andhra Pradesh, Bihar, Himachal Pradesh, Jharkhand, Karnataka, Maharashtra, Mizoram, Punjab, Telangana, and Tripura) up to the beat level and other states/UTs up to the district level.

Near Real-Time Forest Fire Locations

- The National Remote Sensing Centre (NRSC) provides near real-time information on forest fire locations. These represent the centre of the pixel where detection occurs.

FSI VAN AGNI 3.0

- The FSI VAN AGNI 3.0 portal provides information on forest fire danger rating, active and inactive large forest fires, and fire-prone maps

GLOBAL WILDFIRE EMISSIONS

Context

- Recently, it was found that **wildfire emissions** is the second largest emitter of carbon dioxide (CO2), **surpassed only by China.**

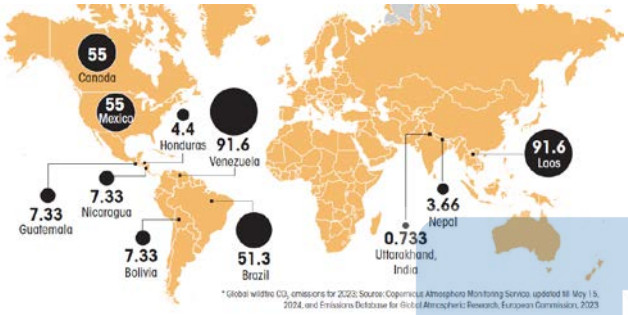
Wildfires in 2024

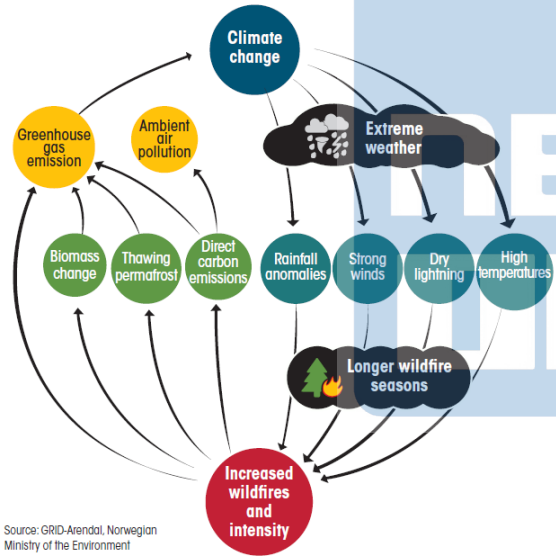
- Wildfires are natural disasters that not only devastated ecosystems but also release substantial amounts of carbon dioxide (CO_2) into the atmosphere.

- In 2024, these fires continued to pose a global challenge, affecting air quality, climate change, and human health.

Numbers and Impact

- Wildfires across 11 countries have produced over 375 million tonnes of CO2 emissions till the first half of 2024.
- Globally, wildfires contributed significantly to CO_2 emissions. In 2024, the total carbon emissions from wildfires were 16% above average, totaling 8.6 billion metric tons of CO_2.





- **Magnitude of Emissions:** In 2024, wildfires globally released 7,330 million tonnes of carbon dioxide (CO_2), surpassing the 6,000 million tonnes emitted by the entire United States in 2022.
- **Potential Underestimation:** Calculating wildfire emissions is challenging and likely underestimated due to various factors like temperature, wind, humidity, and drought.
- For context, consider that wildfires globally add around 5 to 8 billion tonnes of CO_2 each year. In comparison, human activities (such as burning fossil fuels and cement production) emit approximately 37 billion tonnes of CO_2 annually.

Implications

- **Climate Change Amplification:** Wildfire emissions exacerbate climate change by adding more greenhouse gases to the atmosphere. This **feedback loop** can lead to more frequent and intense wildfires, creating a vicious cycle.
  - As temperatures rise and droughts become more common, the risk of wildfires increases, further contributing to global warming.
- **Air Quality and Health:** Wildfire smoke contains harmful pollutants, including fine **particulate matter ($PM_{2.5}$) and volatile organic compounds (VOCs).** These pollutants can worsen respiratory conditions, such as asthma, and impact overall health.
  - In 2024, regions affected by wildfires faced hazardous air quality levels, posing risks to both humans and wildlife.

India and Wildfires

- **India's Third Biennial Update Report** to UNFCCC states that the country's **emissions from forest fires contribute a mere 1-1.5% of all global emissions** from wildfires, despite being home to **about 2% of the total global forest area.**
  - It warns that this could change with climate change because temperature rise would dry out vegetation, making it more fire-prone, especially in Himachal Pradesh and Uttarakhand.

New Challenges

- **Spreading to New Areas:** Wildfires are now reaching higher elevations in historically fire-resistant regions, driven by warmer and drier conditions.
- **Regrowth Challenges:** Frequent and intense wildfires hinder forests' ability to regrow and absorb emitted carbon.
  - Traditionally, 80% of wildfire carbon is reabsorbed by new vegetation, but climate change disrupts this balance.

Mitigation Strategies

- **Prevention and Preparedness:** Investing in fire prevention measures, such as controlled burns and forest management, can reduce the severity and frequency of wildfires.

- **Early warning systems** and community preparedness are crucial for minimising the impact of wildfires.
- **Climate Action:** Addressing climate change is essential to mitigate wildfire risk. Efforts to reduce greenhouse gas emissions globally will indirectly help prevent more intense and frequent fires.
- Sustainable land management practices and reforestation efforts play a vital role in sequestering carbon and preventing wildfires.

PLANT PATHOGENS AND FOOD SECURITY

Context

- In a globalised world, plant pathogens are causing multiple outbreaks, hampering food security for millions.

About

- Plant diseases—caused by pathogens like bacteria, viruses, and fungi—are often the silent saboteurs of our food systems. They stealthily infiltrate crops, affecting their growth, yield, and quality.
- Buoyed by climate change and global trade, pathogens that cause disease outbreaks in food crops are spreading far and wide. They are also evolving fast to reproduce quickly and infect new hosts.
- Pathogens are at an advantage in this era of unparalleled human movement, transportation and interaction.

Fusarium Wilt (Pushing bananas to verge of extinction)

- Caused by **soil fungus Fusarium Oxysporum**, wilt infection has ruined banana plantations across the world for well over a century now.
- Fusarium Oxysporum was **first reported in Central America in 1890**. By 1960, it rooted itself in tropical America, the Caribbean and West Africa impacting 40,000 hectares.
- It has proved lethal to over 80% of the 1000-odd banana varieties available worldwide, including those developed for resistance.

Wheat Blast

- Caused by: Magnaporthe Oryzae Triticum fungus
- It could reduce global production of wheat crops by 13% by 2050.

Maize Lethal Necrosis

- Caused by: Maize chlorotic mottle virus and sugarcane mosaic virus.

Late Blight

- Caused by: Phytophthora Infestans fungus

Coffee Leaf Rust

- Caused by: Hemileia Vastatrix fungus

Cassava Brown Streak Disease

- Caused by: Cassava brown streak virus/Ugandan cassava brown streak virus

Citrus Tristeza Disease

- Caused by: Citrus tristeza virus

Rice Blast

- Caused by: Magnaporthe Oryzae fungus

Impacts

- **Crop Yield Reduction:** Plant diseases can significantly reduce crop yields. Imagine a farmer's hard work—months of planting, nurturing, and tending—being thwarted by an invisible enemy.
  - Whether it's rust on wheat, blight on potatoes, or wilt in tomatoes, these pathogens can lead to substantial losses in agricultural productivity.
- **Quality Degradation:** It's not just about quantity; it's also about quality. Infected plants may produce subpar fruits, grains, or vegetables.
  - Discoloured, misshapen, or blemished produce doesn't just affect aesthetics; it impacts consumer preferences and market value.

- **Food Chain Impact:** Plant diseases ripple through the entire food chain. When crops fail, it affects livestock feed, which, in turn, affects meat and dairy production. Even fisheries can suffer if aquatic plants are hit by pathogens.
  - The interconnectedness of our food system means that a problem at one link reverberates across the entire chain.

Components of Food Security

- **Primary Food Production:** It refers to agricultural output—the crops we grow. When pathogens strike, they directly affect this availability. Less produce means less food on our tables.
- **Production-Import-Stockpiles:** Some regions rely on food imports to meet their needs. Pathogen-induced crop failures disrupt this delicate balance. Stockpiles become critical during shortages.
- **Physical and Supply Chain:** Food must physically reach consumers. Roads, railways, and markets play a vital role. Pathogens can disrupt transportation and access points.
- **Economic:** Can people afford to buy food? In developing countries, where a significant portion of income goes toward food, economic access is crucial.
- **Stability of Food Production and Supply:** Stability matters. Unpredictable outbreaks destabilise the supply chain, leading to insecurity.
- **Utility - Safety - Quality - Nutritive Value:** Safe, nutritious food is essential. Pathogens compromise safety and quality, affecting our well-being1.

A Call to Action

- As we navigate the challenges of climate change, emerging pathogens, and global trade, addressing plant diseases becomes paramount.
- Researchers, policymakers, and farmers must collaborate to develop resilient crops, effective disease management strategies, and sustainable practices. Our food security depends on it.

CARDIOVASCULAR DISEASES IN INDIA

Context

- Recently, WHO found that cardiovascular diseases, along with respiratory infections and tuberculosis, accounted for 45% of all deaths in India in 2021.

About

- Cardiovascular diseases encompass **a group of disorders** related to the **heart and blood vessels.** These include conditions like coronary *heart disease, cerebrovascular disease (stroke), peripheral arterial disease, rheumatic heart disease, congenital heart disease, deep vein thrombosis, and pulmonary embolism.*
- **Behavioural Risks:** Dietary risks; Tobacco; Child and maternal malnutrition; High alcohol use; Low physical activity; Unsafe sex; Drug use; Intimate partner violence; Childhood sexual abuse and bullying.
- **Environmental/Occupational Risk:** Air pollution; Unsafe water, sanitation, and handwashing; Occupational risks; Other environmental risks; Non-optimal temperature.
- **Metabolic Risks:** High systolic blood pressure; High fasting plasma glucose; High LDL cholesterol; Kidney dysfunction; High body-mass index; Low bone mineral density.

Causes of Concerns

- **High Mortality:** CVDs are the leading cause of death globally, responsible for an estimated 17.9 million deaths each year. In India, they account for a significant proportion of total mortality.
- **Prevalence**: The prevalence of CVDs has surged over the past few decades. In 2016, India reported 63% of total deaths due to non-communicable diseases (NCDs), with 27% attributed to CVDs. This increase is alarming and demands attention.
- **Risk Factors:** Several risk factors contribute to the rising burden of CVDs in India:
- **Raised Blood Pressure:** Hypertension is a major risk factor, especially in low- and middle-income countries.

- **Unhealthy Lifestyle:** Poor diet, physical inactivity, tobacco use, and excessive alcohol consumption play a significant role.
- **Obesity and Overweight:** These conditions are prevalent and contribute to CVD risk.
- **Diabetes:** The increasing prevalence of diabetes in India further exacerbates the CVD burden.

State-wise Variations

- **Kerala, Punjab, and Tamil Nadu:** These states have the highest prevalence of CVDs. The burden is **particularly pronounced in Kerala,** where lifestyle factors and genetic predisposition intersect.
- **Age of Onset:** Both men and women in India develop CVDs, especially atherothrombotic coronary heart disease, at a younger age compared to high-income populations elsewhere3. This early onset has significant social and economic implications.

Gender Disparities

- **Heart Disease:** It is now the leading individual cause of disease burden in India, surpassing other health conditions. Heart disease contributed to 17.8% of total deaths in 2016.
- **Stroke:** Stroke ranks fifth among causes of death, contributing 7.1% of total deaths in India. Interestingly, the proportion of deaths and disability from heart disease is higher in men, while stroke affects both genders equally2.

Urgent Action Needed

- **State-Specific Approaches:** Each state must tailor its response to the specific disease burden it faces. Context matters, and targeted interventions are crucial.
- **Early Prevention:** Focusing on prevention—such as promoting healthier lifestyles, reducing tobacco use, and encouraging physical activity—can make a significant impact.
- **Effective Treatment:** Access to essential NCD medicines and basic health technologies in primary care facilities is essential. Timely treatment can prevent premature deaths.

CARBON OFFSETTING

Context

- Recently, a group of 10 West African countries called for allowing countries to use carbon offsets to cut emissions, despite doubts about their effectiveness.

About the Carbon Offsetting

- It is a practice where individuals, companies, or organisations compensate for their greenhouse gas emissions by investing in projects or activities that reduce or remove an equivalent amount of carbon dioxide (CO_2) from the atmosphere.
- Essentially, it's a way to balance out your carbon footprint.

Working of Carbon Offsetting

- **Calculate Emissions First;**
- **Invest in Offsets**: These can be in the form of credits from renewable energy projects, reforestation efforts, or methane capture initiatives.
- **Support Projects:** The funds from your offsets go toward projects that directly or indirectly reduce emissions. For instance:
  - **Renewable Energy:** Investing in wind, solar, or hydroelectric projects.
  - **Forestry**: Planting trees or protecting existing forests.
  - **Efficiency**: Supporting energy-efficient technologies or practices.
  - **Methane Capture:** Preventing methane emissions from landfills or livestock.
  - **Verification:** Projects are verified by recognised standards (such as Verra or Gold Standard) to ensure their legitimacy and impact.

Indian Voluntary Carbon Market

- India has a thriving voluntary carbon market, which is **worth over $1.2 billion.**
- **Recent Developments:** India's power minister announced that the country is open to exporting carbon credits.

- Initially, there was debate about allowing such exports, but the government's position has evolved.

- **Projects**: India has 860 registered projects and a total of 1,451 projects under consideration in leading carbon crediting programs like Verra and Gold Standard.
- These projects cover various sectors, including renewable energy, forestry, and energy efficiency.
- **Earnings:** Indian entities have already earned about $652 million from carbon credits used to offset emissions.
- **Common Types:** Over 32% of all credits issued in the voluntary carbon market are for renewable energy, with wind, hydropower, and centralised solar being the most common sources.

Challenges and Considerations

- **Net Zero Goals:** As countries strive for net-zero emissions, carbon offsetting becomes crucial. India, with its ambitious climate targets, aims to achieve net zero by 2070.
- **Equity and Historical Responsibility:** India emphasises its historical energy poverty and low per capita emissions when advocating for net-zero targets.
  - It argues that developed nations should bear a larger burden due to their historical emissions.
- **Emission Reduction Targets:** To limit global warming, emissions must be significantly reduced.
  - For a 2°C target, emissions need a 28% cut by 2030; for 1.5°C, it's a 42% reduction.
- **Phasing Out Fossil Fuels:** Despite progress, fossil fuels (especially coal) remain a challenge. International agreements aim to 'phase down' coal usage.

WORLD INTELLECTUAL PROPERTY ORGANISATION (WIPO) AND INDIA

Context

- The WIPO treaty on genetic resources overrides vital safeguards in India's law to prevent bad patents.

About

- World Intellectual Property Organization (WIPO) is a specialised **agency of the United Nations** responsible for promoting and **protecting intellectual property (IP)** worldwide.
- Its mission revolves around fostering innovation, creativity, and the use of IP for the betterment of humanity.
- It plays a crucial role in **shaping global IP policies**, facilitating cooperation among nations, and **providing technical assistance to developing countries.**
- It **administers** several international treaties related to patents, trademarks, copyrights, and other forms of IP.
  - These treaties harmonise IP laws across different countries and ensure a fair and balanced system.
- It assists member states in **patent and trademark registration** through systems like the **Patent Cooperation Treaty (PCT) and the Madrid System.**
- It annually publishes the **Global Innovation Index (GII)**, which ranks countries based on their innovation performance.
  - India has steadily climbed the ranks, moving from 81st in 2015 to 46th in 2021.
- It provides training, support, and capacity-building programs to help countries develop robust IP systems.

India's IP Landscape

- **Traditional Knowledge and Traditional Cultural Expressions:** Given India's rich cultural heritage, WIPO's work on protecting traditional knowledge and cultural expressions is particularly relevant for the country.
- **Geographical Indications (GIs):** India has a vibrant GI system, safeguarding products like Darjeeling tea, Basmati rice, and Kanchipuram silk.
- **Technology and Innovation Support Centers (TISCs):** These centres, established in India and other countries, provide valuable IP-related services to inventors, entrepreneurs, and researchers.

India's Commitment and WIPO

- **India is a signatory** to the Agreement on Trade-Related Aspects of Intellectual Property **(TRIPS Agreement)** and a member of the **World Trade Organisation.**
- **India** has been a member of the WIPO since 1975.

Intellectual Property Rights (IPR)

- It refers to the legal protections granted to creators and inventors for their intellectual creations. These rights cover a wide range of areas, including patents, copyrights, trademarks, industrial designs, geographical indications, and trade secrets.
- Essentially, IPR safeguards the fruits of human creativity and innovation.

Categories of IPR

- **Copyright**: Copyright protects literary and artistic works such as books, music, paintings, films, and computer programs. It ensures that creators have exclusive rights to their works for a minimum of 50 years after their passing.
- **Industrial Property:** This category includes several subtypes:
  - **Trademarks**: Trademarks distinguish products or services of one company from those of competitors. Think of iconic logos like the Nike swoosh or the golden arches of McDonald's.
  - **Geographical Indications (GIs):** GIs link a product's characteristics to a specific location. For instance, Champagne must come from the Champagne region in France.
  - **Patents**: Patents protect inventions and technological advancements. They grant inventors exclusive rights for a specified period.
  - **Trade Secrets:** These are confidential business information that provides a competitive advantage.

Issues of India ahead of WIPO

- **Piracy and Counterfeiting:** Rampant piracy and the circulation of counterfeit goods remain significant issues. These undermine the rights of creators and harm industries.
- **Lack of Awareness:** Many small businesses and individuals are unaware of their IPR rights. Educating them about the importance of protecting their creations is crucial.
- **Efficient Implementation:** Despite having robust laws, effective enforcement remains a challenge. Streamlining processes and improving enforcement mechanisms are essential.
- **Compulsory Licensing (CL):** Foreign investors sometimes fear misuse of CL provisions, which allow licences to be granted without the patent holder's consent under certain circumstances.

PRELIMS

H5N2 BIRD FLU

Context

- Recently, the World Health Organization (WHO) confirmed the first fatal human case of H5N2 bird flu in Mexico.

Avian Influenza Virus

- It is caused by **influenza A viruses**, primarily affecting birds. These viruses are classified into **two main categories:**
  - **Low Pathogenicity Avian Influenza (LPAI) A Viruses:** These typically cause mild symptoms in birds and rarely lead to severe outbreaks. However, they can still pose risks to poultry populations.
  - **Highly Pathogenic Avian Influenza (HPAI) A Viruses:** These are the more dangerous variants. They cause severe illness in birds, with high mortality rates. HPAI strains can devastate poultry farms and have significant economic implications.

Transmission

- **Direct Transmission from Infected Birds**: When healthy birds come into contact with infected birds (through saliva, faeces, or respiratory secretions), they can contract the virus.
- **Contaminated Environments:** Avian influenza A viruses can survive in the environment. Birds can become infected by exposure to contaminated water, feed, or surfaces.

Subtypes and Lineages

- Influenza A viruses are divided into subtypes **based on two surface proteins: hemagglutinin (HA) and neuraminidase (NA).**
- Among birds, 16 HA and 9 NA subtypes have been identified. For instance:
  - **H5N1:** This subtype has caused significant concern. It has led to outbreaks in poultry and has occasionally infected humans. The current public health risk from H5N1 remains low, but monitoring is crucial.
  - **H7N2, H3N8, and others:** These subtypes also circulate among birds and occasionally cause infections in other animals like horses and dogs.

Prevention and Treatment

- While avian influenza A viruses can infect birds worldwide, antiviral drugs used for human flu (such as oseltamivir) can be effective against some strains.
- Vigilance, surveillance, and biosecurity measures are essential to prevent outbreaks in poultry and minimise risks to humans.

ENGA LANDSLIDE IN PAPUA NEW GUINEA

Context

- Recently, a massive landslide occurred in the Mulitaka area in the Enga Province of Papua New Guinea, resulting in significant loss of life and property.

About the Enga Landslide

- Papua New Guinea, with its rugged terrain, is no stranger to fatal landslides. The **country's mountainous landscape**, combined with **weather patterns, poverty, and poor land use practices**, makes it susceptible to such disasters.
- In 2024, the nation experienced intense rainfall and flooding, exacerbating the risk of landslides that originated from the **limestone slopes of Mount Mungalo.**

Possible Causes

- **Earthquake:** On May 18, a magnitude 4.5 earthquake occurred west of the landslide site.
  - Although it struck deep below the surface, some speculate it might have triggered the event.
  - However, the Red Cross suggests that the landslide was more likely due to gold mining or heavy rain.
- **Climate Change:** Papua New Guinea's Prime Minister, James Marape, attributed the disaster to climate change.

Papua New Guinea

- It is an island country that lies in the **south-western Pacific.**
- It includes the **eastern half of New Guinea** and many small offshore islands. Its **neighbours** include **Indonesia** to the west, **Australia** to the south and **Solomon Islands** to the south-east.
- It is mainly mountainous but has low-lying plains in southern New Guinea.
- The country has several active volcanoes.

UN'S INTERNATIONAL TRIBUNAL FOR THE LAW OF THE SEA (ITLOS)

Context

- Recently, the **UN's International Tribunal for the Law of the Sea** for the first time called **greenhouse gas emissions a marine pollutant**, and said that countries have an obligation to mitigate their effects on oceans.

About the ITLOS

- It deals with the **interpretation and application** of the United Nations Convention on the Law of the Sea (UNCLOS).
- It emerged from the mandate of the **Third United Nations Conference on the Law of the Sea**. Picture diplomats in Montego Bay, Jamaica, circa 1982, signing the UNCLOS.
  - The UNCLOS established an international framework for governing ocean space, its uses, and resources.

Composition

- ITLOS is a panel of 21 independent members, elected by secret ballot from States Parties to the UNCLOS.
- Each State Party can nominate up to two candidates, but alas, no pirate captains or krakens allowed.

Jurisdiction

- ITLOS has jurisdiction over disputes related to UNCLOS interpretation and application.
- If two countries are squabbling about their exclusive economic zones or arguing over the continental shelf, ITLOS is the courtroom where they present their cases.
- It handles matters specified in other agreements that grant it jurisdiction.
- The ruling, while **not legally binding**, is believed to have created a precedent on the role of emissions in future climate litigation.

ZERO DEBRIS CHARTER

Context

- Recently, Twelve European countries, including Austria, Germany, Sweden and the UK, signed the Zero Debris Charter.

About the Zero Debris Charter

- It is an initiative aimed at ensuring the long-term sustainability of human activities in Earth orbit.
- It was developed collaboratively by space actors from around the globe, and sets ambitious goals to mitigate and remediate space debris.
- The **European Space Agency (ESA)** received encouragement from its Member States to adopt a **'Zero Debris Approach'** for its missions at the Ministerial Conference of 2022.
  - It builds on over a decade of ESA-wide collaborative work and aims to make ESA **debris-neutral by 2030.**
- As per the ESA, there are more than 1 million pieces of space debris in the Earth's orbit, which could damage satellites and other space assets.
- The Zero Debris Charter is a **community-driven document** that involves 40 space entities. These actors collectively define guiding principles and specific **targets to achieve Zero Debris by 2030.**

Key Aspects of the Charter

- **Community Building:** The Charter brings together a diverse array of stakeholders committed to advancing space safety and sustainability.
  - It includes industrial players, government agencies, research centres, and more.
- **Vision for 2030:** The Charter combines high-level guiding principles with ambitious yet realistic technical targets.
  - These targets form the basis for an ambitious roadmap toward Zero Debris, driving global efforts in debris mitigation and remediation.

GLOBAL FOOD POLICY REPORT (2024)

Context

- Recently, the Global Food Policy Report for 2024 was released by **International Food Policy Research Institute (IFPRI).**

Key Findings of Report

- **Unhealthy Diets and Malnutrition: Unhealthy diets** contribute to various public health challenges, including **malnutrition and diet-related noncommunicable diseases (NCDs).**
  - Despite growing awareness, less than half of the world's population consumes diverse diets with adequate nutritious foods.
  - It showed **only 28% of Indians consume healthy food** comprising all five food groups, while **38% consumed processed food.**

- As a result of poor diet, 16.6% of the country's population suffers from malnutrition.

- **Climate Change and Food Systems:** Climate change poses new challenges for our food systems, affecting both food supply and nutritional content.
  - The report emphasises the urgent need to transform our food systems to ensure sustainable, healthy diets for everyone.

Approaches to Addressing Poor Diets and Nutrition

- The report examines multiple approaches from both demand and supply sides.
- Better governance, tailored to specific contexts, can promote a shift toward sustainable healthy diets.
- Policymakers must prioritise healthy diet goals, climate change adaptation, and mitigation options.
- Financial commitments are crucial to making healthy diets affordable, accessible, and desirable.

Climate Change and Food Systems Transformation

- IFPRI's flagship report on Climate Change & Food Systems underscores the urgency of:
  - Accelerating innovation;
  - Reforming policies;
  - Resetting market incentives;
  - Increasing financing for sustainable food systems transformation;

SUBJECTIVE QUESTIONS

1. To what extent are human activities responsible for the increasing frequency and severity of forest fires in India? Discuss the specific actions and policies that could be implemented to mitigate the impact of human-caused forest fires.
2. How do global wildfire emissions contribute to climate change, and what are the potential feedback loops that could exacerbate this impact?
3. How do plant pathogens pose a significant threat to global food security, and what strategies can be employed to mitigate their impact?
4. What are the primary factors contributing to the high prevalence of cardiovascular diseases in India, and what strategies can be implemented to reduce their burden on the population?
5. To what extent is debt a necessary evil for developing countries in their pursuit of economic growth and development?

MCQS

1. *'Fusarium Wilt'* which is caused by *soil fungus Fusarium Oxysporum*, primarily affects the:
   (a) Wheat
   (b) Coconut
   (c) Banana
   (d) Maize

2. Recently, a massive landslide occurred in the Enga Province of which of the following countries?
   (a) Indonesia
   (b) Papua New Guinea
   (c) Brunei
   (d) Taiwan

3. With reference to the *'Zero Debris Charter'*, consider the following statements:
   1. It aims for the long-term sustainability of human activities in marine pollution.
   2. It focuses on debris-neutral oceans by 2030.

   Which of the statements given above is/are correct?
   (a) 1 only
   (b) 2 only
   (c) Both 1 and 2
   (d) Neither 1 nor 2

4. Which of the following international organisations is focusing on *'Zero Debris Approach'*?
   (a) National Aeronautics and Space Administration (NASA)

(b) China National Space Administration (CNSA)
(c) Japan Aerospace Exploration Agency (JAXA)
(d) European Space Agency (ESA)

5. Which one of the following released the *'Global Food Policy Report for 2024'*?
(a) International Food Policy Research Institute (IFPRI)
(b) World Bank
(c) Food and Agriculture Organisation (FAO)
(d) World Trade Organization (WTO)

Answer:

1. (c) 2. (b) 3. (b) 4. (d) 5. (a)