The economic consequences of air pollution

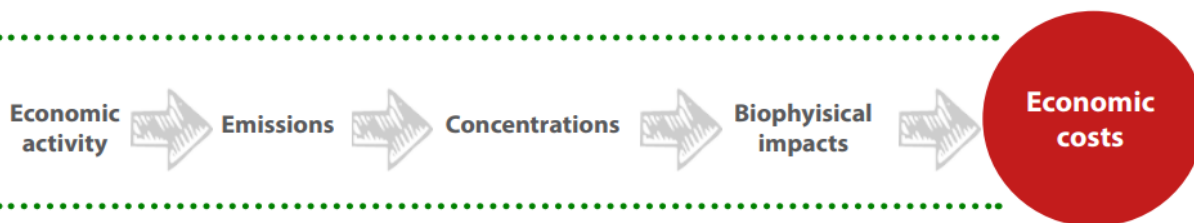**Syllabus: GS3/Economy; Environmental Pollution**
Context:

- A slew of new research points that air pollution has a direct impact on GDP growth and per-capita income levels.

About Air pollution:

- It is **contamination** of the indoor or outdoor environment by *any chemical, physical or biological agent* that *modifies the natural characteristics* of the atmosphere.
  - Household combustion devices, motor vehicles, industrial facilities, and forest fires are common sources of air pollution.
- Pollutants of major public health concern include *particulate matter (PM2.5, and PM 10), carbon monoxide, ozone, nitrogen dioxide, and sulphur dioxide.*

More about the news:

- Air pollution leads to a decline in workers' output, fewer consumers avail of consumption-led services, the productivity of assets is hampered, and health expenses increase.
- Pollution stunts economic growth, exacerbates poverty and inequality in both urban and rural areas, and significantly contributes to climate change.

Economic activity → Emissions → Concentrations → Biophyisical impacts → Economic costs

Impacts of Air Pollution
The Reserve Bank of India (RBI):

- The Department of Economic and Policy Research (DEPR) of RBI reported that up to 4.5% of India's GDP could be at risk by 2030 due to lost labour hours from climate change issues, including extreme heat and humidity.
- The data from RBI suggest that about 50% of India's GDP comes from sectors that are exposed to heat. However, as per the European Central Bank, less than 25% of European GDP is generated by the same sectors.

Greenpeace Research:
- It estimates the economic impact of air pollution in China at $900 billion a year and $600 billion for the US.
- In 2018, the cost of air pollution equated to 6.6% of Chinese GDP, 5.4% of India's GDP, and 3% of US GDP.

World Bank Paper (June 2023):
- It highlighted that the **'micro-level impacts'** of air pollution on health, productivity, labour supply, and other economically relevant outcomes aggregate to **'macro level effects'** that can be observed in year-to-year changes in GDP.

The Lancet Planetary Health:
- Report *'Health and economic impact of air pollution in the states of India: The global burden of disease study'* found large inter-state variations in economic loss as a proportion of the state GDP — from 0.67% to 2.15% — with the biggest losses in the low per-capita GDP states of Uttar Pradesh, Bihar, Rajasthan, Madhya Pradesh, and Chhattisgarh.

Other Impacts:
- **Labor Productivity (Absenteeism):** Air pollution resulted in 1.3 billion working days lost, costing $6 billion in India in 2019 due to absenteeism.
  - 98% of this cost is borne by India's northern and eastern part, where AQI levels cross 300+ frequently.
  - Employees' physical and cognitive performance take a hit due to air pollution. Business heads estimate that employee productivity decreases by 8-10% on high pollution days, costing $24 billion in 2019.
- **Consumer Footfall:** Air pollution diminishes India's strength of being a large consumer economy by reducing consumer spending by 1.3%, costing $22 billion. in 2019.
- **Premature Mortality:** Air pollution contributes to 18% of all deaths in India. India lost 3.8 billion working days in 2019, costing $44 billion to air pollution caused by deaths.
  - Not only premature mortality devastates our current workforce, but also the workforce of the future.
- **Impact on IT sector:** $1.3 billion or 0.7% of its GDP to air pollution, saw a 10% decrease in attendance on bad air days, 3% reduced productivity and even faced 28% higher hiring challenges.

- **Tourism Sector:** It saw a 1% decline in GDP, costing $2 billion. International tourists increasingly re-consider travel plans to India, with pollution being a top concern. This translated to 820,000 jobs lost in tourism and ancillary industries.

The challenges for India:
- **Annual cycle of pollution** in key manufacturing and services hubs like Delhi NCR and Mumbai.
  - Delhi NCR is prone to a recurrent annual cycle of high pollution with the onset of every winter;
  - Mumbai is struggling to cope with a polluting haze after the withdrawal of the southwest monsoon.
- **The Lancet** had listed **Delhi** as the city with the **highest level of per-capita economic loss** due to pollution among major Indian cities.
  - Delhi has the poorest air quality among cities globally, with PM2.5 concentration levels pegged at nearly 10 times the WHO target.
- **Greenpeace** Southeast Asia and the **Centre for Research on Energy and Clean Air** reported that the costs of air pollution from fossil fuels, burning gas, coal, and oil results in *three times as many deaths as road traffic accidents worldwide*.
- **As per the RBI report**, the trend is a concern especially in developing countries such as India when employment generation is largely linked to economic activities involving the outdoors.
  - **Agriculture and construction** are among the biggest employment avenues, while delivery services and security agency work account for the bulk of employment generation options in the urban areas.

Steps Taken by Government:
- **National Clean Air Programme (NCAP)**: It is a long-term, a time-bound programme to reduce air pollution in a comprehensive manner with a target to achieve up to 40% reduction in PM10 concentration level by the year 2025-2026 w.r.t. baseline of 2017-18.
- **The Concept of LiFE (introduced at COP 26 in Glasgow):** It envisions replacing the prevalent 'use-and-dispose' economy—governed by mindless and destructive consumption—with a circular economy, which would be defined by mindful and deliberate utilisation.
- **Nationally Determined Contributions (NDCs)**: India updated its NDCs – plans to limit global warming to 1.5°C, promising to reduce the emissions intensity of GDP by 45% by 2030, from the 2005 level, and achieve 50% cumulative electric power installed capacity from non-fossil fuel-based energy resources by 2030.
- **Commission for Air Quality Management:** It has been set up for Air Quality Management in the National Capital Region and Adjoining Areas for better coordination, research, identification, and resolution of problems

surrounding the air quality index and for matters connected therewith or incidental thereto.

- **Graded Response Action Plan (GRAP):** It is a set of emergency measures that kick in to prevent further deterioration of air quality once it reaches a certain threshold in the Delhi-NCR region.

Way Forward:

- Traditionally, air pollution has been regarded as an inevitable cost of a developing economy and as a public health burden that must, to a large extent, be borne by society as a whole.
- Industry leaders should focus on the **solutions** that include *'greening' business operations and supply chains, adopting renewable energy technology, mitigating emissions through CSR activities, and campaigning for more ambitious pollution policies.*
- Through active and sustained collaboration between the public and private sectors, bluer skies and a healthier economy can soon become India's reality.

Source: IE

MoUs Signed Between UAE and India

Syllabus: GS3/International Relations
In News
- **India and the United Arab Emirates (UAE)** have signed MoUs to **strengthen educational cooperation and to Boost Skill Development.**

About
- **MoU on Education:** The MoU aims to strengthen the existing cooperation in the field of educational institutions in both countries, by facilitating student and faculty mobility, joint research programmes, designing courses, organising and participation in conferences, lectures, symposia, courses, scientific and educational exhibitions.
  - It will also facilitate academic collaboration between **Higher Education Institutions** in both the countries for offering **Twinning, Joint Degree and Dual Degree Programmes.**
  - It will further facilitate creation of a **Joint Working Group** chaired by a representative of the Ministry of Education from India and UAE.
    - The JWG shall meet **at least once a year** alternately to review the implementation of this memorandum.
- **MoU on Skill Development:** National Skill Development Corporation and DP World Sign (an Emirati multinational logistics company) has signed an MoU to Boost Skill Development.
  - The UAE is hosting the largest population of Indian nationals outside of India which underscores the importance of skill development as a fundamental element of the India-UAE Strategic Partnership.
  - Leaders agreed to enhance cooperation to develop professional standards and skills frameworks.

Brief overview of the UAE and India relations
- **Political :** India and the United Arab Emirates (UAE) established diplomatic relations in 1972.
  - While the UAE opened its Embassy in India in 1972, Indian Embassy in UAE was opened in 1973.
- **Multilateral Cooperation:** India and the UAE are currently part of several plurilateral platforms such as I2U2 (India-Israel-UAE-USA) and UFI (UAE-France-India) Trilateral, etc. UAE has been invited as a Guest Country to the G-20 Summit
- **Economic & Commercial** :India and UAE have shared trade links through the centuries. The trade, which was dominated by traditional items such as dates, pearls and fishes, underwent a sharp change after the discovery of oil in the UAE (oil exports began from Abu Dhabi in 1962).

- India UAE trade, valued at US$ 180 million per annum in the 1970s, is today US$ 84.84 billion making UAE, **India's third largest trading partner** for the year 2021-22 after China and US.
- Moreover, UAE is the second largest export destination of India (after the US) with an amount of nearly US$ 31.61 billion for the year 2022-23.
- UAE is the 7th biggest investor in India in terms of FDI
- **Cultural Relations :**UAE has over 3.5 million Indians and Emiratis are quite familiar and sensitive to Indian culture
- **Defence cooperation:** It is steered through a Joint Defence Cooperation Committee (JDCC) at the Ministry level, with the signing of Agreement on Defence Cooperation in June 2003, which came into effect since April 2004.
- **Space Cooperation:** Indian Space Research Organisation (ISRO) and the UAE Space Agency signed an MoU regarding cooperation in the exploration and use of outer space for peaceful purposes on 11th February 2016.
- **Indian Community:** Indian expatriate community of approximately 3.5 million is the largest ethnic community in UAE constituting roughly about 35 percent of the country's population

Source: [News on Air](#)

Philippines Exit from BRI

Syllabus: GS2/IR

News

- The Philippines has announced the termination of major infrastructure projects under [China's Belt and Road Initiative (BRI)](#) in favor of Western and Japanese competitors.

About

- The Philippines has **scrapped $4.9 billion** worth of Chinese projects and is seeking alternative deals from traditional partners such as Japan, South Korea, the US, and the European Union.
- A number of Chinese projects are expected to be put on hold, including the Mindanao Railway Project Tagum-Davao-Digos segment, the Chico River Pump Irrigation Project, the New Centennial Water Source – Kaliwa Dam Project, the Samal Island-Davao City Connector project, and a closed-circuit television project in multiple cities throughout Metro-Manila.

Strained relations between Philippines and China

- Economic and political factors have caused doubt over China's investment initiatives, leading to strained relations between the two countries.

- **Contensions in the South China Sea:** The Philippines' apparent departure from the BRI is rooted in deep-seated bilateral issues concerning contested territories in the South China Sea.
- **USA support:** In the aftermath of a recent collision between Chinese and Philippine sea vessels, the U.S. made it explicit that, in adherence to the terms of the **Philippine-U.S. Mutual Defense Treaty (MDT),** the United States will respond to any attack on Philippine ships, aircraft, or soldiers stationed in the South China Sea.
- **Other concerns:** Apart from geopolitical considerations there are other concerns like China's economic slowdown, property market crises, and challenges associated with investments abroad for the deteriorating relations between two nations.

Significance for India
- India is not a part of China's BRI project and Philippines departure from it coincides with India's efforts to safeguard the country's territorial integrity and sovereign rights.
- It also affirms both nations' commitment to support a rule based order in the Indo-Pacific.

Source: [TOI](#)

Dam Safety in India

Syllabus: GS3/Infrastructure

In News
- The **National Dam Safety Authority (NDSA)** examined the **Medigadda (Laxmi) Barrag**e of the Kaleshwaram irrigation project in Telangana.

> ## Do you know ?
> - The **Kaleshwaram Lift Irrigation Project** is a multi-purpose irrigation project on the **Godavari River** in Telangana, .
> - Currently the **world's largest multi-stage lift irrigation projec**t,its farthest upstream influence is at the confluence of the **Pranhita and Godavari rivers.**

Dams in India
- India has 4,407 large dams, the **third highest number in the world** after China (23,841) and the USA (9,263).
- Maharashtra has the maximum number of large dams followed by Madhya Pradesh and Gujarat.

Dam Failures in India
- The first failure was recorded in **Madhya Pradesh during 1917** when the **Tigra Dam failed due to overtopping.**
- The worst dam disaster was the **failure of Machu dam (Gujarat) in 1979** in which about 2000 people died.
- There are 40 reported failure cases so far.

Reasons for the Dam Failures in India
- The most common cause of dam failures in India has been **breaching – accounting** for about 44% of cases – followed by **overtopping** that accounted for about 25% failures.
- Majority of Indian dams have failed immediately after construction or at the time of first full-load, which can be clearly attributed to **factors of either inadequate design or poor quality of construction.**
  - **For example :** The NDSA team has recently found **fault with the planning and design of the Medigadda barrage**
    - The report also felt that the **reconstruction work had to be taken up** from the foundation level of the barrage.
    - Two other barrages — **Annaram and Sundilla barrages** — also have similar designs and construction methodologies.

Why Dam Safety is a Priority Concern in India?
- **Aging of Dams:** With the increasing number of dams becoming older and older, the likelihood of dam failures in India is expected to be an ascending path. There are 227 large dams in India which are more than 100 years old
- **Structural Deficiencies:** Many dams have varied structural deficiencies and shortcomings in operation and monitoring facilities, while few do not meet the **present design standard- both structurally and hydrologically.**
- **Lack of Institutional and Technical Capacities:** Most of the States have been failing to provide **sufficient budgets** for maintenance and repair of the dam.
  - Many States also lack the **institutional and technical capacities** for addressing dam safety issues.
- **Hazard** to human life and property downstream.

Related steps
- **Dam Safety Act (DSA) 2021**

- ○ **Aim:** It aims for preventing dam failure related disasters and provides for institutional mechanisms to ensure their safe functioning.
  - ○ The Act has provision for setting up an empowered institutional framework for dam safety **both at the Central and State level.**
    - ■ **At Central Level:** A National Committee on Dam Safety has been constituted to prevent dam failure related disasters and maintain standards of dam safety and evolve dam safety policies and recommend necessary regulations.
      - ● The Central Government has also established the **National Dam Safety Authority** as a **regulatory body** for ensuring the nationwide implementation of dam safety policies and standards.
  - ○ **At the State level**: The Act provides for the constitution of the **State Committee on Dam Safety (SCDS)** and the establishment of the **State Dam Safety Organization (SDSO).**
  - ○ All the **28 States and 3 Union Territories** having specified dams have constituted/established the SCDSs/SDSOs.
- ● **Dam Safety Unit:** Dam owners are now required to have a **dedicated Dam Safety Unit,** prepare Emergency Action Plans, and conduct Comprehensive Safety Evaluations at regular intervals.
  - ○ **Chairman of the Central Water Commission (CWC)** would head dam safety protocols at the national level.
- ● <u>**Dam Rehabilitation and Improvement Project (DRIP) Scheme**</u>
  - ● Under the **World Bank funded** DRIP Phase-I scheme, which was implemented between 2012 to 2021, 223 existing dams located in 7 States were comprehensively audited and rehabilitated.
  - ● After completion of DRIP Phase-I Scheme, Government of India has taken up DRIP Phase-II & III scheme envisaging rehabilitation and safety improvement of 736 dams located in 19 States.
  - ● Phase II of DRIP has been declared effective by the World Bank in 2021, and is being co-financed by the World Bank and the Asian Infrastructure and Investment Bank.

What more needs to be done ?
- ● There is a need to classify dams based on hazard risk,
- ● Designing and constructing dams that adhere to safety margins,
- ● Conduct regular inspections
- ● Create emergency action plans,
- ● Institute emergency flood warning systems, and undertake safety reviews and period risk assessment studies.

Source: TH

Major action to curb film piracy

Syllabus: GS2/Governance

Context:
- The Union Ministry of Information and Broadcasting (I&B) has taken strong steps to check film piracy in the country.

What is Piracy :
- **It** refers to the unauthorised duplication of copyrighted content that is then sold at substantially lower prices in the 'grey' market. The ease of access to technology has meant that over the years, piracy has become more rampant

Concerns related to film piracy
- With the proliferation of the internet and almost everyone interested in watching filmic content for free.
- With the proliferation of the internet and almost everyone interested to watch filmic content for free, there has been a boom in piracy.
- Piracy is a big menace not only for the film industry, but for the entire world.
- Film piracy is estimated to cause the entertainment industry losses to the tune of Rs 20,000 crore every year.
- As of now **there is no institutional mechanism** to directly take action on pirated filmic content **except legal action under Indian Penal Code, 1860 and Copyright Act, 1957**.

Measures
- The Ministry of Information and Broadcasting has taken strong steps to check film piracy in the country.
  - the Parliament passed the Cinematograph (Amendment) Act, 1952 during this year's Monsoon Session
    - The Cinematograph Act, 1952 needed to be amended due to **several reasons** — *to harmonise the law with various executive orders, Supreme Court judgements, and other legislations; to improve the procedure for licensing films for public exhibition by the CBFC; and to expand the scope of categorisations for certification.*
  - Earlier, the **Cinematograph (Amendment) Bill, 2019** was introduced proposing changes related **only to film piracy**.
    - This Bill was **referred to the Standing Committee on Information Technology**, which recommended to include age-based categories of certification and the removal of redundant provisions.
  - The Ministry **introduced the Cinematograph (Amendment) Bill 2023** after consultations with industry stakeholders in **2022**.

institutional mechanism of Nodal Officers

- The Ministry of Information and Broadcasting has established an institutional mechanism of **Nodal Officers** to receive complaints against piracy and direct the intermediaries to take down pirated content on digital platforms.
- The government has empowered officials of the Central Board of Film Certification (CBFC) to issue directions to social media intermediaries to remove illegally appropriated film content.
- It was made possible only after the **amendment of the Cinematograph Act, 1952** through the **Cinematograph (Amendment) Bill 2023.**
- The move is seen as a response to the film industry's demand to set up an institutional mechanism to keep a check on piracy and curb film piracy.
- The online platforms will be under obligation to take down the pirated content within 48 hours following an order from officials designated as nodal officers.

Conclusion and Way Ahead

- India should leave no stone unturned in making it a soft power, make good films and the government will take strict action against those indulging in film piracy

Source: PIB

National security strategy

Syllabus: GS3/Internal Security

News

- The National Security Council Secretariat (NSCS) is putting in place a comprehensive National Security Strategy in consultation with several Central ministries and departments.

Background

- The National Security Strategy (NSS) of India has not been defined since its Independence.
- In 2007, a draft National Security Strategy was prepared by the **Integrated Defence Staff**, but was not approved by the Cabinet Committee of Security.
- The Defence Planning Committee (DPC), a senior decision-making mechanism created in 2018 has several mandates including a task to prepare a draft National Security Strategy for India.
- In 2019, the Indian National Congress came out with a document **'India's National Security Strategy',** also called the **Hooda report.**

What is the National Security Strategy?

- A National Security Strategy document outlines the country's security objectives, the ways to be adopted to achieve these.
- Updated periodically, it defines traditional, non-traditional threats and opportunities while introducing accountability of agencies tasked with implementation of responsibilities.
- This is the first time that India will come out with a national security strategy. Countries such as the **US and UK** have published national security strategies which are updated periodically.

Need of National Security Strategy

- **Hostile neighborhood:** Threats posed by China and Pakistan along with rising geopolitical tensions have given way to uncertainties, hence it was felt that there was an urgent need to draft a national security strategy.
- **Non-traditional challenges:** India is also facing various non-traditional challenges and threats such as financial and economic security, food and energy security, information warfare, vulnerabilities in India's critical information infrastructure, and those associated with supply chains and environment.

Source:IE

Facts In News

ATL Marathon 2023-24

Syllabus :GS 2/Governance

In News

Atal Innovation Mission (AIM), NITI Aayog opened applications for 'ATL Marathon 2023-24'- a flagship innovation challenge organised this year in collaboration with the **Ministry of Education, YuWaah and UNICEF.**

About ATL Marathon

- It is a national-level innovation challenge for young innovators across India who can solve community problems of their choice, and develop innovative solutions in the form of working prototypes.
  - Amazon Web Services (AWS) is the hosting partner of this edition of ATL Marathon.
- The last edition of the Marathon witnessed 12000+ innovations from school students across India.
- **This year's ATL Marathon** is themed around "India's 75th Republic Day", with several problem statements on which student teams can build projects like Space, Agriculture, Inclusivity, Disaster management, Mobility, Health, Education & Skill Development.
- **ATL Marathon is open for all schools** across the country, independent of whether they are connected to an Atal Tinkering Lab or not.

Atal Innovation Mission (AIM)

- Atal Innovation Mission (AIM), NITI Aayog is Government of India's flagship initiative to promote a culture of innovation and entrepreneurship in the country and was set up in 2016.
- Towards this end AIM has taken a holistic approach to ensure creation of a problem-solving innovative mindset in schools and creating an ecosystem of entrepreneurship in universities, research institutions, private and MSME sector.

Do you know ?

- The mission of YuWaah Generation Unlimited is to to skill the world's 1.8 billion young people and connect them to opportunities for employment, entrepreneurship and social impact.

Source:PIB

Cement Sector in India

Syllabus :GS 3/Economy

In News

The Competition Commission of India (CCI) is launching a pan-India Market Study on the Cement sector.

About the sector

- Cement is a critical input in crucial sectors of the economy such as housing and infrastructure.
- The first cement company became operational in Porbandar, Gujarat with a capacity of 10,000 tons in 1914.
  - The Industry recorded an exponential growth with the introduction of partial decontrol in 1982 culminating in total decontrol in 1989 and delicensing in 1991.
- **Data Analysis : China produces the most cement globally** by a large margin, at an estimated 2.1 billion metric tons in 2022. China's cement production share equates to over half of the world's cement.
  - **India was the world's second-largest cement producer**, with production amounting to a distant 370 million metric tons in 2022. Vietnam was the third-largest global producer that year, at 120 million metric tons.

Importance

- The cement industry contributes to environmental cleanliness by consuming hazardous wastes like Fly Ash (around 30 Mnt) from Thermal Power Plants and the entire 8 Mnt of granulated Slag produced by Steel manufacturing units and also using alternate fuels and raw materials using advanced and environment friendly technologies.

Initiatives

- The **Perform Achieve and Trade (PAT) scheme** of the Ministry of Power, Government of India has so far covered 126 numbers of cement plants in India targeting to reduce specific energy consumption since its inception from 2012 onwards.

Source:PIB

Zika virus outbreak

Syllabus :GS 2/Health

In News

Five Karnataka villages come under surveillance after Zika virus outbreak

About Zika virus
- It is primarily **transmitted by infected mosquitoes of the Aedes (Stegomyia)** genus, mainly Aedes aegypti, in **tropical and subtropical regions**.
  - Aedes mosquitoes usually bite during the day. These mosquitoes also transmit dengue, chikungunya and urban yellow fever.
- It is also transmitted from mother to fetus during pregnancy, as well as through sexual contact, transfusion of blood and blood products, and possibly through organ transplantation.
- It was **first identified in Uganda in 1947** in a Rhesus macaque monkey followed by evidence of infection and disease in humans in other African countries in the 1950s.
  - From the 1960s to 1980s, sporadic human infections were detected across Africa and Asia.
- **Symptoms:** Most people infected with Zika virus do not develop symptoms.
  - Among those who do, they typically start 3–14 days after infection, are generally mild including rash, fever, conjunctivitis, muscle and joint pain, malaise and headache, and usually last for 2–7 days.
- **Diagnosis:** A diagnosis of Zika virus infection can only be confirmed by laboratory tests of blood or other body fluids, and it must be differentiated from cross-reactive related flaviviruses such as dengue virus, to which the patient may have been exposed or previously vaccinated.
- **Treatment :** There is no specific treatment available for Zika virus infection or disease.
  - People with symptoms such as rash, fever or joint pain should get plenty of rest, drink fluids, and treat symptoms with antipyretics and/or analgesics.
- **WHO's step :** In February 2016, WHO declared Zika-related microcephaly a Public Health Emergency of International Concern (PHEIC), and the causal link between the Zika virus and congenital malformations was confirmed. WHO declared the end of the PHEIC in November of the same year.

Source:TH

Indian Navy Sailing Championship (INSC),

Syllabus :GS 3/Defense

In News

The Indian Navy's most awaited and the largest sailing regatta, the Indian Navy Sailing Championship (INSC), is set to take place at Mumbai from 05 Nov to 09 Nov 23.

About INSC

- **INSC is an annual** event conducted under the aegis of **Indian Naval Sailing Association (INSA)** based at Naval Headquarters to encourage participation of naval personnel in competitive sailing.
- This edition of INSC will see the participation of teams from the three Naval Commands comprising officers, cadets and sailors (including Agniveers).
- The **Indian Naval Watermanship Training Centre (INWTC),** Mumbai, one of the finest sailing facilities in the country, is geared up to host more than 100 pan-Navy participants who will test their sailing skills in five different classes of boats in three different formats of racing.

Source:PIB

Technology for converting CO2 to CO

Syllabus: GS3 /Science and Technology

News

- A new energy-efficient carbon dioxide capture (CO2) technology that converts carbon dioxide to carbon monoxide (CO) under **electro catalytic conditions** has been developed by IIT Bombay's National Centre of Excellence in Carbon Capture and Utilisation (NCoE-CCU).

Need of the Technology

- **Carbon monoxide (CO)** is a widely used chemical in the industry especially in the form of **Syngas.** In the steel industry, CO is an essential ingredient for converting iron ores to metallic iron in blast furnaces.
- **CO is generated** by partial oxidation of coke/coal, which leads to a significant production of CO2 as an end product of this process.
- If this emitted CO2 can be captured and converted into CO, it can lead to a circular economy in this process while reducing the carbon footprint and associated costs.
- It will also support India's goal for **net-zero emissions by 2070.**

Conversion from CO2 to CO

- **The Currently used process** for CO2 to CO conversion occurs at elevated temperatures (**400-750 °C),** and the presence of the equivalent amount of **Hydrogen (H2)** is necessary for driving this reaction forward making it an energy-intensive process.
- **The newly developed process** requires only minimal energy as it can proceed under ambient temperatures **(25-40 °C)** in the presence of water.
  - The energy required for the electrocatalysis reaction can be harnessed directly from a renewable energy source (in the form of a solar panel or

windmill), which ensures a carbon-neutral operating scenario for a facile CO_2 to CO conversion.

Source: PIB

FIND Festival '23

Syllabus: GS2/Education
In News
- Union Minister of State for Skill Development & Entrepreneurship and Electronics & IT, is set to attend the FIND Festival '23.

About
- The FIND Festival is an initiative by Ekya Schools, aimed at fostering a transformative dialogue in K-12 (kindergarten to 12th grade) education.
  - **Ekya is a community of children, educators**, and **parents** where everyone learns together.
- The festival is set to bring together a diverse group of stakeholders, including educators, students, school leaders, and policymakers, to collaborate and share insights that will shape the future of education.
- The event will introduce Ekya Nava, a new model in K-12 education focusing on innovation, creativity, and design thinking.

Source: PIB

Chanakya Defence Dialogue

Syllabus: GS3/Defence
Context:
- The first edition of Chanakya Defence Dialogue organised by the Indian Army in partnership with Centre for Land Warfare Studies (CLAWS)

The Chanakya Defence Dialogue (2023)
- It is the ***first event of its kind*** being organised by the Indian Army, set to navigate the wide canvas of **regional and global security,** and **planned to be a regular event in the years ahead.**
- It served as a vital platform for the exchange of insights and discussions on critical security matters, further enhancing the nation's strategic awareness.

Significance:
- It envisages to carry out **a comprehensive analysis of security challenges in South Asia and the Indo-Pacific,** with the focus on crafting a roadmap for **collaborative security measures** in the region **to fortify India's position**

as a ***ready, resurgent, and relevant stakeholder*** among the nations of this region.
- The Dialogue focus on:
  - *Neighbourhood First;*
  - *Indo Pacific Regions;*
  - *Collaborative Partnerships for Security;*
  - *Emerging Technologies Impact on Defence and Security;*
  - *Indian Defence Industry as Enabler for Collaborative Capacity Building, and*
  - *Comprehensive Deterrence.*

About Chanakya:
- **Vishnugupta (*aka* Kautilya and or Chanakya)** is the scholar and chief minister who **'destroyed the power of the Nandas and placed Chandragupta Maurya** on the throne of Magadha' in the 4th century BC.
  - The empire that Ashoka ruled was founded by his grandfather, Chandragupta Maurya, more than 2300 years ago, who was supported by Chanakya.
- He authored ***Chanakya Niti and Arthashastra***.
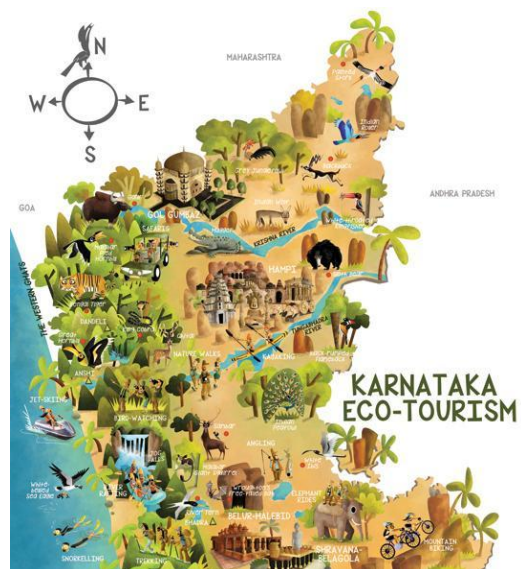

Source: PIB

50th Karnataka Rajyotsava celebrations

Syllabus: Current Events

In News

- Karnataka celebrates 50 years of renaming Mysore State as Karnataka.

Karnataka

- Karnataka, previously known as the State of Mysore, was granted statehood on November 1, 1956.
- The renaming of the state from Mysore to Karnataka occurred on November 1, 1973. Late D. Devaraj Urs, 1st CM of Karnataka State played a crucial role in renaming the state.
- **Geography:** diverse geography, including coastal regions along the Arabian Sea, the Western Ghats, and the Deccan Plateau. It offers a wide range of landscapes and climate zones.
- **Major Rivers**: include the Krishna, Cauvery, Tungabhadra, and Sharavathi.
- **Wildlife**: The state is home to several wildlife sanctuaries and national parks
  - Bandipur National Park, Nagarhole National Park,

Bannerghatta National Park, Bhadra Wildlife Sanctuary, etc.
- **Historical and Cultural significance:**
  - o **Yakshagana:** a traditional dance drama belongs to Karantaka
  - o **Carnatic music:** has deep roots in the state.
  - o **Hampi:** Capital of the Vijayanagara Empire (UNESCO World Heritage Site) is located in Karnataka.

Source: TH

GST Amnesty Scheme

Syllabus: GS3/Economy

In News

- The finance ministry has introduced an amnesty scheme for filing appeals against Goods and Services Tax (GST) demand orders.

About

- **Scheme Duration:** The scheme is open from now until January 31, 2024.
- **Eligibility**: The scheme is available for entities that were unable to submit their appeals against GST demand orders issued by the tax officer on or before March 31, 2023.
- **Amnesty Purpose:** The scheme provides relief to those who missed the deadline for filing appeals due to various reasons, including administrative errors or unforeseen circumstances.
- **Pre-deposit Requirement:** Entities willing to avail of the scheme will have to pre-deposit 12.5 percent of the tax demand, compared to the previous requirement of 10 percent.
- **GST Council Approval:** The amnesty scheme for filing appeals was approved by the GST Council in its meeting on October 7.
- **Benefits:**
  - o This initiative aims to facilitate taxpayers who missed the appeal deadline, promote enhanced compliance, and reduce the burden on the legal system by streamlining the appeal process.
  - o The scheme is expected to help taxpayers resolve their disputes more efficiently and cooperate with tax authorities in clarifying tax matters.
  - o It offers a more lenient approach to appeal filing and aims to reduce the need for prolonged litigation.

Source: ET

Graded Response Action Plan (GRAP)

Syllabus: GS3/ Environment

In News

- Measures under Stage 4 of the Graded Response Action Plan (GRAP) have been invoked in Delhi NCR.

About GRAP

- GRAP is a set of emergency measures designed to prevent further deterioration of air quality when it reaches a certain threshold in the Delhi-NCR region.
- It was approved by the Supreme Court of India in 2016 and officially notified in 2017.
- GRAP was developed through consultations between the Environment Pollution (Prevention and Control) Authority, state government representatives, and experts.
- The primary goal of GRAP is to address and mitigate air pollution in the Delhi-NCR region, especially during periods of severe pollution, with a focus on public health and environmental protection

GRAP Stages: There are four stages:

- Stage 1: Activated when AQI is in the 'poor' category (201-300).
- Stage 2: Activated when AQI is in the 'very poor' category (301-400).
- Stage 3: Activated when AQI is in the 'severe' category (401-450).
- Stage 4: Activated when AQI is in the 'severe +' category (above 450).

The stages and restrictions

Good 0-50 | Satisfactory 51-100 | Moderate 101-200
Poor 201-300 | Very Poor 300-400 | Severe 401-500

STAGE I (AQI 201-300)
Agencies to strictly enforce orders by NGT, SC on keeping vehicles older than 10 years (for diesel) and 15 years (petrol) off roads.

STAGE II (AQI 301-400)
- Measures to curb air pollution at hot spots
- Diesel generators of more than 19KW cannot be used unless they run on dual fuel or have emission control devices.

STAGE III (AQI 401-450)
- BS-III petrol, BS-IV diesel private cars to be banned in NCR. Last year, the rule was optional for state governments
- Schools will likely be closed for children up to Class 5.

STAGE IV (AQI OVER 450)
- Light commercial vehicles registered outside Delhi will be restricted except those that are EVs/CNG/ BS-VI diesels. Vehicles carrying essentials or providing essential services to be allowed
- Educational institutions will likely be closed. Non-emergency commercial activities and odd-even vehicle policy may be rolled out.

Current Situation:

- The air quality in the Delhi-NCR region recently deteriorated to the 'severe' category, leading to the activation of Stage 4 of GRAP.
- Measures under Stage 4 include a ban on diesel four-wheelers that are not BS-VI compliant, entry restrictions on trucks, and the closure of certain industries.
- Additionally, all Delhi schools will be closed for students up to class five, and outdoor activities will be discontinued.

Changes in GRAP This Year:

- This year, GRAP measures are pre-emptively introduced based on forecasts to prevent further air quality deterioration.
- It relies on air quality and meteorological forecasts from organizations like the Indian Institute of Tropical Meteorology and the India Meteorological Department.

- The enforcement is based on the Air Quality Index (AQI), which considers various pollutants, not just PM2.5 and PM10.

Source: IE

World Food India 2023

Syllabus: GS3/ Agriculture

In News

- The second edition of 'World Food India 2023' was inaugurated by Prime Minister Shri Narendra Modi in New Delhi.

Key points from the event

- **Objective**:
  o The primary objective of the event is to present India as the 'food basket of the world' and celebrate 2023 as the International Year of Millets.
  o The event aims to promote India as a global hub for the food processing industry and showcase the country's diverse food culture and heritage.
  o It also underscores the importance of technology and sustainability in the food sector.
- **Seed Capital Assistance**: Seed Capital Assistance to over one lakh Self Help Group (SHG) members has been provided during the event.
- **Food Security:** PM emphasized the challenge of food security in the changing world and the significance of World Food India 2023 in addressing this challenge.
- **Diversity and Heritage:** PM stressed India's rich food diversity and cultural heritage and the importance of sustainable food habits linked with Ayurveda.
- **MoUs and Investments:** On the first day of the event, 16 Memoranda of Understanding (MoUs) were signed between the Ministry of Food Processing Industries (MoFPI) and various industry entities, with a total investment of around Rs 17,990 crore.

Source: PIB