

INTERNATIONAL RELATION**9th BRICS Science & Technology Ministers Meeting**

Recently, India's Minister for Science & Technology chaired the 9th BRICS Science & Technology Ministers meeting. Earlier, the Prime Minister chaired the annual summit of the BRICS which was held virtually.

2021 is an important landmark year in BRICS Cooperation as the grouping completed 15 years.

Key Points**Highlights of Address:**

- **Global Innovation Index:** The member countries should work towards a rightful place for BRICS (Brazil, Russia, India, China, and South Africa) in the Global Innovation Index.
 1. It can be achieved through further strengthening the cooperation in the field of Science, Technology and Innovation (STI).
 2. BRICS Ranking in Global Innovation Index, 2021: India (46), China (12), Russia (45), Brazil (57) and South Africa (61).
- **Cooperation:** BRICS countries must come together and innovate cost effective, affordable, accessible, sustainable and scalable scientific solutions, as they face many similar and unique challenges.

BRICS Innovation Cooperation Action Plan (2021-24)

- **About:**
 1. BRICS member countries have agreed to a Science, Technology and Innovation (STI)-led BRICS Innovation Cooperation Action Plan (2021-24) proposed by India during the 12th meeting of the grouping's science & technology steering committee.
 2. It will facilitate sharing of experiences of each other's innovation ecosystem and networking of innovators and entrepreneurs.
- **Thematic areas included:**
 1. Transient Astronomical Events and Deep Survey Science, Antimicrobial Resistance (AMR), Big Data Analytics, Innovation and Entrepreneurship on Photonic, Nanophotonics, and Metamaterials for Addressing Biomedicine, Agriculture, Food Industry, Energy Harvesting Issues etc.
 2. In accordance with the plan BRICS Ministers and their representatives endorsed the BRICS Science, Technology and Innovation Calendar of Activities 2020-2021.

BRICS

- BRICS is an acronym for the grouping of the world's leading emerging economies, namely Brazil, Russia, India, China, and South Africa.
 1. In 2001, the British Economist Jim O'Neill coined the term BRIC to describe the four emerging economies of Brazil, Russia, India, and China.
 2. The grouping was formalised during the first meeting of BRIC Foreign Ministers in 2006.
 3. South Africa was invited to join BRIC in December 2010, after which the group adopted the acronym BRICS.
- It comprises 42% of the world's population, has 23% of the global Gross Domestic Product (GDP) and around 17% of the world trade.
- The chairmanship of the forum is rotated annually among the members, in accordance with the acronym B-R-I-C-S.
- The BRICS Leaders' Summit is convened annually.
- During the Sixth BRICS Summit in Fortaleza (2014) the leaders signed the Agreement establishing the New Development Bank (NDB). They also signed the BRICS Contingent Reserve Arrangement.

SCIENCE & TECHNOLOGY**Omicron: New Corona Variant**

The World Health Organization has declared the recently-discovered B.1.1.529 strain of Covid-19, to be a variant of concern. The virus was first detected in Southern Africa and it is renamed Omicron.

Key Points**About:**

- Omicron is placed in the most-troubling category of Covid-19 variants, along with the globally-dominant Delta plus its weaker rivals Alpha, Beta and Gamma.

- This variant has a large number of mutations. Some of them are cause for serious concern because they may allow the new variant to evade immunity obtained from a past infection or via a vaccine.
 1. However, there are no reliable estimates of just how much more transmissible the Omicron variant is compared to previous strains of the virus
 2. Apart from South Africa, Omicron has been detected in Israel in people coming from Malawi, Botswana, Belgium and Hong Kong.

Nomenclature:

- The WHO has decided to name the variants after the letters of the Greek alphabet, to avoid the countries that first detected them being stigmatised.
- WHO selected the name Omicron, instead of Nu or Xi, the two letters between Mu and Omicron. This is because:
 1. Xi happens to be a popular surname in China (avoiding ‘causing offence to any cultural, social, national, regional, professional or ethnic groups).
 2. Nu could have been confused with the word ‘new’.

Situation In India:

- Seroprevalence studies indicate that a large proportion of the population has already been exposed to the virus providing some level of protection to subsequent infections.
 1. Further, the immunisation campaign has gained momentum.
 2. Approximately 44% of Indian adults have been fully vaccinated and 82% have received at least one dose.
- Scientists believe that prior infection followed by one or two doses of vaccination may have a larger protective effect than two doses of the vaccination alone.

Variants of Concern

- A variant for which there is evidence of an increase in transmissibility, more severe disease (e.g., increased hospitalizations or deaths), significant reduction in neutralization by antibodies generated during previous infection or vaccination, reduced effectiveness of treatments or vaccines, or diagnostic detection failures.
- The new Variants could kick off new wave(s) of epidemic transmission.
- The WHO currently lists 5 variants of concern:
 1. **Omicron** (B.1.1.529), identified in southern Africa in November 2021
 2. **Delta** (B.1.617.2), which emerged in India in late 2020 and spread around the world
 3. **Gamma** (P.1), which emerged in Brazil in late 2020
 4. **Beta** (B.1.351), which emerged in South Africa in early 2020
 5. **Alpha** (B.1.1.7), which merged in Britain in late 2020.

Variants of Interest

- A variant with specific genetic markers that have been associated with changes to receptor binding, reduced neutralization by antibodies generated against previous infection or vaccination, reduced efficacy of treatments, potential diagnostic impact, or predicted increase in transmissibility or disease severity.

There are currently two:

1. Mu (B.1.621), which emerged in Colombia in early 2021
2. Lambda (C.37), which emerged in Peru in late 2020

Mutation, Variant and Strain

1. When a virus replicates it doesn't always manage to produce an exact copy of itself.
2. This means that, over time, the virus may start to differ slightly in terms of its genetic sequence.
3. Any changes to the viral genetic sequence during this process is known as a Mutation.
4. Viruses with new mutations are sometimes called Variants. Variants can differ by one or multiple mutations.
5. When a new variant has different functional properties to the original virus and becomes established in a population, it is sometimes referred to as a New Strain of the virus. All strains are variants, but not all variants are strains.

Way Forward

- Scientific approach to Travel Ban: India should take a risk-based and scientific approach when considering travel curbs in light of the variant.

- **Reinforcing Public Health Measures:** New emerging variants signify public health measures are still important. For example, distancing, mask-wearing, avoiding crowded spaces, and good ventilation.
- **Lesson Learnt:** An important lesson the pandemic has taught us in India is the critical importance of biomedical research and capacity building – for saving lives and economic growth.

ENVIRONMENT

SAFAR

Recently, SAFAR (System of Air Quality and Weather Forecast and Research) has studied post Diwali Air Pollution in the four Indian Cities (Delhi, Ahmedabad, Mumbai and Pune). Air pollution during the Diwali period in 2021 was higher compared to 2020 in the three metropolitan cities of Delhi, Ahmedabad and Mumbai, whereas Pune was the only city among the four which had lower pollution levels.

High PM in Delhi during the Diwali period is due to high local emissions, combined with the biomass burning effect.

Key Point

About:

- SAFAR is a national initiative introduced by the Ministry of Earth Sciences (MoES) to measure the air quality of a metropolitan city, by measuring the overall pollution level and the location-specific air quality of the city.
- It is an integral part of India's first Air Quality Early Warning System operational in Delhi.
- It monitors all weather parameters like temperature, rainfall, humidity, wind speed, and wind direction, UV radiation, and solar radiation.
- The World Meteorological Organization has recognized SAFAR as a prototype activity on the basis of the high-quality control and standards maintained in its implementation.

Pollutants Monitored:

- PM2.5, PM10, Ozone, Carbon Monoxide (CO), Nitrogen Oxides (NOx), Sulfur Dioxide (SO2), Benzene, Toluene, Xylene, and Mercury.

Developed By:

- The system is indigenously developed by the Indian Institute of Tropical Meteorology (IITM), Pune and is operationalized by the India Meteorological Department (IMD). IITM has a giant true color LED (Light Emitting Diode) display that gives out a real-time Air Quality Index (AQI) on a 24x7 basis with color-coding (along with 72 hours advance forecast).

Objectives:

- To increase awareness among the general public regarding the air quality in their city so that appropriate mitigation measures and systematic action can be taken up.
- To help the policy-makers develop mitigation strategies keeping in mind the nation's economic development.

Significance:

- It will benefit cost savings to several other sectors like agriculture, aviation, infrastructure, disaster management, tourism, etc. which directly or indirectly gets affected by air quality and weather.

Air Quality Index (AQI)

- It is an index for reporting daily air quality. It displays the changes in air pollution in the atmosphere.
- It focuses on health effects one might experience within a few hours or days after breathing polluted air.
- AQI keeps a tab on 8 major air pollutants in the atmosphere namely, Ground-level ozone, PM10, PM2.5, Carbon monoxide, Sulfur dioxide, Nitrogen dioxide, Ammonia, Lead,

Ground-level ozone and airborne particles are the two pollutants that pose the greatest threat to human health in India.

PRELIMS FACT

Project SWADESH

Recently, the Department of Biotechnology (DBT)-National Brain Research Centre (DBT-NBRC) has developed Project SWADESH, for managing Neurological disorders. NBRC is the only institute in India dedicated to Neuroscience Research and Education.

Key Points

About:

- It is the first large-scale multimodal neuroimaging database designed specifically for the Indian population with big-data architecture and analytics for various disease categories under one platform.
- It proposes a big-data architecture that manages and analyzes six modules, namely neurodegenerative [AD, Mild Cognitive Impairment (MCI), and Parkinson's disease (PD)], neuropsychiatric (schizophrenia and bipolar disorder), neurodevelopmental (autism and epilepsy), Covid-19-related disorders, other disorders, and healthy subjects.
- It is supported by JAVA-based workflow environments and Python. Backed by a dedicated storage system, it provides quality control, data analysis reports, and data backups. Python and Java are both computer programming languages.

Significance:

- It will be useful in conducting multimodal brain studies to understand Alzheimer's disease and several neurological disorders.
- Its development will facilitate the integration of multi-site data and collaborative research worldwide.

Neurological Disorders

Meaning:

- Neurological disorders are diseases of the central and peripheral nervous system. In other words, the brain, spinal cord, cranial nerves, peripheral nerves, nerve roots, autonomic nervous system, neuromuscular junction, and muscles.

Types:

- Non-Communicable Neurological Disorders: Stroke, Headache disorders, Epilepsy, Cerebral palsy, Alzheimer's disease and other dementias, Brain and central nervous system cancer, Parkinson's disease, Multiple sclerosis, Motor neuron diseases, and other neurological disorders.
- Communicable Neurological Disorders: Encephalitis, Meningitis, Tetanus.

Injury-related Neurological Disorders:

- Traumatic brain injuries, Spinal cord injuries.

Indian Scenario

- Neurological disorders contribute 10% of the total disease burden in India.
- There is a growing burden of non-communicable neurological disorders in the country, which is mainly attributable to the ageing of the population.
- The contribution of non-communicable neurological disorders to total DALYs (disability adjusted life-years) in India doubled from 4% in 1990 to 8.2% in 2019, and the contribution of injury-related neurological disorders increased from 0.2% to 0.6%. Burden, high blood pressure, air pollution, dietary risks, high fasting plasma glucose, and high body-mass index are the leading contributors for Neurological Disorders in India.

DAILY ANSWER WRITING PRACTICE

Qns. Discuss the MPLAD scheme for the creation of durable community assets and its features for effective development of each constituency. (150 words)

Ans:

Introduction

The Members of Parliament Local Area Development Scheme (MPLADS) was launched in December, 1993, to provide a mechanism for the Members of Parliament to recommend works of developmental nature for creation of durable community assets and for provision of basic facilities including community infrastructure, based on locally felt needs. The MPLADS is a Central Sector Scheme which is fully funded by Government of India. The annual MPLADS fund entitlement per MP constituency is Rs. 5 crore.

Citing economic recovery, the Union Cabinet has restored the Members of Parliament Local Area Development Scheme (MPLADS) that was suspended in April 2020 subsuming the funds for the

scheme in the consolidated fund of India. However, the MPs will get ₹2 crore instead of the annual approved ₹5 crore.

Body**Objectives:**

- To enable MPs to recommend works of developmental nature with emphasis on the creation of durable community assets based on the locally felt needs to be taken up in their Constituencies.
- Lok Sabha Members can recommend works within their constituencies and elected Members of Rajya Sabha can recommend works within the State they are elected from.
- Nominated Members of both the Rajya Sabha and Lok Sabha can recommend works anywhere in the country.
- To create durable assets of national priorities viz. drinking water, primary education, public health, sanitation and roads, etc.

Features for effective development of each constituency

- An MP knows the developmental and welfare issues of his constituency better than anyone else.
- The MPLADS has enabled MPs to play a leadership role in the developmental process of his constituency and sort out its day-to-day problems.
- It is one of the ways government funds are transferred to the grassroots with precision.
- Local MPs can channel fund for specific needs of local communities, whether it is to tar a road, install streetlights or water pumps, or bolster local school and healthcare infrastructure.
- Besides capacity building in the local economy, these works also offer jobs to local people.
- The pork barrel policy of State and Union Governments often leads to skewed development and regional imbalance. The ruling party channels public money to particular constituencies based on political considerations, at the expense of broader public interests. The elected opposition legislators of those constituencies fall victim to this pork barrel politics.
- MPLADS has been an antidote to the above favouritism. The Scheme provided opposition MPs some chance to cater to the developmental needs of their constituency.
- Of the MPLADS corpus, 15% has been earmarked for the development of Scheduled Castes and 5% for the Scheduled Tribes. Around ₹20 lakh of the MPLADS fund per annum has been allotted for the welfare of differently abled people.

Challenges in MPLADS

- Since its inception in 1993, MPLADS has attracted increasing scholarly and media attention focusing on the various ways in which its politicised nature leads to the underutilisation of funds or the misallocation of funds over space and time.
- MPs in the run-up to an election allocate significantly more funds than at other times to projects that eventually end up incomplete.
- The Comptroller and Auditor-General of India (CAG) has time and again flagged instances of financial mismanagement and artificial inflation of amounts spent.
- Within MPLADS, the automatic 'rollover' of unspent MPLADS funds from one year to the next enables politicians to concentrate their project recommendations before anticipated election dates, which is associated with higher project failure rates.
- MPLADS is not governed by any statutory law and is subject to the whims and fancies of the government of the day.
- MPLADS encroaches upon the domain of local self-governing institutions and thereby violates Part IX and IX-A of the Constitution.
- The scheme faces conflict with Doctrine of Separation of Powers as MPs are involved in executive functions.

Way forward

- There is a need to eliminate the automatic rollover provision.
- In addition, providing information to voters on the efforts of incumbents, or lack thereof, with regard to the progress of specific public works projects could incentivize newly elected MPs to follow through on the proposals made by their predecessors.
- Political parties could also help by encouraging competent incumbents to stand for election again in the same constituency which could have beneficial effects on any future discretionary spending programmes.

- More broadly, policies that minimise discretion and that require more stringent and standardised criteria for the approval of project proposals could also reduce the negative effect of democratic elections on public service provision.
- This could also reduce negative effects of demands by the public for greater accountability and transparency from lawmakers to design programmes to benefit the public instead of supporting the interests of incumbent politicians.

DAILY QUIZ

Q1. Consider the following statements:

1. The National Register of Citizens (NRC) is an official record of those who are legal Indian citizens.
2. It includes demographic information about all those individuals who qualify as citizens of India as per the Citizenship Act, 1955.

Which of the statements given above is/are correct?

- a. 1 only
- b. 2 only
- c. **Both 1 and 2**
- d. Neither 1 and 2

Q2. With reference to World Bank's STARS project, consider the following statements:

1. It is a centrally sponsored scheme that seeks to strengthen the school education system.
2. It comes under the Department of School Education and Literacy, Ministry of Education (MoE).

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

Q3. With reference to Unique Land Parcel Identification Number (ULPIN) scheme, consider the following statements:

1. Under the scheme, a 16-digit identification number will be issued to every plot of land in the country.
2. The ULPIN has been included in Digital India Land Records Modernisation Programme (DILRMP).

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

Q4. Addu Atoll is situated in the

- a. Pacific Ocean
- b. Atlantic Ocean
- c. **Indian Ocean**
- d. Arctic Ocean

Q5. Which one of the following is an artificial lake?

- a. **Kodaikanal (Tamil Nadu)**
- b. Kolleru (Andhra Pradesh)
- c. Nainital (Uttarakhand)
- d. Renuka (Himachal Pradesh)