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GS 2 : Polity, Governance, International Relations

1. The Afghan Endgame and the US

As the May 1 deadline for pulling out all American troops from Afghanistan nears, US President Joe Biden faces some difficult decisions.

Key tasks for the US before they exit

- The U.S. could abide by the promise made in the U.S.-Taliban agreement signed in February 2020 to withdraw the last of the around 2,500 American Marines stationed in Afghanistan.
- However, Mr Biden has said it would be tough given the levels of violence there.
- The US could negotiate with the Taliban for an extension of the agreement, offering other incentives like the release of more prisoners and the delisting of sanctioned Taliban terrorists.
- The other option is to scrap the 2020 agreement and back the Ashraf Ghani government to continue towards a negotiated settlement, even as US troops remain in Afghanistan to stabilize the security situation

What is the US likely to do?

- The US exit plan is still underway and that no decision on the length of stay or troop numbers have been made to this point, cleared the US Secy of Defence.
- No U.S. troops have been targeted by Taliban militants in the past year, but violence against Afghan civilians, particularly women, journalists, students and activists has gone up manifold despite the peace agreement.
- More than 3,000 civilians were killed in 2020.
- The US has shown some impatience with the Ghani government as well, believing that it is dragging its feet on intra-Afghan negotiations that began last year in Doha but have stalled for the moment.

Plans for Ashraf Ghani

- A US plan proposes that Mr Ghani step up negotiations with the Taliban for “power-sharing”, discuss principles of future governance and step aside eventually for a “more inclusive” or interim government. The

- The tone of the letter seems to make it clear that the US is not in favour of completely scrapping the 2020 agreement.
- Therefore, it is most likely to pursue the option of negotiating for an extension of the agreement, according to experts, as it builds other dialogue platforms.

What is President Ghani's plan?

- Ghani has proposed his own peace plan.
- It would involve a full ceasefire, inviting the Taliban to participate in early elections in Afghanistan, and then for Mr Ghani to hand over power to the elected government.
- He also said no regional talks could be successful if they did not include India, which is a development partner and a stakeholder.

Where does India stand?

- India's position has been to back an "Afghan-owned, Afghan-led, Afghan-controlled" peace process, backing the elected government in Kabul, and it has not yet held talks with the Taliban directly.
- As a result, its option remains to stand with the Ghani government and support the constitution that guarantees a democratic process and rights of women and minorities, over any plans the Taliban might have if they come to power.
- At the same time, India has not foreclosed on the option of talking to the Taliban if it does join the government in Afghanistan.
- India too has made it clear that it seeks to be an integral part of the process, as the outcomes will have a deep impact on India's security matrix as well.

2. Unique Land Parcel Identification Number (ULPIN) Scheme

The Centre plans to roll out the Unique Land Parcel Identification Number (ULPIN) Scheme.

ULPIN Scheme

- The ULPIN scheme has been launched in ten States this year and will be rolled out across the country by March 2022, the Department of Land Resources told the Standing Committee on Rural Development.
- It would allot a 14-digit identification number to every plot of land in the country within a year's time.
- It will subsequently integrate its land records database with revenue court records and bank records, as well as Aadhaar numbers on a voluntary basis.

- The scheme will enhance the service deliveries to the citizen of the country and will also function as inputs to the schemes of the other sectors like Agriculture, Finance Disaster Management etc.

“Aadhaar number” for Land

- Officials described it as “the Aadhaar for land”, a number that would uniquely identify every surveyed parcel of land and prevent land fraud, especially in the hinterlands of rural India, where land records are outdated and often disputed.
- The identification will be based on the longitude and latitude coordinates of the land parcel and is dependent on detailed surveys and geo-referenced cadastral maps, according to a presentation the Department made to States in September 2020.
- This is the next step in the Digital India Land Records Modernization Programme (DILRMP), which began in 2008 and has been extended several times as its scope grew.

A cost-effective approach

- Linking Aadhaar with land records through ULPIN would cost ₹3 per record while seeding and authentication of landowner Aadhaar data would cost ₹5 each.
- It added that the integration of the Aadhaar numbers with the land record database would be done on a voluntary basis.

3. India-South Korea: Friendship Park

Why in News

Recently, Indian Defence Minister and his South Korean counterpart inaugurated the **India-Korea Friendship Park** in a ceremony at the Delhi Cantonment.

- Later on both the ministers concluded a **bilateral meeting** and explored different areas of cooperation.
- Earlier in February 2019, the **Prime Minister of India visited South Korea** (Republic of Korea).

Key Points

- **About:**

- Spread across a green area of six acres, the park includes an **entrance gate made in Korean style**, a jogging track, well landscaped garden and an **amphitheatre**.
- Has an **imposing handshake** artifact standing tall at the entrance bearing flags of India and South Korea.
- Has **statue of General KS Thimayya**, a celebrated soldier who led the Indian contingent in the Korean War as Chairman of **Neutral Nations Repatriation Commission (NNRC)** in Korea headed by India.
 - **Neutral Nations Repatriation Commission:**
 - One of the follow-up actions to the Armistice Agreement in the Korean War was the establishment of a **NNRC** which **was to decide on the fate of over 20,000 prisoners of war from both sides**.
 - **India was chosen as the Chair of the NNRC**, with Poland and Czechoslovakia representing the Communist bloc and Sweden and Switzerland representing the Western world.
- The **five pillars** raised in the backdrop of General Thimayya's statue are embossed with details of operations carried out by **60 Parachute Field Ambulance** (deployed by India) during the Korean war where they had treated about 1,95,000 cases, and performed about 2,300 field surgeries.
 - One pillar also encompasses **Nobel Laureate Gurudev Rabindranath Tagore's** narration of **Korea as "The Lamp of the East"** which was published in Korean daily "Dong-A-ilbo" in 1929.
- **Developed By:**
 - The park has been developed in joint consultation with the Ministry of Defence, Government of India, Indian Army, Delhi Cantonment Board, Embassy of Korea and Korean War Veterans Association of India.
- **Significance:**
 - The park's significance is not only because of it being a **symbol of strong India-South Korea friendly relations**, but also as a **monument to India's contributions** as part of 21 countries which participated in **Korean war 1950-53**, under the aegis of the **United Nations**.
- **Issues Discussed at the Meet:**
 - Discussed **maritime cooperation** as part of the **Indo-Pacific** strategy and also cooperation in the defense industry and future technologies.
 - The two countries have a logistics agreement helping the Indian navy while operating in the Indo-Pacific region.

India-South Korea Relations

- **Political:**

- During the Korean War (1950- 53), **India played a major role in a cease-fire agreement** signed between both the warring sides (North Korea and South Korea) and the ceasefire was declared on 27th July 1953.
- In **May 2015**, the bilateral relationship was **upgraded to 'special strategic partnership'**.
- **India has a major role to play in South Korea's Southern Policy** under which Korea is looking at expanding relations beyond its immediate region.
- Similarly, South Korea is a major player in India's **Act East Policy** under which India aims to promote economic cooperation, cultural ties and develop strategic relationships with countries in the Asia-Pacific.
- **Economic:**
 - The current bilateral trade between India and South Korea is at USD 21 billion and the **target that has been set is USD 50 billion by the year 2030.**
 - India and South Korea have signed the **Comprehensive Economic Partnership Agreement (CEPA), 2010** which has facilitated the growth of trade relations.
 - To facilitate investment from Korea, India has launched a "**Korea Plus**" facilitation cell under '**Invest India**' to guide, assist and handhold investors.
 - India's share in Korea's global trade was **1.72% in 2020** and India's contribution in Korea's global imports increased from **0.78% in 2001 to 1.05% in 2020.**
- **Cultural:**
 - **Korean Buddhist Monk Hyecho** or Hong Jiao visited India from 723 to 729 AD and wrote the travelogue "**Pilgrimage to the five kingdoms of India**" which gives a vivid account of Indian culture, politics & society.
 - Nobel Laureate Rabindranath Tagore had composed a short but evocative poem - '**Lamp of the East**' - in 1929 about Korea's glorious past and its promising bright future.
 - To further enhance cultural exchanges between India and Korea, **Indian Cultural Centres (ICC)** were established in **Seoul in April 2011** and in **Busan in December 2013.**
- **Multilateral Platforms Shared by Both the Countries:**
 - **United Nations.**
 - **World Trade Organization.**
 - **ASEAN Plus.**
 - **East Asia Summit (EAS).**
 - **G-20.**

Way Forward

- India and South Korea relations have made great strides in recent years and have become truly **multidimensional**, spurred by a **significant convergence of interests, mutual goodwill and high level exchanges**.
- However, there is massive **scope to expand ties between India and South Korea and make it a unique relationship in Asia**. What is needed is political will and new imagination in diverse areas such as cultural relations, building on people-to-people contacts, harnessing democracy and liberal values, and cementing civilisational connections.

4. Japan to Fund Projects in India

Why in News

Japan has finalised loans and a grant totalling around 233 billion yen for several key infrastructure projects in India, including for a project in the Andaman and Nicobar islands.

Key Points

- **Grant for Andaman and Nicobar Islands (ANI):**
 - **About the Grant:**
 - A grant of 4.01 billion yen for a project for the **improvement of power supply in strategically located Andaman and Nicobar Islands**.
 - The grant would be used to procure **15MWh batteries** as well as **power system stabilisers** to allow better utilisation of **solar power generated in South Andaman**.
 - This grant is **Japan's first ever Official Development Assistance (ODA)** to a project in the A&N islands.
 - **About Official Development Assistance (ODA):**
 - ODA is defined as **government aid designed to promote the economic development and welfare of developing countries**.
 - Loans and credits for military purposes are excluded.
 - **India has been the top recipient of the Japanese government's financial aid** under the ODA.
- **Japan's Aid for Other Projects:**
 - For **Delhi Metro's** fourth phase.
 - For Metro lines under **Namma Metro's** second phase in **Bengaluru**.
 - For **crop diversification** in **Himachal Pradesh**.
 - For **mitigating fluorosis** in **Rajasthan's Jhunjhunu and Barmer districts**.
- **Other Recent Developments Between India and Japan:**

- Recently, the **first summit of the leaders' of the QUAD** (Quadrilateral Framework) was held virtually.
 - QUAD is a four-nation alliance of India, Australia, USA and Japan.
- In 2020, India and Japan signed a **logistics agreement** that will allow armed forces of both sides to coordinate closely in services and supplies. The agreement is known as the **Acquisition and Cross-Servicing Agreement (ACSA)**.
- In 2019, India and Japan held the first-ever ministerial-level **2+2 dialogue**. This dialogue involved the Defence and Foreign Ministers on both sides and is seen as an endorsement of the special strategic partnership between **India and Japan**.
- A **“India-Japan Digital Partnership (I-JDP)”** was launched during the visit of the Prime Minister of India to Japan in October 2018, furthering existing areas of cooperation as well as new initiatives within the scope of cooperation in S&T/ICT, focusing more on “Digital ICT Technologies”.
- In 2014, India and Japan upgraded their relationship to '**Special Strategic and Global Partnership**'.
- The **India-Japan Comprehensive Economic Partnership Agreement (CEPA)** that came into force in August 2011 covers trade in goods, services, movement of natural persons, investments, Intellectual Property Rights, custom procedures and other trade related issues.
- India and Japan defence forces organize a series of bilateral exercises namely, **JIMEX** (naval), **SHINYUU Maitri** (Air Force), and **Dharma Guardian** (Army). Both countries also participate in **Malabar exercise** (Naval Exercise) with the USA.

Significance of Andaman and Nicobar Islands

- The Andaman and Nicobar Islands (ANI) are located at the **junction of the Bay of Bengal and the Andaman Sea**.
- It is a **group of 572 islands**, which straddles some of the busiest trade routes in the world.
- ANI spans 450 nautical miles in a roughly north-south configuration **adjacent to the western entrance to the Malacca Strait**, which is itself a major Indian Ocean chokepoint.
- Geopolitically, the **ANI connects South Asia with South-East Asia**. While the northernmost point of the archipelago is only 22 nautical miles from Myanmar, the southernmost point, Indira Point, is a mere 90 nautical miles from Indonesia.

- The islands **dominate the Bay of Bengal, the Six Degree and the Ten Degree Channels** that more than sixty thousand commercial vessels traverse each year.
- The Andaman and Nicobar Islands **constitute just 0.2% of India's landmass but provide near 30% of its Exclusive Economic Zone.**
- Due to the presence of ANI in the Bay of Bengal, **India has a better position to play a vital role in Indo-Pacific.**
- Recently, the Prime Minister has declared that the ANI **will be developed as a "maritime and startup hub".**

Fluorosis

- Fluorosis is a cosmetic condition that affects the teeth.
- It's caused by overexposure to fluoride during the first eight years of life. This is the time when most permanent teeth are being formed.
- After the teeth come in, the teeth of those affected by fluorosis may appear mildly discolored.

Way Forward

- India needs sophisticated technology from Japan, so more collaboration and cooperation can prove beneficial to both nations.
- There is a huge potential with respect to **Make in India**. Joint ventures could be created by merging Japanese digital technology with Indian raw materials and labour.
- Close cooperation is the best measure **to combat China's growing role in Asia and Indo-Pacific**, in physical as well as digital space.

5. Shifting Health to the Concurrent List

Why in News

Fifteenth Finance Commission Chairman N.K. Singh said that **health should be shifted to the Concurrent list** under the Constitution. Presently, 'Health' is under the State List.

- He also pitched for a **Developmental Finance Institution (DFI)** dedicated to healthcare investments.

Key Points

- **Arguments for Shifting 'Health' to the Concurrent List:**

- **Centre with Greater Flexibility:** Bringing health into the Concurrent list would give the Centre **greater flexibility to enact regulatory changes** and **reinforce the obligation** of all stakeholders towards providing better healthcare.
- **Rationalisation and Streamlining of the Multiple Acts:** There is a multiplicity of Acts, rules and regulations, and mushrooming institutions, yet the regulation of the sector is far from adequate.
 - With the health in the concurrent list, uniformity of acts can be ensured.
- **Centre Expertise to States:** The Central government is also **technically better equipped** to come up with the health schemes because it has the assistance of **multiple research bodies and departments** dedicated to the management of public health.
 - States on the other hand do not have the technical expertise to independently design comprehensive public health policies.
- **Arguments Against Shifting 'Health' to the Concurrent List:**
 - **Right to Health:** It is neither necessary nor sufficient to guarantee the provision of accessible, affordable and adequate healthcare for all.
 - Besides, the **right to health** is, arguably, already provided for via the Constitution's **Article 21** that guarantees protection of life and liberty.
 - **Challenges Federal Structure:** Shifting ever more subjects from the states to the Centre would erode India's federal nature and impair efficiency by abandoning the **principle of subsidiarity**, which holds that any task should be left to the level of government best placed to do it.
 - **Trust Cooperative Federalism:** The centre must direct its energies to designing policy that would help states deliver on their constitutional mandate to provide adequate, accessible and affordable healthcare for all.
 - **More Burden With Centre:** The Centre has onerous responsibilities of its own, for which it struggles to find resources. Taking more functions would help neither the states nor the Centre discharge their constitutional obligations.
 - **Encourage States:** The Centre **devolves 41%** of the taxes it collects to the states. The Centre should encourage the states to do what they are supposed to do, while the Centre optimises use of its own resources, focusing on its obligations.
 - Health being a state subject does not preclude the Centre offering constructive support.
 - The NITI Aayog's Health Index, financial assistance through the insurance-based programme Ayushman Bharat, improved regulatory environment for healthcare providers and medical

education are examples of such support that can nudge states in the right direction.

- **Developmental Finance Institution (DFI) for Health Care:**
 - A health sector-specific DFI is much needed on the same lines as that of DFIs for other sectors like **National Bank for Agriculture and Rural Development -NABARD (agriculture), National Housing Bank- NHB (Housing) and Tourism Finance Corporation of India Ltd. - TFCI (tourism).**
 - Such a DFI would **increase health care access in tier-2 and tier-3 cities** and also come with **technical assistance** that ensures proper usage of funds.
- **Other Suggestions by N.K. Singh:**
 - Increase the **government spending on health to 2.5% of GDP by 2025.**
 - **Primary healthcare** should be a fundamental commitment of all States in particular and should be allocated **at least two-thirds of health spending.**
 - To have a **standardisation of health care codes for both the Centre and states.**
 - Forming an **All India Medical and Health Service.**
 - Given the inter-state disparity in the availability of medical doctors, it is essential to constitute the Service as is envisaged under Section 2A of the **All-India Services Act, 1951.**
 - Emphasised the importance of **universalising healthcare insurance**, as a large section of the society still remain uncovered.
- **Need for Universalisation of Healthcare Insurance:**
 - **Existing Insurance Coverage:** The **Pradhan Mantri Jan Arogya Yojana (PMJAY)** covers the **bottom two income quintiles** and **commercial insurance largely covers top-income quintiles**, thereby creating a **'missing middle'** class in between.
 - **Missing Middle:** This refers to people in the middle two income quintiles, where the population is not rich enough to afford commercial insurance and not poor enough to be covered under government-sponsored health insurance schemes.

Concurrent List

- The subject-wise distribution of legislative power is given in the three lists of the **Seventh Schedule** of the Constitution:
 - **List-I- the Union List**
 - **List-II- the State List**
 - **List-III- the Concurrent List**
- Both, the **Parliament and state legislature can make laws** with respect to any of the matters enumerated in the **Concurrent List.**

- It includes the matters on which **uniformity of legislation throughout** the country is desirable but not essential.
- However State legislation operates to the extent that it is not in conflict with the Central legislation. At times, the very presence of a central legislation can negate the state's ability to legislate.
- This list has **at present 52 subjects** (originally 47) like criminal law and procedure, civil procedure, marriage and divorce, population control and family planning, electricity, labour welfare, economic and social planning, drugs, newspapers, books and printing press, and others.
- The **42nd Amendment Act of 1976** transferred **five subjects to Concurrent List from State List** i.e education, forests, weights and measures, protection of wild animals and birds, and administration of justice; constitution and organisation of all courts except the Supreme Court and the High Courts.

Development Finance Institution

- These are specialized institutions set up primarily to provide development/ Project finance especially in developing countries.
- These DFIs are usually majority-owned by national governments.
- The source of **capital of these banks** is national or international development funds.
- This ensures their creditworthiness and their ability to provide project finance at a very competitive rate.

GS 3 : Economy, Science and Technology, Environment

6. Large Hadron Collider beauty Experiment

The LHCb experiment at CERN (European Council for Nuclear Research) has announced the results of their latest analysis of data.

LHCb Experiment: An easy explanation

- LHCb is an experiment set up to explore what happened after the Big Bang that allowed the matter to survive and build the Universe we inhabit today.
- Fourteen billion years ago, the Universe began with a bang.
- Crammed within an infinitely small space, energy coalesced to form equal quantities of matter and antimatter.
- But as the Universe cooled and expanded, its composition changed.

- Just one second after the Big Bang, antimatter had all but disappeared, leaving the matter to form everything that we see around us – from the stars and galaxies to the Earth and all life that it supports.

What is the new finding?

- CERN scientists are excited enough to reveal that if the anomaly they had detected was confirmed.
- Because, if confirmed, it would require a new physical process, such as the existence of new fundamental particles or interactions.

What is this excitement all about?

It is necessary to delve into the world of elementary particles to understand this.

(1) Particle zoo

Until now it is believed that the electron, muon and tauon and their antiparticles, though they differ in mass, behave similarly in particle interactions.

- Broadly speaking, elementary particles are classified into the particles called baryons – which include protons, neutrons and their antiparticles the antiprotons etc.
- The “middle mass” particles, roughly speaking, are called the mesons and they include members such as the K and B particles.
- We then have the leptons, which include the electron and its cousins the muon and tau particles and the anti-particles.
- At a still smaller scale, there are tiny particles called quarks and gluons.
- There are six flavours of quarks: up, down, truth, beauty, charm and strange. They too have antiquarks associated with them.

In this particle zoo, while the baryons are made up of combinations of three quarks, the mesons contain two quarks, more accurately a quark and antiquark pair, and the leptons are truly fundamental and are thought to be indivisible.

By interactions here, is meant the following:

- If a huge particle accelerator such as the LHC were to accelerate beams of hadrons (such as protons) to very high speeds, a fraction of that of light, and then cause them to collide.
- Basically, smash through the repulsive nuclear forces and shatter them, the hadrons would break up into constituents which would recombine to form short-lived particles, which would decay into stabler states.

- Roughly speaking, during this process, they are imaged in a huge multistorey detector and the number of specific processes and particles are counted.

(3) Lepton universality principle

- One such process that was measured was the decay of a meson B (which contained the beauty quark) into K-meson (which contains the strange quark) and a muon-antimuon pair, and this was compared with the decay of B into K and an electron-antielectron pair.
- The expectation is that the ratio of the strengths of these two sets of interactions would be just one.
- This is because the muons are not essentially different from the electrons as per the Standard Model, the presently accepted theoretical model of all elementary particle interactions.
- This is called the lepton universality principle.

THE INDIAN EXPRESS

GS 2 : Polity, Governance, International Relations

1. Election Commission's new rule for polling agents

The Election Commission's recent decision to change the rules for appointing polling agents has sparked off a debate in West Bengal.

Who is a Polling Agent?

- A polling agent is a person appointed as a representative of a political party as it is not possible for a candidate to be physically present at every polling booth on the day of the elections.
- Therefore, the Election Commission allows a candidate to appoint a polling agent who keeps an eye on the voting process.

What is his/her role?

- As per the EC's rules, a polling agent should be familiar with the rules and procedures to conduct elections using EVMs and VVPATs, and with the working of these machines.

- Towards this end, a polling agent attends the demonstrations arranged by the Returning Officer, where the functioning and operation of these machines are explained.

How were they appointed earlier?

- As per the earlier practice, polling agents had to be voters of the same polling stations or at least the neighbouring polling stations of the booth where she has been posted at.

What does the new rule say?

- The ECI, revising the rule, has allowed a party to nominate a polling agent for any booth within the assembly segment where the person is an electorate of.
- So, any voter from within an Assembly constituency can be a polling agent of any booth within that constituency.

Issues with the rule

- The political parties are opposing the change in rules, calling it “arbitrary, motivated and biased”.
- They have also written to the Election Commission seeking withdrawal of the order.

What is the EC’s stand?

- The poll body has defended the change in a rule saying that the new norms have been formulated so that every political party gets to appoint polling agents.
- It is difficult to convince people to sit at the booths amid the Covid-19 pandemic.

GS 3 :Economy, Science and Technology,Environment

2. Suez Shows Civilization Is More Vulnerable Than We Think

Points of vulnerability

- Suez Canal was blocked this week by a container ship named Ever Given when a gust of wind moved the ship out of the course and grounded it.
- Egypt has expanded parts of the canal to enable two-way traffic and accommodate larger carriers.

- The Ever Given ship went off course and got stuck in a part of the waterway that's still narrow.
- But it's also a reminder that even an advanced civilization like ours **has points of acute vulnerability**.

Avoiding single points of failures

- Systems designers strive to avoid these single points of failure, so that **transport, energy and communication networks** are able to withstand attacks or unexpected calamities.
- **Technological advances and globalization** were also supposed to make us less susceptible to this type of problem.
- The internet, for example, was conceived as a decentralized system that's pretty difficult to break, as was Bitcoin.
- But global infrastructure, defined broadly, **still has a surprising number of pinch points**.
- These can be difficult to remedy, as **creating back-up options is expensive** and counteracts economies of scale.
- In some cases, the problem is even getting worse:
- Industries are becoming **more concentrated due to corporate takeovers**.
- Big chunks of our lives are now mediated by a just handful of technology companies.
- The governments are now more cognizant of **the political and economic power** held by those who control choke points.

How canal can disrupt the global trade

- The Panama Canal, the Suez Canal and the Strait of Hormuz are places where container ships and oil tankers are forced to navigate narrow passages.
- The alternative is a long detour or more expensive air freight.
- For decades these waterways have been recognized as areas of **huge strategic importance** and as being susceptible to military or terror attacks.
- Various back-up routes have been mooted but most haven't materialized.

Vulnerabilities in economic sphere

- In seeking to rid itself of one pinch point – pipelines that traverse Ukraine provides gas to Europe – Germany has created another: the twin **Nord Stream gas pipelines** that connect Russia and Germany under the Baltic Sea.
- The U.S. worries these will weaken eastern Europe and increase Germany's dependence on Russia.
- In the realm of finance, trillions of dollars of financial instruments are tied to the London interbank offered rate.

- This rate was easy to manipulate until they were exposed in the years following the 2008 financial crisis.
- Libor is now being replaced.
- Similarly, Europe has long relied on the **Swift payments system** and the U.S. dollar, but that **dependence came into question** in 2018 as it disagreed with the U.S. over Iran sanctions.
- In technology, people have warned for years that the U.S. needs a back-up for the Global Positioning System.
- The system can be spoofed or otherwise disrupted.
- **Semiconductors** are where the clearest pinch points are emerging.
- A **global computer chip shortage** during Covid has forced auto manufacturers to tear up production plans.
- Very few companies are able to produce the most advanced chips, due to the technical challenges and vast cost of constructing foundries.
- The most important of these, **Taiwan Semiconductor Manufacturing Co.**, is based on an island that's under constant threat of invasion by Beijing.
- **ASML Holding NV of the Netherlands** has a monopoly on the machines needed to fabricate the best chips.
- Now China's inability to buy the most cutting edge gear from ASML is holding back its own semiconductor ambitions.

Way forward

- None of these choke-point problems are easy to resolve.
- Not only are there geopolitical ambitions at work here but there are also **usually trade-offs between building greater resilience and efficiency.**
- But because **redundancy offers protection** and is therefore a **public good**, there's an argument that governments should play a role in providing it.
- **Antitrust polices** can be used to challenge monopolies and foster more competition.

Conclusion

Having a back-up is a good idea. We learn that when the roof falls in, or when a ship called the Ever Given snarls up the Suez Canal.

3. Need for technological solutions to use water for agriculture more sustainably

Water availability and usage in India

- As per the **Central Water Commission's reassessment of water availability**, India receives a mean annual precipitation of about **3,880 billion cubic meters (BCM)** but utilises only **699 BCM (18 percent) of this**; the rest is lost to evaporation and other factors.

- The demand for water is likely to be **843 BCM in 2025 and 1,180 BCM by 2050.**
- As per the UN's report on **Sustainable Development Goal-6 (SDG-6)** on "**Clean water and sanitation for all by 2030**", India achieved only 56.6 per cent of the target by 2019.
- Further, as per the **Niti Aayog's Composite Water Management Index (2019)**, 75 per cent households in India do not have access to drinking water on their premises.
- India ranks **120th amongst 122 countries in the water quality index.**
- India is identified as a **water-stressed country** with its per capita water availability **declining from 5,178 cubic metre (m³)/year in 1951 to 1,544 m³ in 2011** – this is likely to go down further to 1,140 cubic metre by 2050.

How free or highly subsidised electricity skews water use pattern

- Despite decades of large public and private investments in irrigation, only about **half of India's gross cropped area:198 million hectares is irrigated.**
- **Groundwater contributes about 64 per cent**, canals 23 per cent, tanks 2 per cent and other sources 11 per cent to irrigation.
- This results primarily from **incentive policy of free or highly subsidised power**, particularly in the country's north-west, the site of the **erstwhile Green Revolution.**
- **Overexploitation of groundwater** has made this region amongst the three **highest water risk hotspots.**
- Overall, **about 1,592 blocks in 256 districts** in India are either critical or overexploited.

Need to focus on rice and sugarcane

- Agriculture uses about **78 per cent of fresh water resources.**
- As per a NABARD-ICRIER study on **Water Productivity Mapping**, these crops alone consume **almost 60 per cent of India's irrigation water.**
- We need a paradigm shift to increase **land productivity measured as tonnes per hectare (t/ha)**, and to maximise **applied irrigation productivity** measured as kilogrammes, or **Rs, per cubic metre of water (kg/m³).**
- Figure 1 shows **applied irrigation water productivity against land productivity** for rice and sugarcane in important growing states.
- Note that while **Punjab scores high on land productivity of rice**, it is at the bottom with respect to **applied irrigation water productivity.**
- In the case of sugarcane, **irrigation water productivity** in Andhra Pradesh, Karnataka, Maharashtra and Tamil Nadu is only 1/3rd of that in Bihar and UP (Figure 2).

- There is, thus, a need to **realign cropping patterns based** on per unit of applied irrigation water productivity.

Use of technology

- There are technologies to produce the **same output** of rice and sugarcane with **almost half the irrigation water**.
- Jain Irrigation, for instance, has set up drip irrigation pilots for paddy and sugarcane.
- The results of these pilots indicate while **it takes 3,065 litres of water to produce 1 kg of paddy grain** (yield level 7.75 t/ha) under traditional flood irrigation, under drip, it can be reduced to **just 842 litres**.
- The **benefit cost ratio of drip** with fertigation in case of sugarcane in Karnataka is observed to be 2.64.
- An extension to this is the **“Family Drip System”** innovated by Israel-based – **Netafim**.
- The company has also launched its largest demonstration project in Asia at Ramthal, Karnataka.
- Technologies like **Direct Seeded Rice (DSR)** and **System of Rice Intensification (SRI)** can also save 25-30 per cent of water compared to traditional flood irrigation.

Need for right pricing policies

- Technological solutions cannot make much headway **unless pricing policies of agri-inputs are put on the right track** and farmers are incentivised for saving water.
- The Punjab government, along with the World Bank and J-PAL, has started some pilots with an innovative policy of **“Paani Bachao Paise Kamao”** to encourage **rational use of water among farmers**.

Conclusion

Overall, it seems it is time to switch from the highly subsidised price policy of water/power (and even fertilisers) to direct income support on a per hectare basis, and investment policies that help with newer technologies and innovations.

4. Lessons from past for the new financial institutions

Establishment of Development Finance Institution

- As promised in the Budget, the Lok Sabha recently passed The **National Bank for Financing Infrastructure and Development (NBFID) Bill, 2021**.
- The Bill seeks to establish a development finance institution (DFI) to fund infrastructure.

Providing finance to NBFID

- The government will initially own **100%** of the proposed NBFID's ₹20,000-crore share capital.
- The government's stake will **be reduced later to 26%**.
- The government will also support NBFID in raising **cheap, long-term finance**.
- Apart from the initial share capital, the government will also provide a ₹5,000-crore grant at the end of its first financial year, presumably to defray initial costs.
- The government has also committed to **guarantee** NBFID's **borrowings and bond issuances** in the domestic and overseas markets.
- In addition, the government will underwrite **NBFID's foreign exchange hedging costs**.

Concerns and lessons from the past

- Studying the performance of **IL&FS Ltd and IDFC Ltd**, two infrastructure financing institutions, set up in the public sector, will be instructive.
- IL&FS had **borrowed short-term loans to finance long-term infrastructure assets**.
- Sustaining this became difficult when a **slowing economy** and political **interference forced infrastructure borrowers to stop repaying loans**.
- Also, it had **grown unwieldy, was mismanaged, and escaped scrutiny for too long** by handing out plum postings to select bureaucrats.
- Similarly, 1996 budget speech announced the setting up of **IDFC to address the lack of long-term infrastructure financing**.
- In 2004, interference by the bureaucrats to tackle slow growth of loan led to the resignation of several senior executives in IDFC.
- IDFC, created originally to finance infrastructure projects, has since then **wound down its project finance book**.
- 2021-22 Budget speech also mentioned the creation of another institution that will acquire the **banking sector's stressed assets**.
- On the similar lines, Industrial Reconstruction Corporation of India was create in 1971.
- Mandated with nursing sick and weak companies, it collapsed under this onerous burden.
- The institution **was eventually shut down in 2012**.

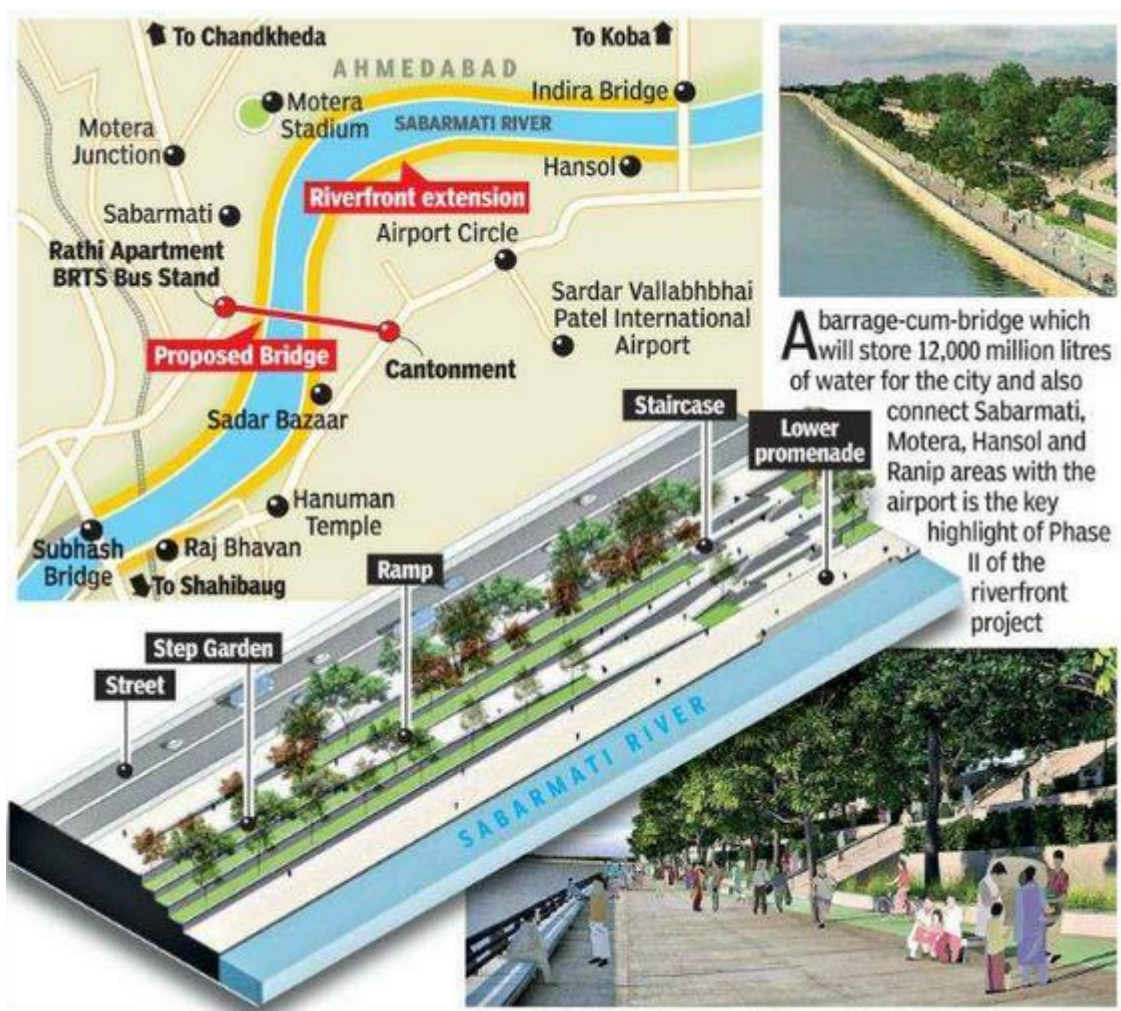
Conclusion

The short lesson is this: Fix the distorted demand side before increasing supply. Any number of institutions can be launched, but cannot be expected to work miracles in a corroded system.

5. Sabarmati Riverfront Development Project

The Ahmedabad Municipal Corporation, in its draft budget for 2021-22, has set aside Rs 1050 crore for the Sabarmati River Front Development phase 2, work on which is to begin soon.

Sabarmati Riverfront Development Project



- The SRDP is an environmental improvement, social uplift and urban rejuvenation project that will renew Ahmedabad.
- The project is being developed by the Sabarmati Riverfront Development Corporation Ltd. (SRFDCL), a company wholly owned by the Ahmedabad Municipal Corporation.

- The project will reclaim approximately 200 hectares of land from the riverbed.
- To reclaim the land, protect low lying developments from floods, and prevent erosion of the river banks, retaining walls have been built on both sides of the river.
- Since Sabarmati is a seasonal river, water is channelled into the river from the Narmada canal, which intersects the river upstream from Ahmedabad and is retained in the river using the Vasna Barrage which is located downstream.

Significance of the project

- The reclaimed land will make Ahmadabad's riverfront, a public asset.
- The project will provide Ahmedabad with 11.5 km long pedestrian promenades at the water's edge along both the banks of the river.
- In addition, many new public facilities will be built on the reclaimed land: cultural centres, museums, sports facilities, trade fair grounds and open-air markets.
- A small portion of the reclaimed land will be sold for private commercial and residential developments.
- The project has won Prime Minister's National Award for Excellence in Urban Planning and Design in the year of 2003.

6. What is the 2008 Lehman Crisis?

The fire sale of about \$20 billion of Archegos assets, comprising Chinese and US stocks, has sent jitters in the global financial markets, raising worries that the event could be a possible "Lehman moment".

What is the Lehman Crisis?

- The bankruptcy of Lehman Brothers on September 15, 2008, was the climax of the subprime mortgage crisis.
- After the financial services firm was notified of a pending credit downgrade due to its heavy position in subprime mortgages, the Federal Reserve summoned several banks to negotiate to finance for its reorganization.
- These discussions failed, and Lehman filed a petition that remains the largest bankruptcy filing in US history, involving more than US\$600 billion in assets.

What defines the moment?

- It signalled a limit to the government's ability to manage the crisis and prompted a general financial panic.

- Money market mutual funds, a key source of credit, saw mass withdrawal demands to avoid losses, and the interbank lending market tightened, threatening banks with imminent failure.
- The government and the Federal Reserve system responded with several emergency measures to contain the panic.

Other terminologies:

Margin Call

- Typically, a margin call occurs when the value of an investor's margin account falls below the broker's required amount during a market correction or sell-off.
- As the margin account contains securities bought with borrowed money, a margin call occurs when lenders demand that an investor deposit additional money or securities into the account so that it is brought up to the minimum value.
- A margin call is usually an indicator that the securities held in the margin account have decreased in value.
- When a margin call occurs, the investor must choose to either deposit more money in the account or sell some of the assets held in their account.
- If the investor fails to pay up the margin amount, the lender will resort to the sale of assets lying in the investor's account.

7. Exercise Desert Flag-VI

Exercise Desert Flag -VI has successfully culminated with the de-induction of the Indian contingent from the UAE.

Ex Desert Flag

- It is an annual multi-lateral large force employment exercise hosted by UAE.
- The sixth edition of the exercise was conducted at Air Force Base Al Dhafra, UAE.
- IAF participated in the exercise for the first time, fielding Su-30MKI fighter aircraft.
- Six countries; UAE, USA, France, Saudi Arabia and Bahrain apart from India participated with aerial assets. Jordan, Greece, Qatar, Egypt and South Korea participated as observer forces.

Objective of the exercise

- The aim for the participating crew and specialist observers was to expose them to operational environment in scenarios requiring multinational forces working together.
- A multinational exercise in UAE with friendly forces afforded a unique opportunity to gain valuable learning to all the participating forces.

8. New Red Algal Seaweed Species

Why in News

Recently, two **new red algal seaweed** species have been discovered along India's coastline.

- India has a **vast coastline** of over 7,500 kms.

Key Points

- **About:**
 - They grow in the **intertidal regions of the coast**, namely the area that is submerged during the high tide and exposed during low tides.
 - The genus **Hypnea** consists of **calcareous, erect, branched red seaweeds**.
 - There are 61 species of which **10 were reported in India**. With two new species, the **total number of species now would be 63**.
- **Location:**
 - **Hypnea indica** was discovered in Kanyakumari in Tamil Nadu, and Somnath Pathan and Sivrajpur in Gujarat.
 - **Hypnea bullata** was discovered from Kanyakumari and Diu island of Daman and Diu.
- **Significance:**
 - Hypnea variants of seaweeds can **fetch good monetary value if commercial-scale cultivation is taken up**. Hypnea contains Carrageenan, a biomolecule commonly used in the food industry.

Seaweeds

- **About:**
 - They are the **primitive, marine non-flowering marine algae without root, stem and leaves**, play a major role in marine ecosystems.
 - Large seaweeds form dense underwater forests known as **kelp forests**, which act as underwater nurseries for fish, snails and sea urchins.
 - Some species of seaweeds viz. *Gelidiella acerosa*, *Gracilaria edulis*, *Gracilaria crassa*, *Gracilaria verrucosa*, *Sargassum* spp. and *Turbinaria* spp.

- **Location:**
 - Seaweeds, **found mostly in the intertidal region**, in shallow and deep waters of the sea and also in estuaries and backwaters.
 - The southern **Gulf of Mannar's rocky intertidal and lower intertidal regions have rich populations** of several seaweed species.
- **Ecological Importance:**
 - **Bioindicator:**
 - When waste from agriculture, industries, aquaculture and households are let into the ocean, it causes nutrient imbalance leading to algal blooming, the sign of marine chemical damage. **Seaweeds absorb the excess nutrients** and balance out the ecosystem.
 - **Iron Sequestrator:**
 - These aquatic organisms heavily rely on iron for **photosynthesis**. When the quantity of this mineral exceeds healthy levels and becomes dangerous to marine life, seaweeds trap it and prevent damage. Similarly, most **heavy metals found in marine ecosystems are trapped and removed by seaweeds**.
 - **Oxygen and Nutrient Supplier:**
 - On their part, the **seaweeds derive nutrition through photosynthesis of sunlight and nutrients present in seawater**. They release oxygen through every part of their bodies. They also **supply organic nutrients to other marine life forms**.
- **Role in Climate Mitigation:**
 - Seaweed has a significant role in mitigating climate change. By afforesting 9% of the ocean with seaweed, it is possible to sequester 53 billion tons of carbon dioxide annually. Hence, there is a proposal termed as '**ocean afforestation**' for farming seaweed to remove carbon.
- **Other Utilities:**
 - They can be used as fertilizers and to **increase aquaculture production**.
 - When **livestock** is fed with seaweed, methane emission from cattle may be reduced substantially.
 - They can be buried in beach dunes to **combat beach erosion**.
 - It is **used as an ingredient in preparing toothpaste, cosmetics and paints**.
- **Related Initiative:**
 - Recently, the Technology Information, Forecasting and Assessment Council (TIFAC) has launched a **Seaweed Mission**.

Prelims practice Questions

1. Consider the following statements with respect to Pong Dam Wildlife Sanctuary:

1. It is located in Sikkim.
2. It is a Ramsar Site of International Importance.
3. Pong Dam is constructed across the Beas river.

Which of the given statement/s is/are correct?

- a. 1 and 2 only
- b. 2 and 3 only
- c. 1, 2 and 3
- d. None of the above

Answer: b

Explanation:

- The Pong Dam also called the Beas dam is an artificial embankment Dam constructed across the Beas river in Himachal Pradesh.
- It is a Ramsar Site of International Importance.

2. Cyberdome is an initiative of which state?

- a) Maharashtra
- b) Karnataka
- c) Tamil Nadu
- d) Kerala

Answer: D

Explanation:

About Cyberdome:

A Kerala Police Department initiative to prevent cybercrime and mitigate cybersecurity threats to the State`s critical information infrastructure.

Features:

- Here people skilled in software, ethical hackers and among others, volunteer to provide their services.
- The initiative is considered to be the first line of defence against online threats.

Successful Interventions:

- Forewarned the Kerala government of a possible ransomware attack.
- Identified a security vulnerability in the State's Integrated Financial Management System.
- Developed cyber-surveillance tools to detect and convict those responsible for industrial espionage.
- Track extremist organisations.
- Cyberdome partnered with the Interpol and the International Centre for Missing and Exploited Children (ICMC) to combat child porn

3. Consider the following statements:

1. H5N1 and H5N8 are categorized as Highly Pathogenic Avian Influenza (HPAI).
2. Humans are not immune from H5N1.
3. Avian influenza can infect birds only.

Which of the given statement/s is/are correct?

- a. 1 and 2 only
- b. 2 only
- c. 1 and 3 only
- d. 1 only

Answer: a

Explanation:

- H5N1 and H5N8 are categorized as Highly Pathogenic Avian Influenza (HPAI), which is of major concern to those keeping birds because it often results in disease and death of fowl and causes economic havoc.
- Humans are not immune from H5N1.

- Avian Influenza is a viral infection that can infect not only birds, but also humans and other animals.

4. School Education Quality Index (SEQI) is released by the which of the following Indian Institute?

- a) National Council for Teacher Education
- b) National Assessment and Accreditation Council
- c) University Grants Commission
- d) National Institution for Transforming India (NITI) Aayog

Answer: D

Explanation:

School Education Quality Index (SEQI):

- School Education Quality Index (SEQI) was developed by NITI Aayog to evaluate the performance of States and Union Territories (UTs) in the school education sector.
- Ministry of Human Resource and Development (MHRD), the World Bank and sector experts are the stakeholders in it.
- The index aims to bring an 'outcomes' focus to education policy by providing States and UTs with a platform to identify their strengths and weaknesses and undertake requisite course corrections or policy interventions.
- SEQI used 2016-17 as the reference year and 2015-16 as the base year.

Key Indicators:

- The index consists of 30 critical indicators that assess the delivery of quality education.
- The index was divided into two broad categories:
 - **Category 1: Outcomes**
 - o Learning outcomes
 - o Access outcomes
 - o Infrastructure and facilities for outcomes
 - o Equity outcomes

• **Category 2:** Governance processes aiding outcomes

Highlights of the SEQI Report:

• Kerala has emerged on top among 20 large states in terms of quality of school education, followed by Rajasthan and Karnataka, while the most-populous Uttar Pradesh was ranked at the bottom position during 2016-17, according to SEQI report.

• **Of the 20 Large States**, 10 perform better on the Outcomes category, with the most noticeable performance differences observed in the cases of Karnataka, Jharkhand and Andhra Pradesh. The 3 Large States with the most noticeable performance differences in the Governance Processes Aiding Outcomes are Odisha, Punjab and Haryana.

• **Of the eight Small States**, seven perform better on the Outcomes category, with the most noticeable performance differences observed in the cases of Manipur, Tripura and Goa. Sikkim is the only Small State that performs better on the Governance Processes Aiding Outcomes category.

5. Which of the following are a part of the Nilgiri Biosphere Reserve:

1. Mudumalai National Park
2. Bandipur National Park
3. Silent Valley National Park
4. Nagarhole National Park

Choose the correct option:

- a. 1 and 2 only
- b. 2 and 4 only
- c. 1, 2, 3 and 4
- d. 3 and 4 only

Answer: c

Explanation:

- The Nilgiri Biosphere Reserve is an International Biosphere Reserve in the Western Ghats and Nilgiri Hills ranges of South India.
- Mudumalai National Park, Bandipur National Park, Silent Valley National Park, Nagarhole National Park are all a part of the Nilgiri Biosphere Reserve.

6. Consider the following statements:

1. The sovereign bonds can be denominated in domestic currency only.
2. The sovereign bond is a tool for the central banks to control the money supply.

Which of the statements given above is/are *not* correct?

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

Answer: A

Explanation:

- The sovereign bonds can be denominated in both foreign and domestic currency.

Enrich Your Learning:

Sovereign Bonds

- A sovereign bond is a specific debt instrument issued by the government.
- They can be denominated in both foreign and domestic currency.
- Just like other bonds, these bonds, too, promise to pay the buyer a certain amount of interest for a stipulated number of years and repay the face value on maturity.
- They also have a rating associated with them which essentially speaks of their credit worthiness.
- To meet the expenditure government, prefer the route of raising money through sovereign bonds.
- The Yield of the sovereign bond is the interest rate that the government pays on issuing bonds.
- The central banks also control the supply of money within the economy by the use of these bonds.

Mains Practice Questions

1. Examine the concept of cooperative farming, in light of problem of land fragmentation, in promoting the socio-economic welfare of farmers. (250 words)

Approach

- Write in brief about the concept of cooperative farming.
- Just give current status and challenges of land fragmentation.
- Examine how cooperative farming can be beneficial and enumerate its challenges and the solutions.
- Emphasize on the future need of the land consolidation and cooperative farming.

2. How are integrated steel plants different from mini steel plants? What problems does the industry face? What recent developments have led to a rise in the production capacity? (250 words)

Approach

- Write what are the integrated and mini steel plants in the introduction part.
- Differentiate between the two.
- Enumerate the problems and recent developments taken to increase the productivity.