



Minimum Support Price

For Prelims: MSP and its Calculation, Kharif Season, Rabi Season

For Mains: Significance of MSP and Associated Issues

Why in News?

Recently, the Centre has approved the [Minimum Support Prices](#) (MSP) for the [Kharif season 2022-23](#), stating that the rates are at least 1.5 times of the weighed average cost of production.

- The rates for 14 Kharif crops have been increased, the hikes ranging from 4% to 8%.

What is Kharif Season?

- Crops are **sown from June to July** and **Harvesting is done in between September-October**.
- **Crops are:** Rice, maize, jowar, bajra, tur, moong, urad, cotton, jute, groundnut, soyabean etc.
- **States are:** Assam, West Bengal, coastal regions of Odisha, Andhra Pradesh, Telangana, Tamil Nadu, Kerala and Maharashtra.

What is MSP?

- **About:**
 - The MSP is the rate **at which the government purchases crops from farmers**, and is based on a calculation of at least one-and-a-half times the cost of production incurred by the farmers.
 - MSP is a **“minimum price” for any crop that the government considers as remunerative for farmers** and hence deserving of “support”.
- **Crops under MSP:**
 - The Commission for Agricultural Costs & Prices (CACP) recommends MSPs for [22 mandated crops and fair and remunerative price \(FRP\)](#) for sugarcane.
 - CACP is an attached office of the Ministry of Agriculture and Farmers Welfare.
 - The mandated crops include 14 crops of the kharif season, 6 [rabi crops](#) and 2 other commercial crops.
 - In addition, the MSPs of toria and de-husked coconut are fixed on the basis of the MSPs of rapeseed/mustard and copra, respectively.
- **Factors for Recommending the MSP:**
 - The CACP considers various factors while recommending the MSP for a commodity, including cost of cultivation.
 - It takes into account the supply and demand situation for the commodity, market price trends (domestic and global) and parity vis-à-vis other crops, and implications for consumers (inflation), environment (soil and water use) and terms of trade between agriculture and non-agriculture sectors.
- **Three Kinds of Production Cost:**

- The CACP projects three kinds of production cost for every crop, both at state and all-India average levels.
 - **'A2'**: Covers all paid-out costs directly incurred by the farmer in cash and kind on seeds, fertilisers, pesticides, hired labour, leased-in land, fuel, irrigation, etc.
 - **'A2+FL'**: Includes A2 plus an imputed value of unpaid family labour.
 - **'C2'**: It is a more comprehensive cost that factors in rentals and interest forgone on owned land and fixed capital assets, on top of A2+FL.
- CACP considers **both A2+FL and C2 costs** while recommending MSP.
 - CACP reckons only A2+FL cost for return.
 - However, C2 costs are used by CACP primarily as benchmark reference costs (opportunity costs) to see if the MSPs recommended by them at least cover these costs in some of the major producing States.
- The Cabinet Committee on Economic Affairs (CCEA) of the Union government takes a final decision on the level of MSPs and other recommendations made by CACP.

What is the Need of MSP?

- The twin droughts of 2014 and 2015 forced the farmers to suffer from declining commodity prices since 2014.
- The twin shocks of [demonetisation](#) and the [rollout of GST](#), crippled the rural economy, primarily the non-farm sector, but also agriculture.
- The slowdown in the economy after 2016-17 followed by the pandemic further ensured that the situation remains precarious for the majority of the farmers.
- Higher input prices for diesel, electricity and fertilisers have only contributed to the misery.

What are the Issues Associated with India's MSP Regime?

- **Limited Extent:** As against the official announcement of MSP for 23 crops, only two, rice and wheat, are procured as these are distributed in NFSA (National Food Security Act). For the rest, it is mostly ad-hoc and insignificant.
- **Ineffectively Implemented:** The Shanta Kumar Committee, in its report in 2015, stated that only 6% of the MSP could be received by the farmers, which directly means that 94% of the farmers in the country are deprived from the benefit of the MSP.
- **More of a Procurement Price:** The current MSP regime has no relation to prices in the domestic market. Its sole raison d'être is to fulfil the requirements of NFSA making it effectively a procurement price rather than an MSP.
- **Makes Agriculture Wheat and Paddy Dominated:** Skewed MSP dominated system of rice and wheat leads to overproduction of these crops and discourages farmers to grow other crops and horticulture products, which has higher demand and subsequently could lead to increase in farmers income.
- **Middlemen-Dependent:** The MSP-based procurement system is also dependent on middlemen, commission agents and APMC officials, which smaller farmers find difficult to get access to.

Way Forward

- A true MSP requires the **government to intervene whenever market prices fall below a predefined level**, primarily in case of excess production and oversupply or a price collapse due to international factors.
- MSP can also be **an incentive price for many of the crops which are desirable for nutritional security** such as coarse cereals, and also for pulses and edible oils for which India is dependent on imports.
- Wisdom lies in **investing more in animal husbandry (including fisheries) and fruits and vegetables**, which are more nutritious.
 - The best way to invest is to incentivise the private sector to build efficient value chains based on a cluster approach.
- Government must come up with **a suitable transition to agricultural pricing policy, whereby partial agricultural pricing should be state-supported** and partially market-driven.
 - One way to do this, could be a deficiency payments scheme along the lines of the

UPSC Civil Services Examination, Previous Year Question

Q. Consider the following statements: (2020)

1. In the case of all cereals, pulses and oil-seeds, the procurement at Minimum Support Price (MSP) is unlimited in any State/UT of India.
2. In the case of cereals and pulses, the MSP is fixed in any State/UT at a level to which the market price will never rise.

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

Ans: (d)

Exp:

- The Government of India announces Minimum Support Prices (MSP) for 22 major agricultural commodities each year in both the crop seasons after taking into account the recommendations of the Commission for Agricultural Costs and Prices (CACP).
- The overall procurement quantity should not normally exceed 25% of the actual production of the commodity for that particular year/season. Over and above the procurement limit of 25%, if any, prior approval of the Department of Agriculture (DAC) shall be required. **Hence, statement 1 is not correct.**
- The MSP is fixed by the Central government, based on the average of MSP proposals made by various states, some of which can be higher than the Centre's recommendation. While the proposals based on input costs vary from state to state, the MSP is fixed to avoid price inequity. When the market prices dip to a level that is below the MSP, the government agencies buy over the produce in order to protect the farmers. Thus market prices can rise above MSP. **Hence, statement 2 is not correct.** Therefore, option (d) is the correct answer.

Q. In India, which of the following can be considered as public investment in agriculture? (2020)

1. Fixing Minimum Support Price for agricultural produce of all crops
2. Computerization of Primary Agricultural Credit Societies
3. Social Capital development
4. Free electricity supply to farmers
5. Waiver of agricultural loans by the banking system
6. Setting up of cold storage facilities by the governments

Select the correct answer using the code given below:

- (a) 1, 2 and 5 only
- (b) 1, 3, 4 and 5 only
- (c) 2, 3 and 6 only
- (d) 1, 2, 3, 4, 5 and 6

Ans: (c)

Bad Bank

For Prelims: Bad Bank, Non-Performing Assets, NARCL

For Mains: Significance of Bad Bank and Associated Challenges

Why in News?

Recently, the Ministry of Finance has announced that the [National Asset Reconstruction Company \(NARCL\)](#) along with the India Debt Resolution Company (IDRCL) will take over the first set of bad loans from banks and try to resolve them.

- The health of the balance sheets of Indian banks has improved significantly over the last few years with their Gross Non-Performing Assets (GNPA) ratio declining from a peak of 11.2% in FY18 to 6.9% in Q2FY22.
- NARCL has been set up by banks to aggregate and consolidate stressed assets for their subsequent resolution. PSBs will maintain 51% ownership in NARCL.
- IDRCL is a service company/operational entity which will manage the asset and engage market professionals and turnaround experts. Public Sector Banks (PSBs) and Public FIs will hold a maximum of 49% stake and the rest will be with private sector lenders.
- The government had already announced sovereign guarantees of Rs 30,600 crore for Security Receipts (SRs) to be issued by NARCL, which will be buying Rs 2 lakh crore non-performing loans from banks.

What is a Non-Performing Asset?

- NPA refers to a classification for loans or advances that are in default or are in arrears on scheduled payments of principal or interest.
- In most cases, debt is classified as non-performing, when the loan payments have not been made for a minimum period of 90 days.
- Gross non-performing assets are the sum of all the loans that have been defaulted by the individuals who have acquired loans from the financial institution.
- Net non-performing assets are the amount that is realised after provision amount has been deducted from the gross non-performing assets.

What is a Bad Bank?

- A bad bank is a financial entity set up to buy [Non-Performing Assets \(NPAs\)](#), or Bad Loans, from banks.
- The aim of setting up a bad bank is **to help ease the burden on banks by taking bad loans off their balance sheets** and get them to lend again to customers without constraints.
- After the purchase of a bad loan from a bank, the **bad bank may later try to restructure and sell the NPA to investors who might be interested in purchasing it.**
- A bad bank **makes a profit in its operations if it manages to sell the loan at a price higher than what it paid to acquire the loan** from a commercial bank.
- However, **generating profits is usually not the primary purpose of a bad bank** — the

objective is **to ease the burden on banks, of holding a large pile of stressed assets**, and to get them to lend more actively.

What are the Pros and Cons of a Bad bank?

▪ Pros:

- **Single Exclusive Entity:**
 - It can help consolidate all bad loans of banks under a single exclusive entity.
 - The idea of a bad bank has been tried out in **countries such as the U.S., Germany, Japan and others in the past.**
 - The troubled asset relief program, also known as TARP, implemented by the U.S. Treasury in the aftermath of the 2008 financial crisis, was modelled around the idea of a bad bank.
- **Freedom to Use Freed-up Capital:**
 - By taking bad loans **off the books of troubled banks, a bad bank can help free capital of over Rs 5 lakh crore** that is locked in by banks as provisions against these bad loans.
 - This will give **banks the freedom to use the freed-up capital to extend more loans** to their customers.
- **Improving Capital Buffer:**
 - It can help improve bank lending not by shoring up bank reserves but **by improving banks' capital buffers.**
 - To the extent that a new bad bank set up by the government can improve banks' capital buffers by freeing up capital, it could **help banks feel more confident to start lending again.**

▪ Cons:

- **Merely Shifts one Pocket of Government to another:**
 - Bad bank backed by the government will merely shift bad assets from the hands of public sector banks, which are owned by the government, to the hands of a bad bank, which is again owned by the government.
 - There is little reason to believe that **a mere transfer of assets from one pocket of the government to another will lead to a successful resolution of these bad debts** when the set of incentives facing these entities is essentially the same.
- **Nature of Ownership:**
 - Unlike private banks, which are owned by individuals who have strong financial incentives to manage them well, **public sector banks are managed by bureaucrats who may often not have the same commitment to ensuring these lenders' profitability.**
 - To that extent, bailing out banks through a bad bank **does not really address the root problem** of the bad loan crisis.
- **Risk of Moral Hazard:**
 - Commercial banks that are bailed out by a bad bank are likely to have little reason to mend their ways.
 - After all, the safety net provided by a bad bank gives these banks more reason to lend recklessly and thus further exacerbate the bad loan crisis.

What are the Associated Challenges?

▪ Mobilising Capital:

- Finding buyers for bad assets in a pandemic hit economy will be a challenge, especially when governments are facing the issue of containing the **fiscal deficit.**

▪ Not Addressing the Underlying Issue:

- Without governance reforms, the **Public sector banks** (accounted for 86%, of the total NPAs) may go on doing business the way they have been doing in the past and may end up piling-up of bad debts again.
- Also, the bad bank idea is like shifting loans from one government pocket (the public sector banks) to another (the bad bank).

▪ Provisioning Issue Tackled Through Recapitalization:

- Union Government, in the last few years, has infused nearly Rs 2.6 lakh crore in banks through [recapitalisation](#).
- Those who oppose the concept of bad banks hold that the government has on its part recapitalised the banks to compensate for the write-offs and hence, there is no need for a bad bank.
- **Market-related Issues:**
 - The price at which bad assets are transferred from commercial banks to the bad bank will not be market-determined and price discovery will not happen.

Way Forward

- So long as Public Sector Banks' managements remain beholden to politicians and bureaucrats, their deficit in professionalism will remain and subsequently, prudential norms in lending will continue to suffer.
- Therefore, a bad bank is a good idea, but the main challenge lies with tackling the underlying structural problems in the banking system and announcing reforms accordingly.

[Source: TH](#)

Good Governance

For Prelims: Citizen Centric Governance, Jan Samarth Portal

For Mains: Significance of Good Governance and Associated Challenges

Why in News?

While launching an **Integrated Credit Portal 'Jan Samarth'**, Prime Minister said that India is moving ahead with the approach of **Citizen-Centric Governance**, which is the fundamental aspect of [Good Governance](#), leaving behind the government-centric approach.

What is Jan Samarth Portal?

- The portal, **an initiative of the Ministry of Finance**, is a **one-stop gateway for over a dozen of the government's [credit-linked schemes](#)** directly connecting beneficiaries to lenders.
- The portal will act as **a single platform for loan application and processing** under Credit-Linked Government Schemes.
- The portal will **improve the lives of students, farmers, businessmen, Micro, Small and Medium Enterprises entrepreneurs** and will also **help the start-up ecosystem**.
 - The idea behind launching this portal is **to encourage inclusive growth and development of several sectors**.

What is Good Governance?

- **About:**
 - Governance is the **process of decision-making** and the process by which decisions are implemented (or not implemented).
 - Governance can be used in several contexts such as **corporate governance, international governance, national governance and local governance**.

- Good Governance is defined as **“the manner in which power is exercised in the management of a country’s economic and social resources for development”**
- The concept of good governance existed even during the days of Chanakya.
 - He had mentioned it **elaborately in Arthashastra.**
- **Citizens centric administration** lies on the foundation of good governance.
- **8 Principles of Good Governance:**
 - **Participation:**
 - People should be able to voice their own opinions through legitimate immediate organizations or representatives.
 - This includes men and women, vulnerable sections of society, backward classes, minorities, etc.
 - Participation also implies freedom of association and expression.
 - **Rule of Law:**
 - Legal framework should be enforced impartially, especially on human rights laws.
 - Without rule of law, politics will follow the principle of matsya nyaya ie law of fish which means the strong will prevail over the weak.
 - **Consensus Oriented:**
 - Consensus oriented decision-making ensures that even if everyone does not achieve what they want to the fullest, a common minimum can be achieved by everyone which will not be detrimental to anyone.
 - It mediates differing interests to meet the broad consensus on the best interests of a community.
 - **Equity and Inclusiveness:**
 - Good governance assures an equitable society.
 - People should have opportunities to improve or maintain their well-being.
 - **Effectiveness and Efficiency:**
 - Processes and institutions should be able to produce results that meet the needs of their community.
 - Resources of the community should be used effectively for the maximum output.
 - **Accountability:**
 - Good governance aims towards betterment of people, and this can not take place without the government being accountable to the people.
 - Governmental institutions, private sectors, and civil society organizations should be held accountable to the public and institutional stakeholders.
 - **Transparency:**
 - Information should be accessible to the public and should be understandable and monitored.
 - It also means free media and access of information to them.
 - **Responsiveness:**
 - Institutions and processes should serve all stakeholders in a reasonable period of time.

What is the Need for Good Governance?

- Improving governance is a part of the development process.
- It is argued that **corruption can be curbed by systematic changes in governance through introducing participation**, Governance, Transparency & Accountability in the administration.
- The **right to good governance is considered as an essential part of the citizens’ rights.**
- Reports have shown that substantially enhanced public sector outlays for education, health, water, sanitation, rural employment, etc. have not resulted in the desired outcomes. At the centre of an answer to this paradox is the **issue of ‘transparent and accountable governance’.**
- Without **good governance, no amount of developmental schemes can bring in improvement in the quality of life of the citizens.**
- Poor governance generates and reinforces poverty and subverts efforts to reduce it. There is growing evidence that the fruits of economic reforms have not been equally distributed, **regional and socio-cultural disparities have only increased.**

What are the Challenges to Good Governance?

- **Attitudinal Problems of Civil Servants:** As per the 2nd ARC report Civil Servants have become inflexible, self-perpetuating, inward-looking.
- **Lack of Accountability:** Very rarely disciplinary actions are initiated against delinquent officers. There is no performance evaluation structure.
- **Red Tapism:** Bureaucracies have to adhere to rules and procedures which are important for good governance, however sometimes these rules and procedures are ill-conceived and cumbersome and they do not serve the very purpose of their existence.
- **Low Levels of Awareness of the Rights and Duties of Citizens:** Awareness of rights and duties would ensure that officials and other citizens discharge duties effectively and honestly.
- **Ineffective Implementation of Laws and Rules:** We have a large number of laws to protect the rights of the citizens and vulnerable sections of society, but the weak implementation of these laws erodes the faith of the citizens in the Government machinery.

What are the Recommendations?

- To Make the Administration more Citizen-Centric, the [2nd ARC \(Administrative Reforms Commission\)](#) has examined the following strategies, processes, tools, and mechanisms.
 - Re-engineering processes to make Governance 'citizen-centric'.
 - Adoption of Appropriate Modern Technology.
 - Right to Information.
 - Citizens Charters.
 - Independent Evaluation of Services.
 - Grievance Redressal Mechanisms.
 - Active Citizens Participation – Public-Private Partnerships.

What are the Related Initiatives?

- [Right to Information.](#)
- [E-Governance.](#)
- [Ease of Doing Business.](#)
- [Police Reforms.](#)
- [Aspirational Districts Programme.](#)
- [Good Governance Index.](#)
- [Unified Payment Interface.](#)

Way Forward

- There is a need to reformulate our national strategy to accord primacy to the Gandhian principle of 'Antyodaya' to restore good governance in the country.
- India should also focus on developing probity in governance, which will make the governance more ethical.
- The government should continue to work on the ideals of Sabka Saath, Sabka Vikas and Sabka Vishwas which will lead to inclusive and sustainable development.
- All public offices need to take schemes and reform initiatives to the intended beneficiaries rather than waiting for the people to come to them.

[Source: HT](#)

Ban on use of Coal in Delhi-NCR

For Prelims: Commission for Air Quality Management, greenhouse gas, Particulate Matter, Nitrogen Oxide, CO₂, CO, Coal, natural gas

For Mains: Effects of Air pollution , Environmental Pollution & Degradation

Why in News?

Recently, the [Commission for Air Quality Management \(CAQM\)](#) has issued directions to ban the use of coal in industrial, domestic and other miscellaneous applications in the entire Delhi-NCR region from 1st January 2023.

- This step is taken to **bring down [greenhouse gas emissions](#)** in Delhi NCR.
- Delhi is among the world's most polluted capital cities.
 - According to the [pollution index](#), on average, the AQI in the capital, its neighboring cities - Gurgaon, Noida, and Ghaziabad - is in the 300-400 level mark.

What is the Significance of this Step?

- **Save Tonnes of Coal Annually:**
 - The Step to drive the switching over to cleaner fuel such as natural gas and biomass **will not only help save 1.7 million tonnes of coal annually**, but also reduce pollutants including [Particulate Matter \(PM\)](#), [Nitrogen Oxide \(NOx\)](#), [CO₂](#) and **Carbon monoxide (CO)**.
 - However, [thermal power plants](#) in NCR are allowed to use **low-sulphur coal**.
- **Help in Tackling Air pollution:**
 - **Heavy pollution from coal is a significant contributor to the degrading quality of air** in the NCR and surrounding areas, and thus a need to switch to a cleaner fuel has been felt over time.
 - Every year, **air pollution from fossil fuels takes millions of lives, increases our risk of stroke**, lung cancer and asthma, and costs us a huge amount of money.
- **Natural Gas gets a Boost:**
 - The decision to ban use of coal as a fuel **will boost the prospects of natural gas in the NCR**.
 - As per the **Petroleum Planning & Analysis Cell**, the global per capita natural gas consumption is 496 cubic meters) compared to 43 cu m for India.

What Steps have been taken to Combat Air Pollution so far?

- **Promoting Clean Fuels:**
 - CAQM has been focusing on **shifting industries to piped [natural gas](#) and other clean fuels**.
 - Around 1.7 million tonnes (MT) of coal is consumed annually by various industries in the NCR, with about 1.4 MT alone being consumed in the six major industrial districts.
- **Supreme Court Order:**
 - In December 2021, the [Supreme Court](#) **ordered the government to find a permanent solution to the air pollution menace** occurring every year in Delhi and NCR.
 - Accordingly, the **CAQM formed an Expert Group** to deliberate upon all such suggestions and proposals.
 - The Expert Group has strongly recommended phasing out use of heavily polluting fossil fuels like coal and mandating cleaner fuels, to the extent possible.

What are the Related Initiatives taken?

- [System of Air Quality and Weather Forecasting and Research \(SAFAR\) Portal](#)

- **Air Quality Index:** AQI has been developed for eight pollutants viz. PM2.5, PM10, Ammonia, Lead, nitrogen oxides, sulphur dioxide, ozone, and carbon monoxide.
- **Graded Response Action Plan**
- For Reducing Vehicular Pollution:
 - **BS-VI Vehicles,**
 - **Push for Electric Vehicles (EVs),**
 - **Odd-Even Policy** as an emergency measure
- **New Commission for Air Quality Management**
- Subsidy to farmers for buying **Turbo Happy Seeder (THS) Machine**

What are the Key Highlights about Coal?

- It is **one of the most abundantly found fossil fuels**. It is used as a domestic fuel, in industries such as iron and steel, steam engines and to generate electricity. Electricity from coal is called thermal power.
- The **coal which we are using today was formed millions of years ago** when giant ferns and swamps got buried under the layers of earth. Coal is therefore referred to as Buried Sunshine.
- The **leading coal producers of the world include** China, India, US, Indonesia, Australia.
- The **coal producing areas of India include** Raniganj, Jharia, Dhanbad and Bokaro in Jharkhand.
- **Coal is also classified into four ranks:** anthracite, bituminous, subbituminous, and lignite. The ranking depends on the types and amounts of carbon the coal contains and on the amount of heat energy the coal can produce.

UPSC Civil Services Examination, Previous Year Question

Q. Consider the following: (2010)

1. Oxides of Hydrogen
2. Oxides of Nitrogen
3. Oxides of Sulphur

Which of the above causes/cause acid rain?

- (a) 1 and 2 only
- (b) 3 only
- (c) 2 and 3 only
- (d) 1, 2 and 3

Ans: (c)

Exp:

- Acid rain, or acid deposition, is a broad term that includes any form of precipitation with acidic components, such as Sulfuric or Nitric Acid that fall to the ground from the atmosphere in wet or dry forms. This can include rain, snow, fog, hail or even dust that is acidic.
- Acid rain results when Sulphur Dioxide (SO₂) and Nitrogen Oxides (NOX) are emitted into the atmosphere and transported by wind and air currents.
- The **SO₂ and NOX react with water, Oxygen and other chemicals to form Sulfuric and Nitric Acids**. These then mixes with water and other materials before falling to the ground. Hence, 2 and 3 are correct.
- **Oxide of Hydrogen, i.e., H₂O does not cause acid rain** on its own. It is only when it combines with Oxides of Sulphur or Nitrogen the acid rain occurs. Hence, 1 is not correct. Therefore, aoption (c) is the correct answer.

Q. Consider the following: (2019)

1. Carbon monoxide
2. Methane
3. Ozone
4. Sulphur dioxide

Which of the above are released into atmosphere due to the burning of crop/biomass residue?

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

Ans: (d)

Exp:

- Biomass is organic material that comes from plants and animals, and it is a renewable source of energy. Biomass contains stored energy from the Sun. Plants absorb the Sun's energy in a process called photosynthesis. When biomass is burned, the chemical energy in biomass is released as heat.
- Crop residue and biomass burning (forest fires) is considered as a **major source of Carbon Dioxide (CO₂), Carbon Monoxide (CO), Methane (CH₄)**, volatile organic compounds (VOC), and Nitrogen Oxides (NOX). Burning of rice crop residue releases Suspended Particulate Matter, SO₂, NO₂ and O₃ in the atmosphere. Therefore, option (d) is the correct answer.

Source: IE

Australia India Water Security Initiative (AIWASI)

For Prelims- AIWASI

For Mains- India-Australia Relations, State of water in India

Why in News?

The Union Cabinet has approved a MoU (Memorandum of Understanding) between India and Australia on **Technical Cooperation for Australia -India water Security initiative (AIWASI)**.

What is AIWASI?

- AIWASI is a project Under **South Asia Water Security Initiative (SAWASI)** of Department of Foreign Affairs and Trade (DFAT), Australia.
- It aims to work towards the **Water Sensitive City vision** which is based on **holistic management** of the **integrated water cycle**.
- AIWASI will **strengthen** India's **water governance** and **undertake investments** that **provide**.
 - urban water services,
 - support to disadvantaged communities to access reliable, safe water and sanitation services.

- The project will undertake and deliver a **Water Sensitive Urban Design (WSUD) demonstration project.**
- This AIWASI project is also a **'living laboratory'** with **multiple educational, social and environmental benefits** like **water literacy** of students and the community, **creation of green spaces, improved air quality from blue-green infrastructure and rejuvenation of degraded water bodies and aquifers.**

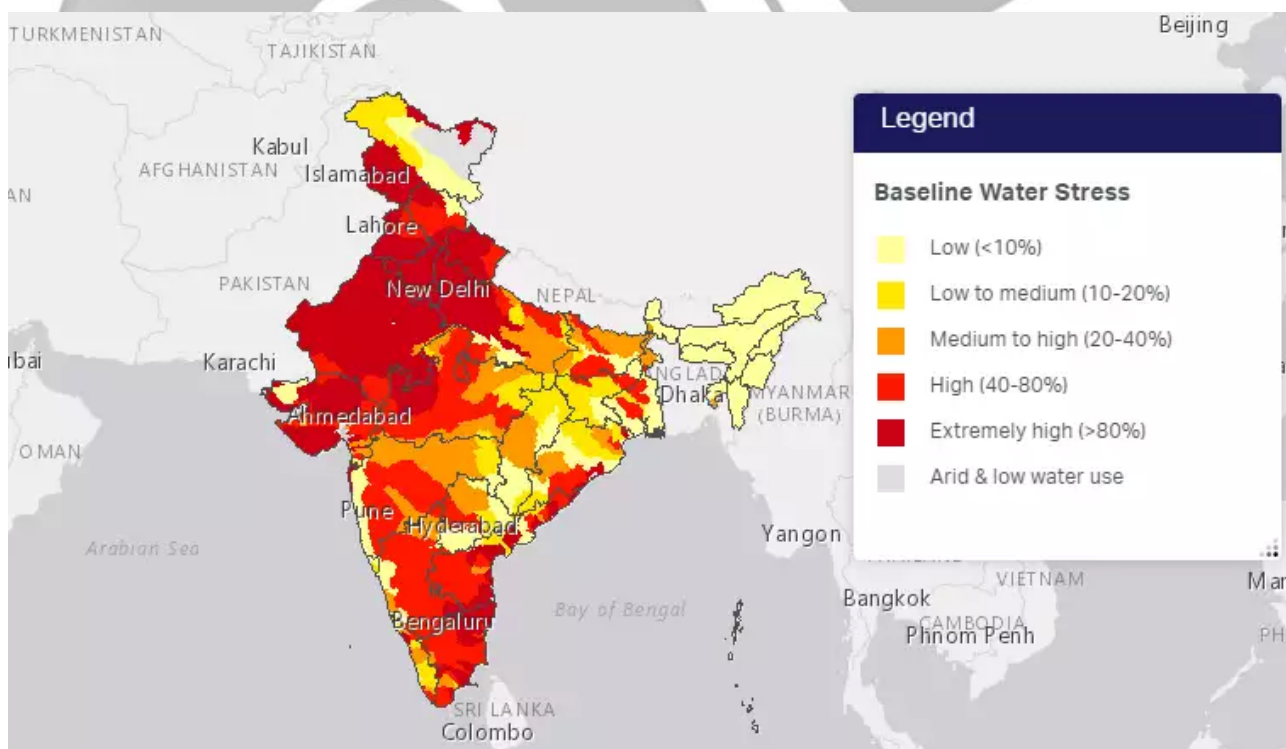
What is water security?

- The definition of **water security** proposed by [UN-Water](#) - The capacity of a population to safeguard **sustainable access to adequate quantities of acceptable quality water for sustaining livelihoods**, human well-being, and socio-economic development, for ensuring **protection against water-borne pollution** and **water-related disasters**, and for **preserving ecosystems** in a climate of peace and political stability.

What are the challenges related to water security in India?

As per the Sustainable Development Goal report (2019)

- **1 in 4 health care facilities lacks basic water services**
- **3 in 10 people lack access to safely managed drinking water services.**
- **6 in 10 people lack access to safely managed sanitation facilities.**
- **At least 892 million people continue to practice open defecation.**
- Mostly, **Women and girls** are responsible for water collection in **80% of households without access to water** on the premises.
- And if current trends of **over-exploitation** continue, India is set to become a **water-scarce** country in the not-too-distant future.
- A rapidly **increasing population** and **urbanization** have **driven up water demands** all across the country.
- While years of **pollution, inefficient methods of farming, decentralized water governance, groundwater exploitation** and **poor infrastructure** have **depleted the water supply.**
- The map shown below illustrates the **Baseline water stress** condition in India and it can be easily visualized that most part of the country is under the **over-exploited category.**
 - Baseline water stress measures total annual water withdrawals (municipal, industrial, and agricultural) expressed as a percent of the total annual available flow.



What are the Related Initiatives?

- [Creation of Jal shakti ministry](#)
- [National water mission](#)
- [Jal shakti abhiyan](#)
- [NITI Aayog's Composite Water Management Index](#)
- [Namami Gange](#)
- [Jal Jeevan Mission](#)

What could be the way forward?

- The MoU signed with Australia would help in **learning the best practices** to save water and use it in a **sustainable manner**, so that water security could be achieved.
- Need to **enhance our own capabilities** by building new **infrastructure** and **creating awareness among masses to conserve water**.
- Need **timely execution** of **government schemes and roadmaps**.
- More **collaboration** needed with countries which had already faced water scarcity in the past and how they overcome it.

[Source: PIB](#)

PD1 Therapy for Cancer

For Prelims: PD1 therapy, T-cells, Dostralinab

For Mains: Significance of PD1 Therapy for treatment of cancer

Why in News?

In a medical trial in the USA, 12 patients were **completely cured of rectal cancer without requiring any surgery or chemotherapy**.

- The trial used a [monoclonal antibody dostarlimab](#) every three weeks for six months for the treatment of a particular kind of **stage two or three rectal cancer**.
- The study was done by doctors from the Memorial Sloan Kettering Cancer Centre in New York.

What are Findings of the trial?

- The trial showed that **immunotherapy** alone - without any **chemotherapy, radiotherapy, or surgery** that have been staples of cancer treatment - could completely cure the patients with a particular kind of rectal cancer called **'mismatch repair deficient' cancer**.
 - 'Mismatch repair deficient' cancer is **most common** among colorectal, gastrointestinal, and endometrial cancers. Patients suffering from this condition **lack the genes to correct typos in the DNA** that occur naturally while cells make copies.
 - Immunotherapy is a treatment that uses a person's own immune system to fight cancer. Immunotherapy can boost or change how the immune system works so it can find and attack cancer cells.

- Immunotherapy **belongs to a category called PD1 blockades** that are now recommended for the treatment of such cancers rather than chemotherapy or radiotherapy.

What is PD1 Therapy?

- **PD1** is a **type of protein** that regulates certain functions of the immune system, including by **suppressing T cell activity**, and PD1 blockade therapy looks to release the **T cells** from this suppression.
 - T-cells are the White Blood cells (WBCs). They are critical for developing immunity towards common pathogens or antigens.
- Earlier, this therapy was used post-surgery, but the study has shown that **surgery may not be required**.
- Although the therapy is usually used for cancers that have **metastasised** (spread to locations other than where the cancer formed), it is now **recommended for all mismatch repair deficient cancers** as they result in quicker improvement and lesser toxicity as compared to traditional chemo and radiotherapy.
- Eliminating other treatments can **improve a patient's quality of life** by preserving fertility, sexual health, and bladder and bowel functions.

When can such a treatment be accessible in India?

- The problem with immunotherapies is that they are **expensive and unaffordable** for most people in India. An immunotherapy treatment can cost around Rs 4 lakh per month, with patients needing the treatment for six months to a year. "People may end up using their life-savings for the treatment.
- **Precision medicine**, such as using particular immunotherapy drugs for particular types of cancers, is **still at a nascent stage in India**.
 - **Precision medicine** is an emerging approach for disease treatment and prevention that **takes into account individual variability** in genes, environment, and lifestyle for each person." This approach will allow doctors and researchers to predict more accurately which treatment and prevention strategies for a particular disease will work in which groups of people.

UPSC Civil Services Examination, Previous Year Questions

Q. The term 'ACE2' is talked about in the context of (2021)

- (a) Genes introduced in the genetically modified plants
- (b) Development of India's own satellite navigation system
- (c) Radio collars for wildlife tracking
- (d) Spread of viral diseases

Ans: (d)

Exp:

- **'ACE2' is a proteinaceous enzyme** on the surface of many cell types that stands for Angiotensin Convertase Enzyme-2. It is an enzyme that generates small proteins by cutting up the larger protein angiotensinogen that then goes on to regulate functions in the cell.
- Using the spike-like protein on its surface, the SARSCoV-2 virus binds to ACE2 like a key being inserted into a lock - prior to entry and infection of cells. Hence, ACE2 acts as a cellular doorway or a receptor for the virus that causes COVID-19.
- **Therefore, option (d) is the correct answer.**

Source: IE

Unified Geologic Map of the Moon

Why in News?

Recently, the **United States Geological Survey (USGS)** in partnership with [National Aeronautics and Space Administration \(NASA\)](#) and the Lunar Planetary Institute has released a new comprehensive map of the Moon, called the '**Unified Geologic Map of the Moon**'.

- The **new map showcases the Moon in a 1:50,00,000-scale size**, and is claimed to come handy to researchers, scientists, students and the general public.
- The map has been **created with the help of the information gathered** from six [Apollo-era regional maps](#).
 - It also uses data from **recently held satellite missions to the Moon**.

What is the Significance of this New Map?

- **Blueprint for Future Human Mission:**
 - This new map will serve as the **“definitive blueprint of the Moon’s surface geology for future human missions.”**
- **Help in understanding the Moon Surface:**
 - It will come handy to **understand the surface of the Moon**.
 - The map will also **help researchers learn the history behind the formations** located on the Moon’s surface.
 - Earlier, a leftover piece of a spacecraft flying (of Chang'e 5-T1 – a lunar mission of China) through space reportedly hit the surface of the moon creating a new crater that may be around 65 feet wide ([lunar crater](#)).

What are the key Highlights about the Moon?

- **About:**
 - The Moon is **Earth's only natural satellite** and the fifth largest moon in the solar system.
 - The Moon's presence **helps stabilize our planet's wobble** and moderate our climate.
 - The Moon's distance from Earth is about 240,000 miles.
 - The Moon has a **very thin atmosphere called an [exosphere](#)**.
- **Phases of the Moon:**
 - The Moon displays four main phases: new, first quarter, full, and last quarter.
 - **New Moon:** It occurs when the **Moon is between Earth and the Sun**, and thus the side of the Moon that is in shadow faces Earth.
 - **Full Moon:** It occurs when the **Moon is on the opposite side of Earth from the Sun**, and thus the side of the Moon that is illuminated faces Earth.
 - **First and Last Quarter:** In this phase, half the Moon appears illuminated, occurring when the Moon is at a right angle with respect to the Sun when viewed from Earth. (Earth, as seen from the Moon, shows the same phases in opposite order—e.g., Earth is full when the Moon is new).
- **Related Missions:**
 - **Chandrayaan-3 Mission (India)**
 - [Artemis I moon mission \(USA\)](#)
 - [Chang'e-5 Mission \(China\)](#)

Q. Which of the following pairs is/are correctly matched? (2014)

	Spacecraft	Purpose
1.	Cassini-Huygens	Orbiting the Venus and transmitting data to the Earth
2.	Messenger	Mapping and investigating the Mercury
3.	Voyager 1 and 2	Exploring the outer solar system

Select the correct answer using the code given below:

- (a) 1 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

Ans: (b)

Q. In the context of space technology, what is “Bhuvan”, recently in the news? (2010)

- (a) A mini satellite launched by ISRO for promoting the distance education in India
- (b) The name given to the next Moon Impact Probe, for Chandrayaan-II
- (c) A geoportal of ISRO with 3D imaging capabilities of India
- (d) A space telescope developed by India

Ans: (c)

Q. What is the purpose of the US Space Agency’s Themis Mission, which was recently in the news? (2008)

- (a) To study the possibility of life on Mars
- (b) To study the satellites of Saturn
- (c) To study the colourful display of high latitude skies
- (d) To build a space laboratory to study the stellar explosions

Ans: (c)

Source: IE