

Abhimanu

Weekly current affairs Series

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Abhimanu's IAS Study Group
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NATIONAL ECONOMIC AFFAIRS

How Falling Rupees affect the Indian Economy?

- With the rupee recently weakening past ₹70 to a dollar and hovering about that level since, concerns over the impact of the devaluation on economic indicators are intensifying.

Analysis:

- One of the first visible effects of currency depreciation is the country's imports become more expensive and exports cheaper. It takes more rupees to pay for the same quantum of imports and fewer dollars for a buyer to pay for the same quantity of exports.
- More expensive imports are likely to drive inflation upward, especially in India where input products constitute a large part of our imports. In addition, a depreciating rupee also impacts the oil import bill since it costs more rupees per barrel of oil, which plays its own part in pushing inflation up.
- There is also a negative impact of depreciation of currency on GDP. This is a more complex question given the number of factors that affect GDP growth. On the one hand, costlier inputs and the subsequent increase in the prices of finished goods should have a positive impact on GDP. But the consequent decrease in demand due to higher prices could nullify this.
- A depreciating rupee certainly affects the exports and imports, since exports are likely to receive a boost while imports could flag somewhat. It remains to be seen what impact a reduction in household consumption would have on demand, especially when the festive season is nearing.
- A depreciating rupee means higher prices of goods and services, costlier petrol and trips abroad turning more expensive. On the flip side, the domestic tourism could grow as more tourists visit India since their currency now buys more here. In the medium term, export-oriented industries may also create more jobs.

Participatory notes

- Investment through Participatory notes into Indian capital markets plunged to over nine-year low of Rs 80,341 crore till July-end amid stringent norms put in place by the SEBI.
- P-note investments were on a decline since June last year and hit an over eight-year low in September. However, these investments rose slightly in October but fell again in November and the trend continued till July this year.
- The decline could be attributed to several measures taken by the market watchdog to stop the misuse of the controversy-ridden participatory notes.
- In July 2017, Sebi had notified stricter norms stipulating a fee of USD 1,000 on each instrument to check any misuse for channelising black money.
- It had also prohibited FPIs from issuing such notes where the underlying asset is a derivative, except those which are used for hedging purposes.
- These measures were an outcome of a slew of other steps taken by the regulator in the recent past.

About P-Notes:

- Participatory Notes (P-Notes) are instruments used by foreign funds and investors not registered with the SEBI to invest in Indian securities.

- They are generally issued overseas by associates of India based foreign brokerages (FPIs) and domestic institutional investors.
- Technically, P-Notes are Offshore Derivative Instruments (ODIs) issued by FPIs and their subaccounts against underlying Indian securities (like shares).

Prompt Corrective Action (PCA) framework

- PSU banks are expected to come out of the Prompt Corrective Action (PCA) framework by the end of this year.
- Currently, 11 out of a total of 21 state-owned banks are under the RBI's Prompt Corrective Action (PCA) framework.

About PCA:

- RBI has issued a policy action guideline (first in May 2014 and revised effective from April 1, 2017) in the form of Prompt Corrective Action (PCA) Framework if a commercial bank's financial condition worsens below a mark.
- The PCA framework specifies the trigger points or the level in which the RBI will intervene with corrective action. This trigger points are expressed in terms of parameters for the banks.

The parameters that invite corrective action from the central bank are:

- Capital to Risk weighted Asset Ratio (CRAR)
- Net Non-Performing Assets (NPA) and
- Return on Assets (RoA)
- Leverage ratio

When these parameters reach the set trigger points for a bank (like CRAR of 9%, 6%, 3%), the RBI will initiate certain structured and discretionary actions for the bank. As per the revised framework by the RBI, in April 2017, capital, asset quality and profitability continue to be the key areas for monitoring. Along with this, leverage of banks also will be monitored.

The some of the structured and discretionary actions that could be taken by the Reserve Bank are: recapitalization, restrictions on borrowing from inter-bank market to steps to merge/amalgamate/liquidate the bank or impose moratorium on the bank if its CRAR does not improve beyond etc.). The corrective actions are tough with worsening of the financials.

NATIONAL POLITY

Floods in Kerala

- At least 167 people are dead and about two crores affected by the deluge that destroyed more than Rs 8,000 cr worth property since August 8 in Kerala.
- All 14 districts of the state have been placed under red alert after the rise in flood waters in Periyar river due to the rains and opening of the shutters of all major dams.
- Till the mid of August, Kerala received 2,191 mm of rainfall, the highest in the last five years. Despite the closure of the monsoon season being far off, the state has already recorded 30 percent excess rainfall over the long-term average of the past 50 years. Idukki district, which is home to the Mullaperiyar and Idukki dams, received 70 percent excess rain. Low lying Ernakulam district had received 21 percent excess rain, enough to cause cancellation of flights from Kochi airport.

Analysis:

- Incessant rainfall over the past few days has exacerbated the situation, but doubts linger as to whether the floods this year are a natural calamity or a disaster induced by indiscriminate development.
- India's western coast has received above-average rainfall on account of sustained low-pressure conditions. However, other factors such as a change in land use patterns and climate change could have contributed to the situation on the ground.
- Injudicious use of land is responsible for making some regions of the state more prone to floods and landslides. Incursions into catchment areas of rivers that have dried up and mountainous areas have rendered settlements in their vicinity vulnerable to the vagaries of nature.
- Further, Kerala is yet to implement recommendations of the Gadgil Committee on conservation of Western Ghats, which was submitted in August 2011. Many political parties had protested against the report on the grounds that it was excessively environment-friendly, and not in tune with ground realities.
- As far as conditions in the Western Ghat are considered, low pressure over the Arabian Sea draws in southwesterly winds which result in rainfall once they hit the ghats. Two such instances happened on August 7 and 14, resulting in torrential rains in Kerala and large parts of the Konkan coast. It resulted in 7,158 mm of rainfall – roughly 46 percent of the total rainfall recorded in other parts of the country since the onset of monsoons.

NCRB to track complaints on sexual violence

- National Crime Records Bureau (NCRB) would be the designated nodal agency for monitoring the complaints received on a government portal that records child pornography and sexual violence videos.
- The NCRB would coordinate with service providers such as Facebook, YouTube and WhatsApp and ask them to block malicious videos and contents.

About NCRB:

- NCRB was set-up in 1986 to function as a repository of information on crime and criminals so as to assist the investigators in linking crime to the perpetrators.
- It was set up based on the recommendations of the National Police Commission (1977-1981) and the MHA's Task force (1985), by merging the Directorate of Coordination and Police Computer (DCPC), Inter State Criminals Data Branch of CBI, Central Finger Print Bureau of CBI, and Statistical Branch of BPR&D.
- NCRB developed Crime Criminal Information System (CCIS) in the year 1995, Common Integrated Police Application (CIPA) in 2004, and finally Crime and Criminal Tracking Network & System (CCTNS) in 2009. The CCTNS connects approximately 15000 police stations and 6000 higher offices in the country.
- NCRB also compiles and publishes National Crime Statistics i.e. Crime in India, Accidental Deaths & Suicides and Prison Statistics.
- NCRB has been conferred with "Digital India Awards 2016-Silver Open Data Championship" from the Ministry of Electronics and Information Technology, Government of India in open data championship category with silver for uploading of Crime Statistics since 1953 on Govt. Portal.

NOTA voting option cannot be allowed in Rajya Sabha polls

- The Supreme Court overruled an Election Commission notification, saying that the option NOTA (None of the Above) cannot be permitted for voting in Rajya Sabha elections on Tuesday.
- It is impermissible for the EC to have prescribed NOTA option in RS elections, it being an indirect means for proportional representation of States in RS.
- The top court has set aside the poll panel's notification allowing NOTA option in the ballot papers for Rajya Sabha elections.

Why SC scrapped the use of NOTA in Rajya Saba elections?

- As per the court, the NOTA option is meant only for universal adult suffrage and direct elections and not polls held by the system of proportional representation by means of the single transferable vote as done in the Rajya Sabha.
- NOTA in indirect elections, such as in the Rajya Sabha, would lead to horse-trading, corruption and use of extra constitutional methods to defeat a party candidate.
- NOTA also makes the system of proportional representation by means of single transferable vote nugatory and otiose.

What is NOTA?

- NOTA or 'None of the above' is a ballot option that a voter can choose to apply instead of giving their vote to any of the contesting candidates.
- In 2009, the Election Commission of India had asked the Supreme Court to offer this option on electoral ballots, but the government had opposed to it.
- In September 2013, the SC ruled that every voter should have the right to register a 'None of the above' vote. From then on, the option has been in the electronic voting machines.
- The Election Commission clarified that votes caste as NOTA are counted, but are considered 'invalid votes'. Therefore, votes made to NOTA will not change the outcome of the election.

Sikh pilgrim corridor

- Recently, Punjab minister Navjot Singh Sidhu claimed that Pakistan proposed to open a corridor on the 550th birth anniversary of Guru Nanak next year which would lead to Gurdwara Darbar Sahib at Kartarpur in Pakistan's Narowal district.

The shrine

- The gurdwara in Kartarpur stands on the bank of the Ravi, about 120 km northeast of Lahore.
- It was here that Guru Nanak assembled a Sikh community and lived for 18 years until his death in 1539.
- The shrine is visible from the Indian side, as Pakistani authorities generally trim the elephant grass that would otherwise obstruct the view.
- Indian Sikhs gather in large numbers for darshan from the Indian side, and binoculars are installed at Gurdwara Dera Baba Nanak.

The pilgrims

- The gurdwara was opened to pilgrims after repairs and restoration in 1999, and Sikh jathas have been visiting the shrine regularly ever since.
- This was one of the outcomes of the historic bus trip to Lahore by Prime Minister Atal Bihari Vajpayee in February 1999, and there are no restrictions on visiting Gurdwara Kartarpur Sahib once a pilgrim has entered Pakistan on a valid visa.
- Sikh jathas from India travel to Pakistan on four occasions every year — for Baisakhi, the martyrdom day of Guru Arjan Dev, the death anniversary of Maharaja Ranjit Singh, and the birthday of Guru Nanak Dev. These Indian pilgrims are given access to all gurdwaras in Pakistan.

Analysis:

- The "corridor" would bring Pak infrastructure right up to the Indian border. Over the past year, gurdwaras in Pakistan have been used for a pro-Khalistan campaign.
- Earlier this year, a gurdwara displayed posters and distributed pamphlets for the so-called "Sikh Referendum 2020", and Pakistan denied permission to the Indian envoy and diplomats to visit it.
- Pakistan's intent also remains suspect, and Indian officials are wary of the corridor being misused by both state and non-state actors in that country.

UDAN may extend its wings to Southeast Asian destinations

- Residents of India's northeastern states will soon be able to enjoy cheaper air fares to destinations in Southeast Asia.

- A draft policy extends the subsidised air travel programme Ude Desh ke Aam Naagrik (UDAN) to international circuits, with state governments funding and identifying the routes for operation.
- The objective of the UDAN (International) scheme is to enhance international air connectivity between Indian states and select international destinations through the provision of financial support to airlines. It is the next step after the positive domestic impact of UDAN.

About UDAN:

- The UDAN scheme is applicable on flights which cover between 200 km and 800 km with no lower limit set for hilly, remote, islands and regions which are security sensitive.
- Under the UDAN scheme, the flights are bound to connect at least one RCS airport (underserved and unserved airports).
- The RCS caps fares and also offers a ceiling for the VGF (Viability Gap Funding) available for each route. Which means the airlines cannot charge beyond the caps specified from passengers.
- For the shortest route under the scheme fare has been capped at Rs 1,420. For longest route, fare has been capped at Rs 3,500.
- The Centre has also decided to provide concessions such as 2% excise on Value Added Tax (VAT) and service tax at 1/10th.
- State government are bound to provide free security and fire service, utilities at concessional rates and reduce VAT on ATF to 1%.
- There will be no landing charges, parking charges and Terminal Navigation Landing Charges will be imposed for RCS flights.
- A Regional Connectivity Fund (RCF) will be created to fund the scheme via a levy on certain flights. States are expected to contribute 20 per cent to the fund.

INTERNATIONAL AFFAIRS

Caspian Sea Agreement

- Leaders from Russia, Azerbaijan, Iran, Kazakhstan and Turkmenistan have finally signed a legal convention on ways to manage Caspian Sea and its surrounding areas.

About Agreement:

- The convention signed at the recent summit has confirmed that the surface of the Caspian Sea would be legally classified as a sea, meaning each country would control 15 nautical miles of water from its shoreline for mineral exploration and 25 natural miles of shoreline for fishing.
- All other parts of the Caspian Sea would be considered neutral waters for common use. The summit also produced important security decisions, including an agreement that military vessels from non-Caspian states would be prohibited from entering the sea.

Analysis:

- Until the dissolution of the Soviet Union (USSR) in 1991, that's what it was known as and shared between the USSR and Iran. But the arrival on the scene of new countries complicated this issue, with ensuing claim and counterclaim. Iran had argued it was a lake and not a sea, but none of the four other countries agreed.
- Caspian Sea which is practically a lake is treated as sea because If it was treated as a sea, then it would be covered by international maritime law, namely the United Nations Law of the Sea.

- This binding document sets rules on how countries can use the world's oceans. It covers areas such as the management of natural resources, territorial rights, and the environment. And it is not limited to littoral states, meaning others can seek access to its resources.
- But if it is defined as a lake, then it would have to be divided equally between all five countries.
- Another key factor is that seabed boundaries are yet to be negotiated (although now it's the subject of bilateral agreements - not multilateral as before).
- But because the deal does not define the Caspian as a lake, Iran - which has the smallest coastline - is viewed as a potential loser.
- The Caspian Sea is highly-prized for its vast oil and gas reserves. It's estimated there are 50 billion barrels of oil and nearly 300 trillion cubic feet (8.4 trillion cubic metres) of natural gas beneath its seabed.
- That is why disagreements over how to divide some of its huge oil and gas fields have been numerous - and acrimonious. On occasion, warships have been deployed to scare off contractors hired by rival countries.
- The disagreement over its legal status has also prevented a natural gas pipeline being built across the Caspian between Turkmenistan and Azerbaijan. This would have allowed Turkmen gas to bypass Russia on its way to Europe.
- The Caspian Sea has a number of different species of sturgeon, the fish that yields the highly prized delicacy caviar. Between 80-90% of the world's caviar is sourced from the Caspian, but the numbers have been falling over the past few decades.

World Bank launches world-first blockchain bond

- The World Bank has launched the first bond on a blockchain with the Commonwealth Bank of Australia.
- The World Bank has priced the world's first public bond created and managed using only blockchain in a A\$100 million (\$73.16 million).
- Bond-i is the first blockchain bond offered to public and global range of investors.

What is blockchain technology?

- A blockchain is an anonymous online ledger that uses data structure to simplify the way we transact. Blockchain allows users to manipulate the ledger in a secure way without the help of a third party.
- A bank's ledger is connected to a centralised network. However, a blockchain is anonymous, protecting the identities of the users. This makes blockchain a more secure way to carry out transactions.
- The algorithm used in blockchain reduces the dependence on people to verify the transactions. This technology used for recording various transactions has the potential to disrupt the financial system.

How it works?

- Blockchain enables two entities that do not know each other to agree that something is true without the need of a third party.
- As opposed to writing entries into a single sheet of paper, a blockchain is a distributed database that takes a number of inputs and places them into a block. Each block is then 'chained' to the next block using a cryptographic signature.
- This allows blockchains to be used as a ledger which is accessible by anyone with permission to do so. If everyone in the process is pre-selected, the ledger is termed 'permissioned'. If the process is open to the whole world, the ledger is called unpermissioned."

Benefits of blockchain technology

- Disintermediation & trustless exchange : Two parties are able to make an exchange without the oversight or intermediation of a third party, strongly reducing or even eliminating counterparty risk.
- Empowered users : Users are in control of all their information and transactions.
- High quality data : Blockchain data is complete, consistent, timely, accurate, and widely available.
- Durability, reliability, and longevity : Due to the decentralized networks, blockchain does not have a central point of failure and is better able to withstand malicious attacks.
- Process integrity : Users can trust that transactions will be executed exactly as the protocol commands removing the need for a trusted third party.

- Transparency and immutability : Changes to public blockchains are publicly viewable by all parties creating transparency, and all transactions are immutable, meaning they cannot be altered or deleted.
- Ecosystem simplification : With all transactions being added to a single public ledger, it reduces the clutter and complications of multiple ledgers.
- Faster transactions: Interbank transactions can potentially take days for clearing and final settlement, especially outside of working hours. Blockchain transactions can reduce transaction times to minutes and are processed 24/7.
- Lower transaction costs : By eliminating third party intermediaries and overhead costs for exchanging assets, blockchains have the potential to greatly reduce transaction fees.

Remembering the Haitian revolution

- The United Nations' International Day for the Remembrance of the Slave Trade and its Abolition is observed every year on August 23 to remind people of the tragedy of the transatlantic slave trade, the largest deportation in history.
- The day is commemorated to pay tribute to all those who fought for freedom and worked hard to abolish the slave trade and slavery throughout the world.
- This commitment and the actions used to fight against the system of slavery had an impact on the human rights movement.

The Haitian revolution

- The Haitian Revolution has often been described as the largest and most successful slave rebellion in the Western Hemisphere.
- Slaves initiated the rebellion in 1791 and by 1803 they had succeeded in ending not just slavery but French control over the colony.
- These revolutions were influenced by the French Revolution of 1789, which would come to represent a new concept of human rights, universal citizenship, and participation in government.
- In the 18th century, Saint Dominigue, as Haiti was then known, became France's wealthiest overseas colony, largely because of its production of sugar, coffee, indigo, and cotton generated by an enslaved labor force.
- When the French Revolution broke out in 1789 there were five distinct sets of interest groups in the colony. There were white planters—who owned the plantations and the slaves—and petit blancs, who were artisans, shop keepers and teachers. Some of them also owned a few slaves. Together they numbered 40,000 of the colony's residents.
- Many of the whites on Saint Dominigue began to support an independence movement that began when France imposed steep tariffs on the items imported into the colony.
- The planters were extremely disenchanted with France because they were forbidden to trade with any other nation.
- Furthermore, the white population of Saint-Dominique did not have any representation in France. Despite their calls for independence, both the planters and petit blancs remained committed to the institution of slavery.
- The three remaining groups were of African descent: those who were free, those who were slaves, and those who had run away. There were about 30,000 free black people in 1789. Half of them were mulatto and often they were wealthier than the petit blancs. The slave population was close to 500,000. The runaway slaves were called maroons; they had retreated deep into the mountains of Saint Dominigue and lived off subsistence farming. Haiti had a history of slave rebellions; the slaves were never willing to submit to their status and with their strength in numbers (10 to 1) colonial officials and planters did all that was possible to control them.
- Despite the harshness and cruelty of Saint Dominigue slavery, there were slave rebellions before 1791. One plot involved the poisoning of masters.

- Inspired by events in France, a number of Haitian-born revolutionary movements emerged simultaneously.
- They used as their inspiration the French Revolution's "Declaration of the Rights of Man."
- The General Assembly in Paris responded by enacting legislation which gave the various colonies some autonomy at the local level. The legislation, which called for "all local proprietors...to be active citizens," was both ambiguous and radical.
- It was interpreted in Saint Dominigue as applying only to the planter class and thus excluded petit blancs from government. Yet it allowed free citizens of color who were substantial property owners to participate.
- This legislation, promulgated in Paris to keep Saint Dominigue in the colonial empire, instead generated a three-sided civil war between the planters, free blacks and the petit blancs. However, all three groups would be challenged by the enslaved black majority which was also influenced and inspired by events in France.
- Despite reinforcements from France, the area of the colony held by the rebels grew as did the violence on both sides.
- In 1803, at the Battle of Vertieres the French forces were defeated. On January 1, 1804, Dessalines declared the nation independent and renamed it Haiti. France became the first nation to recognize its independence. Haiti thus emerged as the first black republic in the world, and the second nation in the western hemisphere (after the United States) to win its independence from a European power.

ILO report flags wage inequality in India

- International Labour Organisation has called for stronger implementation of wage law in India amid persistent low pay and inequality, especially in case of women.
- According to ILO's India Wage Report India's economy in the past two decades has seen an annual average GDP rate of 7 percent but low pay and inequality persist.

Important highlights:

- India's economic growth, it said, has resulted in fall in poverty, moderate change in employment patterns with a growing proportion of workers in services and industry.
- However, a substantial proportion of workers (47%), continue to be employed in the agricultural sector, it said. The economy still faces informality and segmentation.
- More than 51 percent of the people employed in India, as per 2011-12 data, were self-employed and as many as 62 percent of wage earners are employed as casual workers.
- While the organised sector has seen a rise in employment, many jobs in this sector too have been of casual or informal nature.
- The report pointed out that though the overall wage inequality in India has declined somewhat since 2004-05, it continues to remain high.
- The decline in overall wage inequality has been largely due to the doubling of the wages of casual workers between 1993-94 and 2011-12.
- Nonetheless, the sharp increase in wage inequality for regular workers between 1993-94 and 2004-05 has stabilised in 2011-12.
- The gender wage gap however is still steep, as per international standards, despite having declined from 48 percent in 1993-94 to 34 percent in 2011-12.
- The wage gap exists for all kind of workers regular and casual, urban and rural. The women employed as casual workers in the rural economy earn the lowest in India, which is 22 percent of what urban regular male workers earn.
- Although, the average labour productivity (as measured by the GDP perworker has increased), the labour share, which is the proportion of national income that goes into labour compensation has declined from 38.5 percent in 1981 to 35.4 percent in 2013 .
- India was one of the first countries to introduce minimum wages through the Minimum Wages Act in 1948. But the report found that there exist challenges in providing a universal wage floor for all workers.
- As per the study the minimum wage system in India is quite complex. The minimum wages are set by state governments for employees in selected 'scheduled' employment and this has led to 1709 different rates

across the country. As the coverage is not complete these rates are applicable for an estimated of 66 % of wage workers.

- A national minimum wage floor was introduced in the 1990s which has progressively increased to Rs 176 per day in 2017 but this wage floor is not legally binding, in spite of a recurrent discussion since the 1970s.
- In 2009-10, nearly 15 percent of salaried workers and 41 percent of casual workers earned less than this indicative national minimum wage. About 62 million workers are still paid less than the indicative national minimum wage with the rate of low pay being higher for women than for men.

International Conference on Recent Advances in Food Processing Technology (iCRAFPT)

- International Conference on Recent Advances in Food Processing Technology (iCRAFPT) 2018 is being held at Indian Institute of Food Processing Technology, Thanjavur in Tamilnadu.
- This conference will be a valuable and important platform for inspiring international and interdisciplinary exchange at the forefront of food research.

Analysis:

- Food processing sector in India has a dualistic structure. The unorganised segment dominates in numbers (about 25,00,000 in 2015-16) of small enterprises and workers, but the organised segment (about 40,000) dominates in terms of value of the output and investment.
- The percentage share of the organised/registered food processors are hardly 1.5 percent of the total food processors.
- The first tier technology should target the unorganized sector who can be encouraged to concentrate on primary processing and provide strong supply link to the high-end secondary and tertiary processing.
- The second tier should deal with sophistication of secondary and tertiary processing of high value products and enable industry to compete and stand up shoulder to shoulder with world food processing industries. Nation's export basket of food produces contains 75% of the fresh F&V and unprocessed item and only 25% of processed products.

SCIENCE AFFAIRS

Gaganyaan

- Prime Minister Narendra Modi announced that India will send an astronaut to space in the year 2022. He was addressing the nation on India's 72nd Independence Day.
- If India does launch the Gaganyaan mission, it will be the the fourth nation to do so after the United States, Russia and China.

About Gaganyaan:

- The mission is estimated at ₹9000 crore. Most of the critical technologies and hardware required for the project are ready or have been demonstrated by its centres. ISRO would now stitch them up into a complete project and present a comprehensive project report to get a formal approval of the government. ISRO have tested the necessary critical technologies required for the Human Space Flight Programme (HSP) and are confident of achieving it as stated by the Prime Minister.

- ISRO revealed the first germ of an HSP in November 2004 and got incremental funds for supporting projects over the next few years. It could not go ahead mainly because the GSLV MarkIII vehicle was not ready until last year.
- ISRO demonstrated the flight of a crew module and its re-entry in 2014. On July 5 this year, ISRO has conducted an experiment for emergency escape of astronauts called the Pad Abort Test. It will be repeated at higher distances.
- The most critical elements of the human mission are the Environment Control and Life Support Systems that make the crew capsule liveable and the flight safe for the astronauts. Food and hygiene are other aspects.
- The launchpad at the Sriharikota spaceport, the Satish Dhawan Space Centre, would be enhanced for the human mission. The Space Applications Centre which makes electronic devices and instruments for ISRO missions will also get refurbished.
- It would raise scientific and technological temper across the country and inspire youngsters

Chandrayaan- I

- Scientists have confirmed the presence of frozen water deposits in the darkest and coldest parts of the Moon's polar regions using data from the Chandrayaan-I spacecraft.
- With this water would possibly be accessible as a resource for future expeditions to explore and even stay on the Moon, and potentially easier to access than the water detected beneath the Moon's surface. The ice deposits are patchily distributed and could possibly be ancient.
- At the southern pole, most of the ice is concentrated at lunar craters, while the northern pole's ice is more widely, but sparsely spread. NASA's Moon Mineralogy Mapper (M3) instrument to identify three specific signatures that definitively prove there is water ice at the surface of the Moon.

About Moon Mineralogy Mapper(M3):

- M3, aboard the Chandrayaan-1 spacecraft, launched in 2008 by the Indian Space Research Organisation (ISRO), was uniquely equipped to confirm the presence of solid ice on the Moon. It collected data that not only picked up the reflective properties we would expect from ice, but was able to directly measure the distinctive way its molecules absorb infrared light, so it can differentiate between liquid water or vapour and solid ice.

About Chandrayaan 1:

- The Chandrayaan-I spacecraft, India's first lunar probe, started suffering from several technical issues and stopped sending radio signals on August 28, 2009. Shortly after this, ISRO officially declared the mission over.
- The probe, which was intended to operate for two years, achieved 95 per cent of its planned objectives in under a year of its space journey.