



PIB, THE HINDU Newspaper and Editorial

Current Affairs

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New Urea Policy-2015

Why in news?

The Cabinet Committee on Economic Affairs has approved the proposal of the Department of fertilizers to extend the duration of New Urea Policy-2015 from April 1, 2019 till further orders, except for the provisions which stand already amended vide notification dated March 28, 2018.

About New Urea Policy-2015:

- The Policy has multiple objectives of maximizing indigenous urea production and promoting energy efficiency in urea units to reduce the subsidy burden on the Government.
- Savings in energy shall reduce the carbon-footprint and would thus be more environment friendly. It will enable the domestic urea sector having 30 urea producing units, to become more energy efficient, would rationalize the subsidy burden and incentivize urea units to maximize their production at the same time.
- The policy will ensure timely supply of urea to farmers at same Maximum Retail Price (MRP) with lesser financial burden on the exchequer. It will also reduce import dependency in the urea sector.
- Urea units would adopt best available technology in the world and will become globally more competitive. The Policy will result in direct saving of subsidy of around Rs. 2618 crore and indirect saving of Rs. 2211 crore (total savings will be Rs.4829 crore) on account of revised specific energy consumption norms and import substitution respectively during the next four years. It is expected to result in

additional production of around 20 lakh/MT annually.

- Government had also already decided in January to allow urea producers to produce neem coated urea upto 100 percent of production and making it mandatory to produce a minimum of 75 percent of domestic urea as neem coated, so that farmers are benefitted. Neem coated urea is required less in quantity with same plot size and gives higher crop yields. Underground water contamination due to leaching of urea also gets reduced with neem coating since nitrogen in the neem coated urea gets released to plants very slowly. Neem coated urea is not fit for industrial use, so chances of its illegal diversion to industries will also be lesser.
 - The MRP of urea for the farmers has been kept the same at Rs. 268/- per bag of 50 kgs. excluding local taxes. Farmers have to pay an additional price of only Rs.14/- per bag of neem coated urea.
 - The movement plan for urea would continue to be given by the Government every month to urea suppliers, to ensure its timely and adequate availability, in all parts of the country.
 - Earlier the Government had also decided to revive closed urea units at Gorakhpur in Uttar Pradesh and Barauni in Bihar to produce and additional 26 lakh tonnes. Joint venture agreements among various stakeholders were signed in December, 2014 and January, 2015 for revival of the closed Talcher urea unit in Odisha and Ramagundam in Telangana. These two units shall also increase domestic production of urea by 26 lakh tonnes.
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Cooperation Agreement between India and Denmark in the field of Renewable Energy

Why in news?

The Union Cabinet, chaired by the Prime Minister has given its approval for a Cooperation Agreement between Ministry of New and Renewable Energy of India and Ministry for Energy, Utilities and Climate of the Kingdom of Denmark on strategic sector cooperation in the field of Renewable Energy with a focus on Offshore Wind Energy and a Letter of Intent to establish an Indo-Danish Centre of Excellence for renewable

energy in India.

Key Highlights:

- The objective of the Cooperation Agreement is to promote cooperation between the two countries in the field of renewable energy with special focus on Off-shore wind.
 - The areas of cooperation would include technical capacity building for management of offshore wind projects, measures to develop and sustain a highly efficient wind industry, onshore as well as offshore; measures to ensure high quality of wind turbines, components, and certification requirements; forecasting and scheduling of off-shore wind
 - The Indo-Danish Centre of Excellence in Integrated Renewable Power would work on Renewable energy resource assessments with focus on onshore and offshore wind; Hybridisation of wind, solar, hydro and storage technologies; integration of renewable energy in high level of wind energy, Testing and R&D; and skill development / capacity building.
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Continuation of Phase 4 of Geosynchronous Satellite Launch Vehicle (GSLV)

Why in news?

The Union Cabinet, chaired by the Prime Minister has approved ongoing GSLV continuation programme Phase-4 consisting of five GSLV flights during the period 2021-2024.

Background:

- GSLV has enabled independent access to space for 2 tonne class of satellites to Geosynchronous Transfer Orbit (GTO). One of the very significant outcomes of the GSLV Continuation Programme is the mastering of the highly complex cryogenic propulsion technology, which is an essential technological capability to launch

communication satellites to GTO. This has also paved the way for the development of a high thrust Cryogenic engine & stage for the next generation launch vehicle i.e. GSLV Mk-III.

- With the recent successful launch of GSLV-F11 on 19th December 2018, GSLV has successfully orbited 10 national satellites. GSLV with the indigenous Cryogenic Upper Stage has established itself as a reliable launch vehicle for communication, navigation and meteorological satellites and also to undertake future interplanetary missions.

Financial implications:

The total fund requirement is Rs. 2729.13 Crores and includes the cost of five GSLV vehicles, essential facility augmentation, Programme Management, and Launch Campaign along with the additional funds required for meeting the scope of the ongoing GSLV Continuation Programme.

Benefits:

The GSLV Continuation Programme - Phase 4 will meet the launch requirement of satellites for providing critical Satellite Navigation Services, Data Relay Communication for supporting the Indian Human spaceflight programme and the next interplanetary mission to Mars. This will also ensure the continuity of production in Indian industry.

Implementation Strategy and targets:

The GSLV Continuation Programme - Phase 4 will meet the demand for the launch of satellites at a frequency up to two launches per year, with maximal participation by the Indian industry. All the operational flights would be completed during the period 2021-24.

Major impact:

The operationalization of GSLV has made the country self-reliant in the launching capability of 2 tonne class of satellites for communication & meteorological satellites. The GSLV Continuation Programme will sustain & strengthen the capability and self-reliance in the launching of similar satellites for national requirements including next generation navigation satellites, data relay communication satellites and interplanetary missions.

ECI Says it is powerless

Why in news?

The Supreme Court gave the Election Commission of India (ECI) exactly 24 hours to explain its lawyer's submissions that the poll body is largely "powerless" and "toothless" to **act against religious and hate speeches** by candidates during the on-going Lok Sabha election campaigning.

SC Notice:

- During the hearing, Chief Justice of India Ranjan Gogoi even threatened to have the Chief Election Commissioner (CEC) in the courtroom within the next half hour if the court did not get clear answers to its questions on the poll body's powers under the law against candidates who spew vitriol.
- The court found that the ECI had issued notice for hate speeches and campaigning for votes on the basis of religion in only three cases so far. The three include Uttar Pradesh Chief Minister Yogi Adityanath and Bahujan Samaj Party (BSP) supremo Mayawati.
- The Election Commission, represented by advocate Amit Sharma, said Mr. Adityanath had been issued an advisory. Ms. Mayawati, the ECI said, had asked for votes in the name of religion.
- Mr. Sharma tried to reason, saying, "There is a procedure and we have to give them time to reply."
- So, you are basically saying you the ECI are toothless and powerless against hate speeches. The most you can do is send a notice to the offending candidate. If the candidate replies, send him or her an advisory. Despite this, if there is violation of Model Code of Conduct, you may then file a criminal complaint... That is all? Those are your powers under the law?" Chief Justice Gogoi asked Mr. Sharma.

No other power:

- Mr. Sharma concurred that was "no other power" with the ECI.

- The ECI cannot de-recognise or disqualify the person. This is the only power, he submitted.
 - Hearing this, the court decided to examine in detail the issue of the ECI's powers to deal with hate and defamatory election speeches, and violations of the Model Code of Conduct.
 - It ordered an ECI official to be personally present in the court on April 16.
 - Mr. Sharma tried to explain that the ECI had "standing instructions" to act against hate speeches and the violation of the Model Code.
 - The court was hearing a petition filed by a non-Resident Indian (NRI) Harpreet Mansukhani, **highlighting the increase in hate and divisive speeches in the name of religion in the Lok Sabha elections of 2019.**
 - The petition had called for **strict action against political leaders and party representatives** spreading hatred on religious and caste lines through the media, especially social media.
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Monsoon likely to be 'normal' this year

Why in news?

Monsoon rains in India are likely to be "normal" this year, the India Meteorological Department (IMD) said. However, uncertainty clouds this optimism as the agency's own assessment suggests a significant probability for rains falling in the 'below normal' category.

Monsoon Forecast:

- Monsoon rainfall this year is forecast to be **96% of the Long Period Average** (or 89 cm, which is a 50-year average of India's monsoon rains).
- Strictly speaking, a 96% forecast is, in the IMD lexicon, "near normal." This is just shy of 'below normal' (90%-96% of LPA) rain.
- This is a **more optimistic assessment** from the one by private weather forecasting agency, Skymet, which earlier this month, warned of 'below normal' rains June-September.

A weak El Nino:

- The IMD's optimism stems from global climate models projecting a **'weakening El Nino.'**
- **The El Nino, a cyclic warming of the Central and Eastern Pacific region, has historically been linked to a weakening of monsoon rain.**
- A temperature rise greater than 1 degree C for three months at a trot, is considered a 'strong' El Nino (and threatening to the monsoon). A 0.5C -1C rise is called 'weak El Nino conditions.' Currently the El Nino is 0.9 C.
- The IMD's models in March, expect the El Nino to peak around May and then recede for the rest of the monsoon months.
- Globally too, other models that track El Nino expect it to recede after June or July. So that reflects in our forecast of a normal as opposed to below normal monsoon rains IMD said.

Odds of below normal:

- In any given year, the odds of 'below normal' rains are 17%. This year the IMD's assessment says the odds are 32% which was "significant."
- However, the odds of 'near normal' rains this year were 39%, the IMD's forecast notes.
- The IMD issues its first monsoon forecast in April and then updates it in June with details on how the monsoon will perform in various geographical regions.
- The April forecast can be unreliable. Last year, the IMD forecast 'normal rains' (97% of LPA) and India saw below normal (91% of LPA) rains. This was attributed by the IMD, to an unexpected weakening of the monsoon rains in North Eastern India.
- Another factor, called a **positive Indian Ocean Dipole (IOD)** (which refers to a warming in the western Arabian ocean) could neutralise the potential negative impact from the El Nino.

Public sector enterprises to get 12 months to sell non-core assets

Why in news?

State-run companies will have 12 months to monetise non-core assets identified by a **ministerial panel headed by the finance minister**, failing which the finance ministry may restrict budgetary allocations to the CPSEs.

DIPAM Guidelines:

- The Department of Investment and Public Asset Management (DIPAM) issued guidelines for **monetisation of non-core assets of CPSEs** and immovable enemy properties, following a Cabinet decision in February.
- According to the guidelines, an inter-ministerial group (IMG) chaired by the secretary of DIPAM will identify the non-core assets of the CPSEs on its own, and also on the basis of **recommendations of the Niti Aayog**.
- **The final call will, however, be taken by the finance minister-headed panel.**

Alternative Mechanism:

- Once the **Alternative Mechanism, comprising the finance minister, road transport minister and the minister of the administrative ministry concerned** approves the assets for monetisation, it should be completed within 12 months from the date of approval.
 - This will be the target to be achieved by the CPSEs as part of the memorandum of understanding with the Department of Public Enterprises (DPE).
 - The Department of Expenditure and Department of Economic Affairs may consider any proposal from the CPSE/administrative ministry for budgetary support only after looking at the achievement of asset monetisation target by the CPSE.
 - Performance of contract management will be considered before sanctioning any government budgetary support.
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Wholesale price inflation spikes to 3.18%

Why in news?

Wholesale price inflation rose to a three-month high of 3.18% in March on costlier food and fuel, government data released showed.

Fuelled by the food articles:

- The Wholesale Price Index (WPI)-based inflation was at 2.93% and 2.76% in February and January this year, respectively, and 3.46% in December 2018. It was 2.74% in March last year.
- **Inflation in the 'food articles' basket hardened** to 5.68% during March 2019 as against 4.28% in February, as prices of vegetables skyrocketed.
- **Vegetable inflation was at 28.13%** in March, up from 6.82% in the previous month. However, inflation in potato cooled substantially to 1.30%, from 23.40% in February.
- Pulses and wheat witnessed some cooling in inflation at 10.63% and 10.13%, respectively. Also, protein rich items such as 'egg, meat and fish' saw inflation fall to 5.86% during March.
- Deflation in onion was 31.34%, while the same in fruits was 7.62% during the month. Wholesale inflation in the 'fuel and power' category, however, spiked to 5.41%, from 2.23% in February.
- Inflation in diesel shot up to 7.33% during the month from 3.72% in February. In petrol, inflation was 1.78% in March, as against a deflation of 2.93% in the previous month.

Low CPI:

- The **Reserve Bank of India, which mainly factors in retail inflation for monetary policy decision**, had, earlier this month, cut interest rates by 0.25% to 6%, while projecting retail inflation to be at 2.9-3%, mainly due to lower food and fuel prices as well as normal monsoon.
 - Data released last week showed retail inflation accelerated to **2.86% in March from 2.57% a month ago**.
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Tiger reserve status for Nandhaur Wildlife Sanctuary

Why in news?

With the number of tigers steadily on the rise at **Nandhaur Wildlife Sanctuary in Uttarakhand**, the authorities feel upgrading it to a tiger reserve is necessary for the conservation of tigers at the facility.

Rise in tiger numbers:

- The number of tigers at the sanctuary when it came into being in 2012 was nine which rose to 27 in 2018. The number is set to cross 32 this year.
- Nandhaur Wildlife Sanctuary is situated close to the **Nandhaur river in Kumaon region** of the state and spread over an area of 269.5 square km.
- The official said the steady rise in tiger population at the sanctuary over the years and the growing trend indicate that the sanctuary with the limited resources at its disposal may not be able to efficiently handle its responsibilities for long.

Need for Tiger reserve status:

- Though the **Wildlife Institute of India** and the Forest Department are working hard with financial help from the Zoological Society of London to maintain the sanctuary as a safe habitat for tigers, the task may get difficult in the long run.
 - The situation becomes rather delicate from the point of view of tiger conservation as the sanctuary at present does not come formally under the ambit of the **National Tiger Conservation Authority**.
 - The state government can play a role in its elevation as a tiger reserve so that it gets central government funds and the expertise of national level zoological scientists to conserve the growing population of tigers at the sanctuary, the official said.
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CCS to decide on dual control over Assam Rifles

Why in news?

The Ministry of Home Affairs has conveyed to the Delhi High Court that it, along with the Ministry of Defence, will abide by any decision of the Cabinet Committee on Security on the dual control over the Assam Rifles.

Dual Control:

- In an affidavit filed with the Delhi HC, the MHA has conveyed that the Union Home Secretary had held a meeting with the Defence Secretary on April 4 to discuss the issue.
 - **Assam Rifles, the 184-year-old paramilitary force of the country, is under the administrative control of the Ministry of Home Affairs while the operational control lies with the Ministry of Defence.**
 - The meeting discussed about a note moved by the MHA for the CCS on March 20 for resolving the issue of dual control over Assam Rifles.
 - The CCS is chaired by the Prime Minister and comprises the Minister of External Affairs, the Home Minister, the Finance Minister and the Defence Minister.
 - It was decided by both the MHA and the MoD that they will abide by the decision of the CCS, the MHA told the High Court in its affidavit.
 - The Court is now learnt to have issued a notice to the Cabinet Secretary to inform it as to what decision the CCS had taken on the note forwarded to it by the MHA, an official said.
 - The Court was hearing a petition filed by the Assam Rifles Ex-Servicemen Welfare Association on the **difficulties faced by the retired personnel of the force with regard to the payment of pension due to the dual control of the force.**
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Indigenisation in enhanced coastal security

Why in news?

Chief of Army Staff General Bipin Rawat called for enhanced coastal security and expressed satisfaction over the thrust being attached by the Indian Coast Guard (ICG) for indigenisation and augmenting its fleet under 'Make in India' programme to face the challenges posed by various elements.

ICG Veera:

- He was speaking after commissioning the **Indian Coast Guard Ship Veera, third in the series of seven offshore patrol vessels built by L&T Shipbuilding.**
- Describing the induction of the ship as a historic occasion, Gen. Rawat said the dynamics of modern conflicts was fast changing.
- Scenarios to fight in the sea and air are undergoing change, he said and stressed the need to work in close coordination with the Army, and explained how they were successfully working jointly in the Andamans and other parts.
- Stating that the Coast Guard was the **youngest force created by the Ministry of Defence in 1978**, he said they had been mandated to take up various operations to ensure round the clock surveillance with a hawk eye vigil on coastal and maritime security.

Joint operations:

- Gen. Rawat said that the Coast Guard had developed **flexibility and resilience** to work as per the demand and underlined how it had played a stellar role in taking up joint operations with the Army.
 - The induction of air cushion vehicles would further strengthen the capabilities of the Coast Guard, the fourth largest force in the world.
 - He said the Coast Guard was working in close coordination with the Navy and other stakeholders in serving the **maritime security and coastal security.**
 - It was also extending aid to civil authorities in the event of natural calamities such as cyclones and floods, he said and cited how it saved several lives during the Chennai and Kerala floods.
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Sunstroke cases on the rise in Andhra Pradesh

Why in news?

Even as the State government and the Disaster Management Authority (APSDMA) are implementing the “**heat wave action plan**” in view of increasing summer heat, several people in the State are being affected by sunstroke.

Rise in Numbers:

- The number of sunstroke cases registered across the State so far this season has already crossed the total number of sunstroke cases registered during the last summer season.
- According to APSDMA, which is at the helm of heat wave impact mitigation, so far 346 cases of sunstroke (hospitalisation) have been reported by the authorities concerned of all the districts up to April 14.
- The highest number of sunstroke cases occurred in Kadapa district, where 143 cases were reported. It is followed by Guntur and Visakhapatnam districts that registered 84 and 41 cases respectively.
- Last year, in the entire summer season, eight cases of sunstroke deaths were reported, and only 242 cases of hospitalisations due to sunstroke were reported, according to officials. So far, the highest maximum temperature recorded in the State was **44 degrees Celsius** at Gollavidipi of Prakasam district on April 14.

Heat wave:

- As per the reports, severe heat wave condition is predicted in two mandals and heat wave condition is predicted in 48 mandals of the State on Tuesday. Also, as per the Discomfort Index, 133 mandals will experience very hot weather.
- Admitting that there was an increase in the number of sunstroke cases, APSDMA said the government is leaving no stone unturned to mitigate the impact of rising temperatures.
- SDMA had for the first time prepared a **heat wave atlas** that consolidates the highest temperatures recorded in the state between 2010 and 2018 and marks vulnerable mandals also called as hot spots

so that effective precautions could be taken.

- SDMA had so far conducted 42,000 **heat wave awareness campaigns** and distributed 3.27 lakh ORS packages besides setting up 11,107 water kiosks.
 - As a precautionary measure 13,212 emergency shelters were arranged in schools, colleges and other buildings.
 - The government was also focussing on **heat index which is a combination of high temperature and humidity** that is usually found high in the coastal districts.
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Plea in SC seeks entry of women into mosques

Why in news?

A couple has moved the Supreme Court against the prohibition of entry of Muslim women into mosques, terming the bar as illegal, unconstitutional and a violation of their dignity.

Demand for gender equality:

- There should not be any gender discrimination. Allow Muslim women to pray in all mosques, cutting across denominations.
- There is no such gender discrimination to offer worship in Mecca, the holy city. The faithful, both men and women, together circle the Kaaba," the Pune-based couple, Yasmeen Zuber Ahmad and Zuber Ahmad, submitted in their petition.
- Women are now **allowed to offer prayers at mosques under the Jamaat-e-Islami and Mujahid denominations.**
- Muslim women are barred from mosques under the predominant Sunni faction.
- Even in mosques where women are allowed, there are separate entrances and enclosures for men and women.

Petitioner's plight:

- The couple said they had approached **several Islamic religious**

heads on the issue, but received no positive response.

- In fact, the petition said, “The Imam of Jama Masjid, Bopodi, Pune had written that since no permission can be granted, he is not sure about entry of women in mosque.”
 - The petitioners said the **police did not also respond to their request** to provide them protection for entering mosques.
 - The petition comes several months after the **Supreme court upheld the dignity of women worshippers aged between 10 and 50 by lifting the bar on them to pray at the Sabarimala temple in Kerala.**
 - The court concluded that the bar amounted to discrimination and even a practice of untouchability.
 - **The Haji Ali Dargah Trust had also agreed in the Supreme Court to allow women to enter the sanctum of the shrine.**
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Sub-sonic cruise missile Nirbhay

Why in news?

In a major boost for defence, India successfully test-fired its first Sub-sonic cruise missile, Nirbhay. The launch was conducted from a test range in Odisha.

Successful Test:

- The missile, which can be deployed from multiple platforms, was launched by the **Defence Research and Development Organisation** (DRDO) from complex-3 of the Integrated Test Range (ITR) at Chandipur, PTI reported.
- Describing the trial “successful”, DRDO said the missile, which is capable of loitering and cruising at **0.7 Mach at altitude as low as 100 meters**, covered the designated target range in 42 minutes and 23 seconds.
- The test flight achieved all the objectives from lift off till the final splash, DRDO said.
- The missile majestically cruised and covered it’s given range,”

officials at DRDO were quoted as saying by PTI.

- Nirbhay was tracked with the help of **ground-based radars** and other parameters were monitored by indigenous telemetry stations developed by DRDO. The missile test was conducted in a phased manner.
 - The last successful trial of 'Nirbhay' cruise missile was conducted on November 7, 2017.
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China ready to wait for India's BRI participation

Why in news?

China signalled that it was ready to wait for India's participation in President Xi Jinping's signature Belt and Road Initiative, but also pointed to possible downside to New Delhi's delay in participating in the giant connectivity project.

- In response to a question on the likelihood of India's non-participation in the upcoming Belt and Road Forum (BRF) that will take place later this month, Foreign Ministry spokesperson Lu Kang stressed that Beijing was ready to exercise patience.
- He highlighted that if the relevant side would like to wait and see, we do not oppose that.
- The spokesperson's remarks align with China's perception about India's participation in BRI following last April's **Wuhan informal summit** between President Xi and Prime Minister Narendra Modi.
- In August, Zhang Jun, China's Assistant Minister of Foreign Affairs, said that **India was China's "natural partner" in the Belt and Road Initiative** (BRI).
- He pointed out that "historically India was an important country on the ancient Silk Road, and it is fair to say that India was a natural partner on the ancient and (is one) in the Belt and Road Initiative".
- But during the media briefing on Monday, Mr. Lu emphasised that India could be negatively impacted if it arrived as latecomer in the

BRI family.

- In an obvious reference to New Delhi, the spokesperson said that “some countries will lose some opportunities as more international organisations are participating at the (BRF) event”.
- The Chinese Foreign Ministry stressed that BRI is an “**international public good**”.
- As for the Indian comment on not participating in the BRI for various reasons I would like to say that **BRI is an open and inclusive economic cooperation initiative** it does not involve territorial and maritime dispute.
- During the Belt and Road initiative China and other countries uphold **the principles of equality and open transparency**. We follow market-based principles and the customary international rules. I think some sides have misunderstandings on the Belt and Road initiative and thus have some wrong judgment,” Mr. Lu observed.

India's Opposition:

- **Citing sovereignty concerns**, India has not joined the BRI, following the establishment the China-Pakistan Economic Corridor (CPEC) that passes through Pakistan Occupied Kashmir.

China using Artificial Intelligence to profile ethnic Muslims

Why in news?

The Chinese government has drawn wide international condemnation for its harsh **crackdown on ethnic Muslims in its western region**, including holding as many as 1 million of them in detention camps.

Racial Profiling:

- Now, documents and interviews show that authorities are also using a vast, secret system of advanced facial recognition technology to track and control the **Uighurs, a largely Muslim minority**.

- It is the first known example of a government intentionally using artificial intelligence for racial profiling, experts said.
- The facial recognition technology, which is integrated into China's rapidly expanding networks of surveillance cameras, looks exclusively for Uighurs based on their appearance and keeps records of their comings and goings for search and review.
- The practice makes China a pioneer in applying next-generation technology to watch its people, potentially ushering in a new era of automated racism.
- The technology and its use to keep tabs on China's 11 million Uighurs were described by five people with direct knowledge of the systems, who requested anonymity because they feared retribution.
- The New York Times also reviewed databases used by the police, government procurement documents and advertising materials distributed by the AI companies that make the systems.

Surveillance net:

- Chinese authorities already maintain a vast surveillance net, including tracking people's DNA, in the **western region of Xinjiang, which many Uighurs call home.**
- But the scope of the new systems, previously unreported, extends that monitoring into many other corners of the country.
- Police are now using facial recognition technology to target Uighurs in wealthy eastern cities like Hangzhou and Wenzhou and across the coastal province of Fujian, said two of the people.
- Law enforcement in the central Chinese city of Sanmenxia ran a system that over the course of a month this year screened whether residents were Uighurs 500,000 times.
- A new generation of startups catering to Beijing's authoritarian needs are beginning to set the tone for emerging technologies like artificial intelligence. Similar tools could automate biases based on skin colour and ethnicity elsewhere.

First' 3D printed heart has human cells, vessels

Why in news?

Scientists in Israel unveiled a 3D print of a heart with human tissue and vessels on Monday, calling it a first and a “major medical breakthrough” that advances possibilities for transplants.

For the First time:

- The heart marked “the first time anyone has successfully engineered and printed an entire heart replete with cells, blood vessels, ventricles and chambers,” said Tel Aviv University’s Tal Dvir, who led the project.
- People have managed to 3D-print the structure of a heart in the past, but not with cells or with blood vessels,” he said.
- But the scientists said many challenges remain before fully working 3D printed hearts will be available for transplant into patients.
- Journalists were shown a 3D print of a heart about the size of a cherry at Tel Aviv University on Monday. The findings were published in the journal Advanced Science.
- Researchers must now teach the printed hearts “to behave” like real ones. Then they plan to transplant them into animal models, said Mr. Dvir. “Maybe, in 10 years, there will be organ printers in the finest hospitals around the world, and these procedures will be conducted routinely,” he said.
- But he said hospitals would likely start with simpler organs than hearts.

What is 3D Printing?

- 3D printing is based on methods of applying a **2D image on a 3D surface, a system for generating three-dimensional objects by creating a cross-sectional pattern of the object to be formed.**
- 3D scanning is the process of analysing and collecting data of real object; its shape and appearance and builds digital, three dimensional models.
- 3D Printing employs **additive layer processes**, where successive layers of materials are laid down in different shapes.
- Some companies offer on-line 3D printing services open to both consumers and industries. Such services require people to upload their 3D designs to the company website.

- Designs are then 3D printed using industrial 3D printers and either shipped to the customer or in some cases; the consumer can pick the object up at the store.

How it works?

- 3D printing works under **computer control and is a limited type of industrial robotics** that is capable of carrying out an additive process.
- The 3D printer can print with anything that can be dispensed from a syringe as liquid or paste.

Applications:

- The 3D printing technology is used for both prototyping and distributed manufacturing with applications in architecture, construction, industrial design, automotive, aerospace, military engineering, civil engineering, dental and medical industries, biotech (human tissue replacement), fashion, footwear, jewellery, eyewear, education, geographic information systems, food, and many other fields.
- Even the first working blueprint to produce a plastic gun with a 3D printer was available on a website in May 2013 (removed later on from the site)!
- **China has committed around \$500 million** towards the establishment of national 3-D printing development institutes.
- In 2013, Chinese scientists began printing ears, livers and kidneys, with living tissue instead of plastic successfully using specialized 3D bio print.

