

Current Affairs search results for tag: science-and-technology

1. IPCC warns of irreversible impact of global climate change (March 1, 2022)

The Intergovernmental Panel on Climate Change (IPCC) has warned of a grim future for earth if global warming continues and the global temperatures continue to increase beyond 1.5% .

- The latest warnings have come in the second part of IPCC's Sixth Assessment Report which talks about climate change impacts, risks and vulnerabilities, and adaptation options. The first part of the report was released in August last year.
- The Assessment Reports, the first of which had come out in 1990, are the most comprehensive evaluations of the state of the earth's climate. Later reports were released in 1995,2001,2007 and 2015.

The report highlights the increasing impacts that are expected as the rise in global temperatures, currently around 1.1C, heads to 1.5C above the 1850s level.

Highlights of the report

- South Asia is the most vulnerable to severe climate change impacts due to its inequality and poverty .
- The Ganga, Indus, Amu Darya river basins in Asia will face severe water scarcity by 2050. It will adversely affect agriculture and drinking water scarcity in the region .
- Ahmedabad city faces a risk of urban heat island effect . It means that the average temperature in the city will be higher than the surrounding areas.
- Mumbai is at a high risk of rising sea level and consequent flooding
- If the temperature increases by 1-4 degree centigrade then rice production in the world can fall by 10-30% and maize production can fall by 25-70%.
- If temperatures rise to between 1.7 and 1.8C above the 1850s level, then the report states that half the human population could be exposed to periods of life-threatening climatic conditions arising from heat and humidity.

Rising Sea Level

According to the IPCC report, global sea levels will likely rise 44-76 cm this century if governments meet their current emission-cutting pledges. With faster emission cuts, the increase could be limited to 28-55 cm.

But with higher emissions, and if ice sheets collapse more quickly than expected, sea levels could rise as much as 2 m this century and 5 m by 2150.

Wet Bulb Temperature

- Lucknow and Patna ,Bhubaneswar, Chennai, Mumbai, Indore, and Ahmedabad , are among the cities predicted to reach wet-bulb temperature of 35°C if emissions continue to rise.

- Assam, Meghalaya, Tripura, West Bengal, Bihar, Jharkhand, Odisha, Chhattisgarh, Uttar Pradesh, Haryana and Punjab will be the most severely affected, but if emissions keep rising, all States will have regions that experience wet-bulb temperature of 30°C or more by the end of the century.

IPCC

The Intergovernmental Panel on Climate Change was set up by the World Meteorological Organisation and the United Nation Environment Programme in 1988.

Aim of IPCC

It was set up to prepare a comprehensive review and recommendations with respect to

- the state of knowledge of the science of climate change;
- social and economic impact of climate change,
- potential response strategies and elements for inclusion in a possible future international convention on climate.

Its Headquarters : **Geneva, Switzerland**

Current Chairman : **Hoesung Lee**

It shared Nobel Peace Prize with the former American Vice-President Al Gore in 2007

Concept Clearing

What is Wet Bulb Temperature

Human body regulates our body temperature depending upon the external environment of heat and humidity. If the temperature is high then our body tries to lower down our body temperature by sweating. The more we sweat the faster the cooling. However if humidity (water vapour in air) is high then the ability of our body to cool also reduces . That's why dry heat feels more tolerable than extreme humidity.

Wet-bulb temperature accounts for both heat and humidity, and reflects what that combination means for the human body's ability to cool down.

The term wet bulb comes from a way the measurement can be taken, by wrapping a piece of wet cloth around the end of a thermometer to see how much evaporation can decrease the temperature.

35 degree centigrade is considered to be the maximum limit for a wet bulb temperature.

If the wet bulb temperature reaches 35 degree centigrade then a normal healthy human being cannot lose its body heat by sweating and will suffer heat stroke leading to death if they remain outdoors for a considerable period of time.

With the continuous rise in earth temperature the risk of wet bulb temperature phenomena is expected to become common.

2. MSME Technology conclave Center to be set up in Sindhudurg (Feb. 26, 2022)

Union Minister for Micro, Small & Medium Enterprises (MSME), Shri Narayan Rane announced the establishment of MSME-Technology Centre with an outlay of Rs. 200 Crore, in Sindhudurg, Maharashtra on 25 February 2022.

- The MSME-Technology Centre will provide the best of technology, incubation as well as advisory support to the industry, especially MSMEs, to enhance their competitiveness and provide skilling services for the employed and unemployed youth of the area to enhance their employability.

The minister also launched the Union MSME RuPay Credit Card of Union Bank of India in Sindhudurg at the two day MSME Conclave being held in the district from 25-26 February 2022.

- The card is being offered by Union Bank of India in association with National Payments Corporation of India (NPCI).
- MSME borrowers will be able to enjoy an interest-free credit period of up to 50 days on their business spends. The card also offers the EMI (Equated Monthly Installments) facility to the customers on their business-related purchases.

The two-day MSME Conclave (25 and 26 February) was organized in Sindhudurg by the Ministry of MSME. The Conclave aims to promote entrepreneurship and trade opportunities for MSMEs in the Konkan region by hand holding them in use of technology, product development and skilling.

Concept Clearing

MSME (Micro Small and Medium Enterprises)

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The MSME has been defined by the 'Micro, Small and Medium Enterprises Development Act, 2006 as amended in 2020.

The enterprises which are which are either in the business of Manufacturing or providing service has been defined as Micro, Small , Medium enterprises on the basis of Investment in plant and machinery needed for production of good (for manufacturing sector) or services and Turnover (sales)

Micro Enterprises : where the investment in Plant and Machinery or Equipment does not exceed one crore rupees and turnover does not exceed five crore rupees;

Small Enterprise: where the investment in Plant and Machinery or Equipment does not exceed ten crore rupees and turnover does not exceed fifty crore rupees;

Medium enterprise, where the investment in Plant and Machinery or Equipment does not exceed fifty crore rupees and turnover does not exceed two hundred and fifty crore rupees.

3. Svalbard Global Seed Vault to receive rare seeds deposits (Feb. 14, 2022)

The Svalbard Global seed vault on **Spitsbergen island** halfway between mainland Norway and the North Pole is only opened a few times a year to limit its seed banks' exposure to the outside world.

On 14 February 2022, the gene banks from Sudan, Uganda, New Zealand, Germany and Lebanon will deposit seeds, including millet(bajra), sorghum(Jowar) and wheat, as back-ups to their own collections in the vault.

- The Seed Vault is owned and administered by the Ministry of Agriculture and Food on behalf of the Kingdom of Norway and is established as a service to the world community.
- The Svalbard Global Seed Vault provides insurance against both incremental and catastrophic loss of crop diversity held in traditional genebanks around the world. The Seed Vault offers long-term protection for one of the most important natural resources on earth.
- The vault is located an extraordinary 120 metres (393.7 feet) into the rock, ensuring that the vault rooms will remain naturally frozen even in the event of failure of the mechanical cooling system and rising external air temperatures due to climate change.
- The Seed Vault has the capacity to store 4.5 million seed samples.
- The vault at present holds over 1.1 million seed samples of nearly 6,000 plant species from 89 seed banks globally, and serves as a backup for plant breeders to develop new crop varieties.
- The world used to cultivate more than 6,000 different plants but U.N. experts say we now get about 40% of our calories from three main crops -- maize, wheat and rice -- making food supplies vulnerable if climate change causes harvests to fail.

Important for Exams

Important Place

Svalbard : Norway

4. ISRO launches first satellite of the 2022 (Feb. 14, 2022)

The Indian Space Research Organisation- (ISRO) successfully launched a **Polar Satellite Launch Vehicle -C52(PSLV-C52)** on 14 February 2022 from the Satish Dhawan Space Centre at Sriharikota in Andhra Pradesh.

The PSLV-C52 rocket carried three satellites EOS-04 ,INSPIR Esat-1and INS-2TD)

Satellites carried by PSLV-C52

ESO-04 Satellite

- It is a Radar Imaging Satellite designed to provide high quality images under all weather conditions for applications such as Agriculture, Forestry and Plantations, Soil Moisture and Hydrology and Flood mapping.
- It is a 1,710 kg satellite which was built at the UR Rao Satellite Centre in Bengaluru.

It will be deployed into a sun synchronous polar orbit of 529 km.

INSPIRESat-1

It is a micro satellite made by students of Indian Institute of Space Science and Technology ,Thiruvananthapuram, Kerala in association with Laboratory of Atmospheric and Space Physics at University of Colorado, Boulder, Nanyang Technology University (NTU), Singapore and National Central University(NCU),, Taiwan.

INS-2TD

It is a technology demonstrator satellite which is a forerunner to the India-Bhutan satellite INS 2-B

Fact about ISRO PSLV Mission

- Polar Satellite Launch Vehicle is a four stage rocket of ISRO which was launched on 30 September 1993 for the first time .
- This was the 80th launch vehicle mission from SDSC SHAR, Sriharikota;
- It was the 54th flight of PSLV;
- It was the 23rd flight of PSLV in the XL configuration (6 strap-on motors).

Indian Space Research Organisation (ISRO)

- ISRO was set up on 15 August 1969
- Chairman of ISRO: S Somnath
- Headquarters of ISRO : Bengaluru, Karnataka
- Space Station from where ISRO launches rockets
- Satish Dhawan Space Centre (SDSC) SHAR, Sriharikota, Andhra Pradesh.

Full form for Exam

- **ISRO**: Indian Space Research Organisation
- **PSLV** : Polar Satellite Launch Vehicle
- **EOS** : Earth Observation Satellite
- **SDSC**: Satish Dhawan Space Centre
- **SHAR** :Sriharikota Range

5. Tower of Silence to be fenced (Feb. 5, 2022)

The Supreme Court has approved the Parsi(Zoroastrian) community agreement with the Government of India to fence their **Tower of Silence** in order to follow Covid protocol

regarding the disposal of dead bodies. The dead bodies of the community will be now fenced with a metallic net in their tower of silence .

- In the Parsi Dokhamanshini tradition, the dead body is kept on the roof of a structure referred to as the tower of silence, to be eaten by vultures, and the remains are left to decompose under the sun.
- The Parsi community approached the court after the Government of India issued a guideline regarding disposal of dead bodies during covid pandemic. The bodies were to be fully covered and were to be either buried or burnt as coronavirus was found to be active on dead bodies for nine days .
- The Parsi community argued that it was against their custom of Dokhamanshini.

Now in a compromise the community and the government have agreed to fence the dead body with metallic mesh in the tower of silence , so that it is not eaten by vultures and the spread of coronavirus can be stopped .

According to the 2011 census the total population of Parsis in India was 57,624.

6. International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) (Feb. 5, 2022)

The Prime Minister inaugurated the 50th Anniversary celebrations of ICRISAT.

- He inaugurated ICRISAT's Climate Change Research Facility on Plant Protection and ICRISAT's Rapid Generation Advancement Facility.
- These two facilities are dedicated to the smallholder farmers of Asia and sub-Saharan Africa.
- The Prime Minister also unveiled a specially designed logo of ICRISAT and launched a commemorative stamp issued on the occasion.

ABOUT ICRISAT

ICRISAT is a non-profit international organisation founded by renowned agricultural scientists **M.S.Swaminathan,C.Fred Bently and Ralph Cummins in 1972 at Patancheru, Hyderabad.**

- It was set up to conduct agricultural research for development in the drylands of Asia and sub-Saharan Africa.
- Its mission is to empower these poor people to overcome poverty, hunger and a degraded environment through better agriculture.
- It helps farmers by providing improved crop varieties and hybrids and also helps smallholder farmers in the drylands fight climate change.

- It has two regional hubs at Nairobi(Kenya) and Bamako(Mali). It has country offices in
- Niger, Nigeria, Zimbabwe, Malawi, Ethiopia and Mozambique.

7. ISRO will launch Chandrayaan 3 in August 2022 (Feb. 4, 2022)

Union Minister of State in the Department of Atomic Energy of India Dr. Jitendra Singh on 3rd February 2022 informed the Lok Sabha that the Indian Space Research Organisation's (ISRO's) Chandrayaan-3 is scheduled for launch in August 2022.

- The Chandrayaan-1 mission was launched on 22nd October 2008 using the PSLV-C11. The major discovery of the Chandrayaan-1 mission is the detection of water (H₂O) and hydroxyl (OH) on the lunar surface.
- The Chandrayaan-2 mission was launched on 22nd July 2019. It comprised an Orbiter, Lander (Vikram) and Rover (Pragyan) sent aboard the country's most powerful geosynchronous launch vehicle the GSLV-Mk3 However, lander Vikram which to land on the moon's South Pole, instead of a controlled landing, ended up crash-landing on September 7, 2019. It still has a fully operational orbiter.
- Chandrayaan-3 will be the follow-up mission of Chandrayaan-2. It will only include Lander and Rover.
- Other major projects of ISRO such as first manned mission **Gaganyaan** and mission to Sun, **Aditya Solar Mission** are also in the pipeline for this year.
- The number of missions planned by the ISRO from January 2022 to December 2022 are 19.

Some of the important mission are::

- **RISAT-1A PSLV C5-2 Satellite** (scheduled for launch in mid-February 2022).
- **OCEANSAT-3** and **INS 2B ANAND** on **PSLV C-53** (scheduled for launch in March 2022).
- **SSLV-D1 Micro SAT** (scheduled for launch in April 2022).
- **GSAT-24 through the Ariane 5 rocket** owned by Arianespace (scheduled for launch in the first quarter of 2022).

Note

RISAT:- Radar Imaging Satellite

PSLV:- Polar Satellite Launch Vehicle

SSLV:- Small Satellite Launch Vehicle

8. Atal Innovation Mission declares results for Space Challenge 2021 (Jan. 13, 2022)

The Atal Innovation Mission (AIM), NITI Ayog on 12th January 2022 announced the results of the "ATL Space Challenge 2021" which was launched in collaboration with Indian Space Research Organisation (ISRO) and Central Board of Secondary Education (CBSE) on September 6th, 2021.

Atal Innovation Mission declares results for Space Challenge 2021

- Mission Director, AIM, Dr. Chintan Vaishnav unveils the winners through a virtual event.
- The ATL Space Challenge witnessed over 2500 submissions from both ATL and Non-ATL students across the country from which **75 top innovators were selected and announced**. ATL Space Challenge 2021 witnessed over 6500 students participating in the challenge from 32 States/ UTs. This Challenge also had a heartening participation of over 35% from girl students.

The ATL Space Challenge 2021 was launched with an objective to enable innovation among young school students to create something in space sector that will not only help them learn about the space but create something that the space programme can use itself. The Challenge is also aligned with the World Space Week 2021, which is observed from 4 to 10 October each year at the global level in order to celebrate the contributions of space science and technology.

9. Pig's heart in human (Jan. 12, 2022)

Surgeons in the United States have **transplanted a pig's heart in a human patient** that represents a remarkable first in the world of medical science, one whose success could potentially end the years-long backlog of people waiting to get a healthy organ and open up a new world of opportunities.

Pig's heart in human

- The highly experimental surgery was performed on a **57 year old** Maryland resident, **David Bennett** at the University of Maryland Medicine (UMM) on January 7, 2022.
- Surgeon **Dr. Bartley P Griffith** conducted the first-in-the-world surgery.

Gene editing by the United States biotech firm Revivicor:

- The transplanted heart was harvested from the pig that had undergone genetic editing.
- The scientists removed the three genes of the pig "that would have led to rejection of an animal's heart by the human body" along with the one that would have led to the excessive growth of pig's heart tissues.
- Further six human genes that would have facilitated the organ's acceptance by the human body were inserted into the pig genome, meaning that a total of 10 unique edits were carried out in the pig.

Xenotransplantation:

The process of transplanting or grafting of animal organs is known as Xenotransplantation.

Points to Know:

- The world's first human-to-human heart transplant was performed by **Dr. Christiaan Barnard** at Groote Schuur Hospital in Cape Town, South Africa on 3 December 1967.
- In India the first heart transplant was done by **Dr. Prafulla Sen** on 16 February 1968 in Bombay now Mumbai, however the patient died on the same day
- The first successful heart transplant in India was done by a team of Doctors led by **Dr. P. Venugopal** at AIIMS, New Delhi on 3 August 1994.

10. India successfully tests advanced “Sea to Sea” variant of BrahMos Missile (Jan. 11, 2022)

India on 11th January 2022 successfully tested an advanced sea variant of **BrahMos Supersonic Cruise Missile** from newly commissioned **INS Visakhapatnam**.

India successfully tests advanced “Sea to Sea” variant of BrahMos Missile

- Defence Research and Development Organisation, DRDO said the missile hit the designated target precisely.
- Raksha Mantri Rajnath Singh congratulated the team work of DRDO and Indian Navy.
- The Indian Navy tweeted, “Successful test-firing of the extended-range BrahMos Supersonic Cruise missile from INS Visakhapatnam, Indian Navy’s newest indigenously-built guided missile destroyer, represents a twin achievement: Certifies the accuracy of the ship’s combat system and armament complex. Validates a new capability the missile provides the Navy and the Nation.”

Additional Information:

- The Indian Navy began deploying BrahMos, which has the capability to hit sea-based targets beyond radar horizon, on its frontline warships from 2005.
- The BrahMos from ship can be launched as a single unit or in a salvo up to eight in numbers separated by 2.5 second intervals. These salvos can hit and destroy a group of targets having modern missile defence systems. BrahMos as a ‘prime-strike weapon’ for the ships significantly increases their capability of engaging naval-surface targets at long ranges.

A combination of the names of **Brahmaputra and Moskva rivers**, BrahMos missiles are designed, developed and produced by BrahMos Aerospace, a **joint venture** company set up by the **DRDO and the Mashinostroyeniya of Russia**.