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1. India's '2023 Science Vision' (Jan. 6, 2023)

India's '2023 Science Vision'

Briefing the media about the '2023 Science Vision', Union Minister **Dr. Jitendra Singh** said, "The future belongs to those who have innovative ideas and out-of-the-box goals, and the conviction and courage to achieve them." He said this on the occasion of the [Indian Science Congress](#).

108th Indian Science Congress

- The 108th Indian Science Congress is being held on **January 3-7, 2023** at **Rashtrasant Tukadoji Maharaj (RTM) Nagpur University** in Nagpur, Maharashtra.
- Prime Minister **Narendra Modi** virtually inaugurated the Indian Science Congress on January 3.
- He talked about the achievements India has acquired in Science and Tech.
- The theme of this year's Indian Science Congress is "**Science and Technology for Sustainable Development with Women Empowerment.**"

2023 Science Vision

- The development of science, technology and innovation is the only way for **sustainable development**.
- The Prime Minister said in ISC 2023, in 2015 India was ranked **81st in the Global Innovation Index** of 130 countries, but has reached **40th position** in 2022.
- Most of the major S&T companies around the world are being headed by people from India.
- India has been a staunch supporter of promoting scientific temper in daily life. "Science, technology and innovation will define **India@100 in 2047**."

2. The first-ever "National Genome Editing & Training Centre" inaugurated at Mohali (Jan. 6, 2023)

The first-ever "National Genome Editing & Training Centre" inaugurated at Mohali

Union Minister of State for Science and Technology **Dr. Jitendra Singh** on 5 January inaugurated "**National Genome Editing and Training Centre (NGETC)**" at **National Agri-food Biotechnology Institute (NABI) Mohali** in Punjab.

An overview of the news

- He also inaugurated the 4-day International Conference on **Food and Nutrition Security 2023**.
- He said that Agri-tech start-ups have a unique potential in India and more awareness is needed to make it successful.

National Genome Editing and Training Centre (NGETC)

- It is equipped with **state-of-the-art facilities** and is a suitable platform for adoption of various **genome editing methods** including **genome modification** and to meet regional needs.
- The center will also help in improving crops in present climate scenarios and making them more tolerant to changing environmental conditions.
- NGETC will cater to the regional needs for adoption of various **genome editing methods**.
- It will also empower young researchers by providing them training and guidance regarding its application in crops.

What is Genome Editing?

- Genome editing, also known as **gene editing**, is a group of different technologies that provide scientists with the ability to alter the **deoxy-ribonucleic acid (DNA)** of an organism.
- These technologies allow genetic material to be added, removed, or changed at particular locations in the **genome**.

3. Hydrogen blended PNG project starts operation at NTPC Kawas ,Gujarat (Jan. 3, 2023)

India's largest power company [NTPC Ltd](#) has commissioned India's first **green hydrogen blending project** at **Kawas**, Gujarat. The piped natural gas (PNG) blended with green hydrogen gas is being supplied through the Gujarat Gas limited piped natural gas (PNG) network in the NTPC Kawas township, Surat.

In April 2022 the NTPC signed an agreement with Gujarat Gas for blending of green hydrogen in the piped natural gas (PNG) to be supplied to the NTPC Kawas Township.

Green Hydrogen refers to the breaking down of the water molecule into hydrogen and oxygen using renewable sources of energy.

The Central government owned NTPC provides the green hydrogen produced at its **1 megawatt (MW) floating solar project of NTPC Kawas** in the Surat district of Gujarat for blending purposes.

Initially, the percentage of hydrogen blending in the PNG shall be around **5% and** after successful completion, it will be increased. The Hydrogen blended PNG will be used for **cooking purposes**.

This is the first project of its kind in the country. This is seen as a first step toward the decarbonization of the cooking sector and self-sufficiency for the energy requirements of the nation.

Gujarat Gas Limited (GGL) is India's largest City Gas Distribution (CGD) Company in terms of sales volume, with operation across 43 districts in 6 states and 1 Union territory in the states of Gujarat, Maharashtra, Rajasthan, Haryana, Punjab and Madhya Pradesh and Union Territory of Dadra & Nagar Haveli.

It is owned by Gujarat government owned Gujarat State Petroleum Corporation.

Headquarters: Ahmedabad, Gujarat.

4. 'SMART' program for Ayurveda professionals launched to regulate and boost R&D in Ayurveda (Jan. 2, 2023)

In order to regulate Ayurvedic medical education and boost the research and development in Ayurveda, the government has launched '**SMART**' (**Scope for Mainstreaming Ayurveda Research in Teaching Professionals**) program on 2 January 2023.

The SMART program has been jointly launched by the **Indian System of Medicine (NCISM)** and the **Central Council for Research in Ayurvedic Sciences (CCRAS)**. Both the Institutions come under the Union Ministry of Ayush.

The proposed initiative is conceptualized with an objective to identify, support and promote innovative research ideas in healthcare research areas through Ayurveda colleges and hospitals.

The program was launched by **Vaidya Jayant Deopujari**, Chairman, NCISM and **Prof. Rabinarayan Acharya**, Director General, CCRAS in the presence of **Prof. B. S. Prasad**, President of Board of Ayurveda, NCISM and other senior officials.

Every year **23 October** is observed as [Ayurveda Diwas](#) in India.

Union Ministry of AYUSH (Ayurveda, Yoga, Unani, Siddha, Homoeopathy)

- The Ministry of AYUSH was set up on the 9th of November 2014 to revive the knowledge of traditional Indian systems of medicine.
- It focuses on education and research in the fields of Ayurveda, Yoga Naturopathy, Unani, Siddha, and Homoeopathy.
- Minister of AYUSH: **Sarbananda Sonowal**

5. Centre to launch the Digital India Innovation Fund for catalyzing deep tech start-ups (Jan. 2, 2023)

Minister of State for Electronics and IT, Rajeev Chandrasekhar on 30th December 2022 said that the central government is going to launch a Digital India Innovation Fund that will support deep-tech startups.

What is Deeptech?

- Technology that is based on tangible engineering innovation or scientific advances and discoveries are known as Deep tech.
- It is a term used to describe technologically based companies or enterprises that develop innovative solutions and approaches to address major societal challenges such as climate change, food production, chronic diseases, waste recycling and others.
- As for the technologies, deep tech involves the vast utilization of advanced solutions, including Artificial intelligence & Machine learning, Big data, Nanotechnologies, Blockchain, Quantum computing, Robotics etc.

India's Deeptech ecosystem

- India's deep-tech ecosystem has grown by 53% in the last decade and is now at par with developed economies such as the US, China, Israel and Europe.
- From drone delivery and cold chain management to climate action and clean energy, deep-tech start-ups are making their presence felt in all sectors.
- Bengaluru accounts for 25-30% of India's deep-tech start-ups, followed by Delhi-NCR (15-20%) and Mumbai (10-12%).

6. PM to address 108th Indian Science Congress to be held in Nagpur (Jan. 1, 2023)

PM to address 108th Indian Science Congress to be held in Nagpur

Prime Minister Narendra Modi will address the **108th Indian Science Congress (ISC)** on 3rd January, 2023 through video conferencing. The 108 Indian national Science Congress is being organised by the **Indian Science Congress Association** from 3-7 January 2023 at the **Rashtrasant Tukadoji Maharaj Nagpur University**.

The 107 Indian Science Congress 2022 was held at the University of Agricultural Sciences, GKVK Campus, Bangalore, Karnataka in January 2022.

Theme of the 108th Indian Science Congress 2023: Science and Technology for Sustainable Development with Women Empowerment”.

The Congress will hold discussions on issues of sustainable development, women empowerment and the role of science & technology in achieving this. A special programme to showcase the contribution of women in science and technology will also be held, which will also witness lectures by renowned women scientists.

Other Programmes at the ISC

Several other programmes will also be organised alongside ISC. **Children's Science Congress** will also be organised to help stimulate scientific interest and temperament among children. **Farmer's Science Congress** will provide a platform to improve the bio-economy and attract youth to agriculture.

Tribal Science Congress will also be held, which will also be a platform for scientific display of indigenous ancient knowledge system and practice, along with focusing on the empowerment of tribal women.

Indian Science Congress Association

The Indian Science Congress Association owes its origin to the two British Chemists, Professor J. L. Simonsen and Professor P. S. Mac Mahon. It was set up in **Kolkata** in 1914.

It was their view that scientific research in India would be stimulated if an annual meeting of research workers somewhat on the lines of the British Association for the Advancement of Science could be arranged.

Every year its members meet annually in the first week of January named Indian Science Congress. The first session of the Congress was held in **1914**.

7. Dinesh Kumar Shukla assumes the charge as the Chairman of the Atomic Energy Regulatory Board (Dec. 31, 2022)

Dinesh Kumar Shukla assumes the charge as the Chairman of the Atomic Energy Regulatory Board

Distinguished Scientist and former Executive Director of Atomic Energy Regulatory Board (AERB) **Dinesh Kumar Shukla** assumed the charge as Chairman, AERB on 31st December 2022. He has been appointed to this post for a period of **three years**.

The Atomic Energy Regulatory Board was constituted on November 15, 1983, by the President of India under the Atomic Energy Act, 1962 to carry out certain regulatory and safety functions.

The regulatory authority of AERB is derived from the rules and notifications promulgated under the Atomic Energy Act and the Environment (Protection) Act, 1986.

The Mission of the AERB is to ensure the use of ionizing radiation and nuclear energy in India does not cause undue risk to the health of people and the environment.

Currently, the Board consists of a full-time Chairman, an *ex officio* Member, three part-time Members and a Secretary.

Headquarters of AERB: **Mumbai**

8. ISRO, NCES and Andhra University to set up equipment along beaches to predict rip currents and prevent drowning at sea (Dec. 31, 2022)

Indian Space Research Organisation (ISRO)

The [Indian Space Research Organisation \(ISRO\)](#) with **National Centre for Earth Sciences (NCES), Thiruvananthapuram** and Andhra University will jointly set up equipment to forecast **rip currents** at Rushikonda and RK beach of [Visakhapatnam](#), Andhra Pradesh.

According to the state government over 200 people have drowned in sea at various beaches in and around Visakhapatnam during 2012 to 2022 and of these, RK beach in the city accounted for 60 percent of deaths. Majority of the death has been due to the presence of rip currents.

The equipment will be used to inform the local marine and local police to alert visitors in the coastal areas.

Rip currents are powerful, narrow channels of fast-moving water which moves from shore towards sea. The rip currents are so powerful that they pull people away from the shorelines towards sea. The majority of people who are pulled away by the rip currents die when they are unable to keep themselves afloat and swim to the shore.

Rip currents are found in almost all the beaches of the world.

9. SpaceX launched the first 54 Starlink v2.0 satellites into orbit (Dec. 31, 2022)

On December 28, 2022, the **SpaceX Falcon 9 launch vehicle** launched into **low Earth orbit** the **first 54 Starlink satellites** of the **new generation - v2.0 or Gen2**.

Important facts

- The launch took place from the **SLC-40 launch pad** of the **US Air Force Base** at Cape Canaveral. This is the **60th successful SpaceX mission** since the beginning of 2022.
- Starlink v2.0 satellites have several different configurations depending on the launch vehicle.
- v2.0 is carried by the **old Falcon 9**. The mass of such satellites is 303 kg, and the dimensions are almost the same as in v1.5.
- SpaceX currently has **3,604 operational Starlink satellites** in orbit.
- The total number of satellites planned is **12,000** with the possibility of additional expansion up to **42,000**.

About SpaceX

- It is a private spaceflight company that sends satellites and people to space, including NASA crews to the **International Space Station (ISS)**.
- The company sent its first two astronauts to the ISS on May 30, 2020, aboard the SpaceX Crew Dragon, and several more on behalf of NASA and other organizations.
- As of mid-2022, it is the only commercial spaceflight company capable of sending astronauts into space.
- SpaceX was founded by **Alan Musk**, a South African-born businessman and entrepreneur.

10. Five generations of high-temperature stars revealed in the largest Milky Way globular cluster Omega Centauri (Dec. 31, 2022)

Astronomers and scientists at the **Indian Institute of Astrophysics (IIA)** while studying the **Omega Centauri** have found that **hot stars and white dwarfs** emitted less ultraviolet radiation than expected.

Important facts

- The largest known **globular cluster** in the **Milky Way** may provide clues to the formation of a strange class of high-temperature stars in Omega Centauri.

What are Globular clusters?

- A globular cluster is a globular group of stars.
- Globular clusters are bound together by gravity, with high concentrations of stars toward their centres.
- They can include anywhere in the millions of stars.
- These mostly orbit in the extended stellar halo surrounding spiral galaxies.
- It is a matter of research how globular clusters are formed. Or what role they played in the evolution of galaxies.

Omega Centauri

- It is a globular cluster in the constellation of Centaurus that was first identified as a non-stellar object by Edmond Halley in 1677.
- Located at a distance of **17,090 light-years**, it is the largest known globular cluster in the **Milky Way** at a diameter of about 150 light-years.
- It also includes stars of a variety of ages, whereas other globular clusters contain stars from only one generation.

What is Galaxy?

- It is a huge collection of **gas, dust, and billions of stars and their solar systems** bound together by gravity.
- There are more than **100 billion galaxies** in the universe, presenting beautiful structures that can be seen in telescopic images taken from the distant universe.