

PRAJYA

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**Kartavya Path Inaugurated
Statue of Netaji Unveiled**

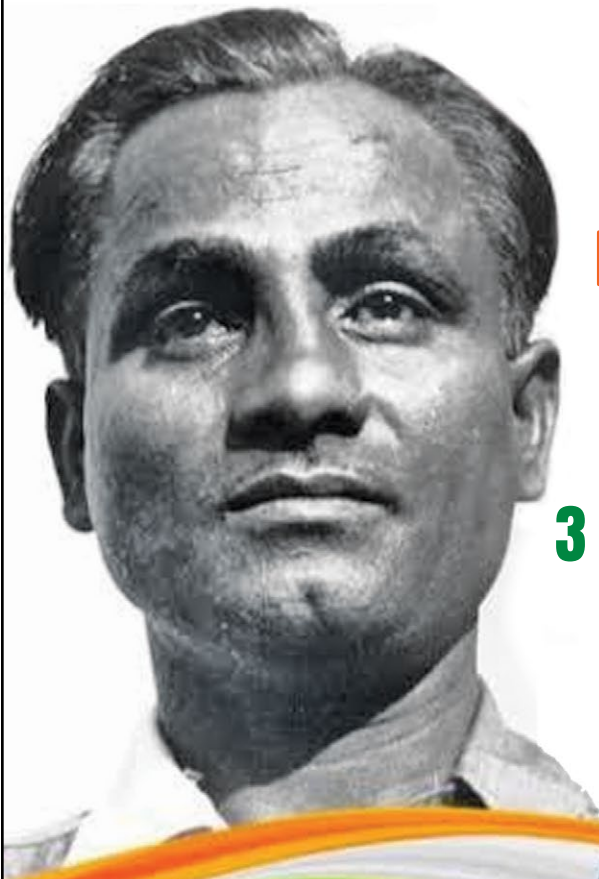


National Sports Day

29th August



.....
DEDICATION + MOTIVATION = SUCCESS
.....



This day marks the birthday
of Indian Hockey Legend

MAJOR DHYAN CHAND

who brought glory to the
country by winning

3 OLYMPIC GOLD MEDALS





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आत्मज्ञान समारम्भस्तितिक्षा धर्मनित्यता ।
यमर्थान्नापकर्षन्ति स वै पण्डित उच्यते ॥

(**Rough translation:** A wise person is someone who is not distracted from the goal and helped by self-knowledge, initiative, forbearance and steadfastness in core values.)

So says the wise Vidura in Mahabharata. This is absolutely relevant whether in practical and mundane or spiritual terms. Understanding one's abilities, interests, skills and strengths helps realise individual potential. This is true of startups, leaders and even nations.

Be it making the needle-free intranasal spray as a vaccine or something gargantuan as the majestic INS Vikrant, success is possible only with sustained and unrelenting focus on achieving the primary objective. A **TB-Mukt -Bharat** is another worthy goal to pursue and achieve. Kochi airport becoming the **first fully solar-powered airport in the world**; setting up of **bio villages** as in Daspara, Tripura; modernizing foodgrain storage infrastructure using the **Hub and Spoke model** and making it a public private partnership enterprise; launching of the **Palan 1000** campaign to educate the parents-to-be so the next generation develops wholistically are a few initiatives that will do us proud. We as individuals and a nation need to remain in focus and keep replicating our stellar achievements.

Some wise person rightly said, "**You are not your struggles. You are the survivor who keeps moving forward in spite of them.**"

Read, reflect and revert with your thoughts and feelings.

We look forward to your support and suggestions.



- **Editorial Team**

Dear Readers,

There have been requests from quite a few readers for hard copies of Prajya. We understand that quite a high percentage of our young readers keep revisiting some articles, and a handy print version within reach induces one to read more often, highlight things and make notes. This also partly contributes to students spending less screen time. The Prajya team is happy to bring to you the issue in print.

However, there are few things that we want to be careful about:

- We don't want to print more than what is required and
 - Keep the cost of the print version (plus postage) within reasonable limits.
- Please note that the access to free online e-version will continue.**

So, it will greatly help us if you could fill in the details in the link provided.

<http://bit.ly/Prajya>

Happy Reading !

Watch out for the Monthly Prajya Quiz online

Visit <https://davchennai.org/publications/prajya-news-magazine/>



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Astra-Rafael

Joint Venture to manufacture Electro-Optic systems

Electro-optical sensors are electronic detectors that convert light, or a change in light, into an electronic signal. These sensors are able to detect electromagnetic radiation from the infrared up to the ultraviolet wavelengths.

Imagine something small and lightweight that is capable of telling the absence or presence and distance of an object. It can switch-on on its own in response to darkness or dimness, and can do much more. We are talking about **electro-optical sensor system**.

This system had been procured by India through global tenders. Now it can be manufactured, upgraded and serviced in the country by a partnership, as part of the **AtmaNirbhar** initiative.

India's **Astra Microwave**

Products Limited and Israel's Rafael Advanced Defense System have come together to form the joint venture company, **Astra Rafael Comsys Private Limited**. They will take up development, manufacturing, integration, customisation and product supply of electro-optical systems in India.

The systems are used for military and security appliances, to identify target, track moving targets, and provide surveillance, navigation and early warning information on the battlefield.

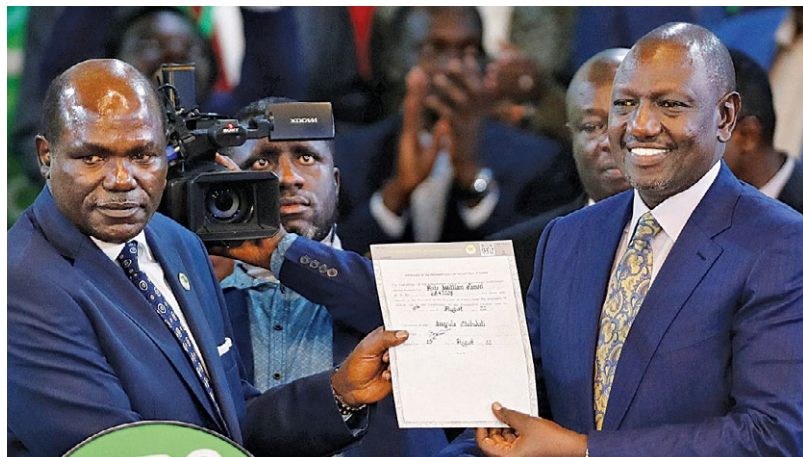




WILLIAM RUTO elected as Kenya's President

DO YOU KNOW

- **Currency:**
Kenyan shilling
- **Official languages:**
Swahili, English
- **An erstwhile British colony, Kenya became independent in 1963.**



Dr. William Kipchirchir Samoei Arap Ruto was sworn in as the fifth President of the Republic of Kenya on 13th September in Nairobi. He was handed a copy of Kenya's constitution and a sword to represent the transfer of power from former president Uhuru Kenyatta.

Born: 21st December 1966

Educational Qualifications:
B.S. (Botany and Zoology), M.S. and a Ph.D. in plant ecology.

Career: 11th Deputy President of Kenya (2013 to 2022).

Political party: Jubilee Party of Kenya.

While Kenyans were reeling from the Covid-19 crisis and hit by rise in food and fuel prices, nearly 40% unemployment and heavy debt, he promised cheaper fertilizer and more affordable credit, more money for the judiciary, financial independence for the national police from the presidency and to fight drought.

Dr. Ruto, a powerful orator, coined the phrase "**Hustler nation**" to refer to the young people struggling to make ends meet.



Artefacts Repatriation

– Restitution of Civilisational Heritage



Indian civilization is one of the oldest in the world with a rich heritage and culture. In many fields like art, culture, astronomy and medicine, India was a powerhouse of knowledge and achievements. The Indic religious tradition was always diverse and inclusive. Temples in ancient India were the centres that synthesized religion, arts and culture.

The exquisitely sculpted *Murthis* and other images, the *Vimanas* and the *Gopurams* demonstrate the levels of excellence of sculpture in ancient India. Apart from this there were also highly evolved arts and art forms. These have been practised and handed down over generations. Thus, India in general and the temples in particular were the storehouses of precious artefacts. These temples were managed by the local communities.

Theft of Heritage

With the arrival of the British, things changed. India lost several precious artefacts through the British rule and then through smuggling activities. The British rule unfortunately created a deracinated educated class. Post independence a significant section

of the ruling class belonged to this category. The section of the Indian society that was very respectful of the Indic beliefs and traditions were oblivious and unmindful of the monetary value of the artefacts while the section that had little respect for Indic culture and traditions were more than aware of the monetary value and potential. Independent India witnessed huge loss of artefacts through smuggling.

As per the estimate of UNESCO, over 50,000 idols, icons, artefacts and antiquities have been stolen from India over the years till 1989. It will be much more now. The apathy of the polity to such loss of heritage is appalling. The difference between such theft and smuggling of artefacts happening in other countries and India is that these are not mere art pieces but deities themselves in many cases. The *Murtis* that have to be worshipped in the sanctum sanctorum of temples adorn the living rooms and museum galleries in the west. The corrupt ecosystem aided and abetted in no mean measure by the deracinated elite and ruling class had resulted in unchecked smuggling. Naturally the attempts towards bringing stolen artefacts back to India were feeble and had little success.

We should be vigilant and report any theft of artefacts to the local police and also report the matter to NGOs like the India Pride Project.

Green shoots

The nation saw escalated efforts at repatriation of artefacts only from 2014. The efforts have started bearing fruits and India saw some significant repatriation – the latest being the transfer of ownership of seven ancient artefacts to India by the Scotland Museum. Earlier we saw the US returning 248 artefacts valued at USD15 Mn in October 2021 and Australia returning 29 artefacts valued at USD2.2 Mn in March 2022 . Artefacts have also been repatriated from Singapore, Holland, Canada and Germany. This Government in the past eight years has repatriated more antiquities and artefacts than what was done in the previous six decades. In fact, many countries are working on this and we now see increased interest in repatriating artefacts globally.

While the Indian Government has been proactive on this front, the credit should also go to the UNESCO and the **United Nation’s Office on Drugs and Crimes (UNODC)** which have been in the forefront in the fight against cultural heritage crimes. Credit should also go to the first crowd sourced heritage recovery project named **India Pride Project** founded by two Singapore based art enthusiasts. ***The motto of this NGO is “History belongs to its Geography.”*** They feel that the *Murtis* should be restored to the temples where they originally belonged.

The road ahead

The District Attorney of Manhattan, while returning the 248 artefacts, said, “the case serves as a potent reminder that individuals who maraud sacred temples in pursuit of individual profit are committing crimes not only against a country’s heritage but also its

present and future.” UNESCO says heritage theft remains a rampant problem across India, which is compounded by poor protection of historical monuments.

The ASI has tightened its vigil on smuggling of precious antiquities and has initiated intelligence sharing with the ED and the Customs Department. The laws need further strengthening and we as citizens should also be proactive. **The India Pride Project founders suggest that we can visit our villages and heritage sites and take photos of sculptures and preserve them for posterity as proof. We should be vigilant and report any theft of artefacts to the local police and also report the matter to NGOs like the India Pride Project.**

The UNESCO has also taken significant steps - one being the development of digital inventories and professional documentation of cultural property. Promoting instant reporting of theft to prevent stolen objects from entering illegal trade channels could be another major step.

The return of the stolen artefacts and antiquities has other important issues over provenance documentation (document establishing the chain of ownership) and proper maintenance of the repatriated artefacts. These are areas that would need the attention of the Government. Over the past few years international cooperation has increased in facilitating the return of antiquities but we need to increase our capacities for conservation within our own country. We should all realize that decolonization is not complete without the repatriation of all the artefacts taken away by stealth or force.

The road is long and we have miles to go.





Nepal gives two power projects to India

The projects, expected to cost around USD 2.4 billion, will develop a total of 1200 Megawatts.

On 18th August 2022, India further strengthened its bilateral relations with Nepal by signing a Memorandum of Understanding (MoU) to develop two hydropower projects in Nepal.

The projects named **West Seti Hydropower Project** and **Seti River Hydropower Project** span over four out of 77 districts in Nepal – Bajhang, Doti, Dadeldhura, and Achham.

It is being developed four years after two Chinese companies withdrew from going ahead with the projects. China National Machinery and Equipment Import and Export

Corporation (CMEC) signed an MoU in the year 2009 with the Nepalese Government, only to pull back in 2011. China Three Gorges International Corporation, in the year 2017, in an effort to develop the project, set up a joint venture, only to withdraw in 2018.

The projects, expected to cost around USD 2.4 billion, will develop a total of 1200 Megawatts.

The MoU was signed between AK Singh, CMD, National Hydro Power Corporation (NHPC), India, and Sushil Bhatta, CEO of Investment Board Nepal (IBN), in the presence of Sher Bahadur Deuba, Prime Minister of Nepal.

This is not the first Hydropower Project being developed in Nepal with the help of India. **Sutlej Jal Vikas Nigam (SJVN)** signed two agreements with the Government of Nepal in 2008 for the construction of the 900 MW Arun-3 Hydro Electric Project along the river Arun and the 679 MW Lower Arun Hydropower Project in 2021. Both projects are developed under the Build, Own, Operate, and Transfer (BOOT) model.





New species of long-fingered Bats discovered in India, Sri Lanka



A new species of long-fingered bat named *Miniopterus phillipsi* has been discovered using DNA barcoded specimens in India and Sri Lanka by a team of international researchers led by Tharaka Kusuminda of the University of Rohana.



It is part of the larger *Miniopteridae* family which consists of at least 40 species.



DNA barcoding:

A method for identifying species.

Miniopterus phillipsi has been named after WWA Philips (1892-1981) for his contributions to studies on the mammals of Sri Lanka and South Asia.

Physical Characteristics and Features

These are primarily found in caves and tunnels, and prefer living in large colonies. The team also found that the morphological and anatomical features of specimens collected across India and Sri Lanka are identical.

The research took 3 years to complete and has been published in *Acta Chiropterologica*, an international scientific journal.





Largest ever **LIQUID** **HYDROGEN TANK** made in India for **SOUTH KOREA**

DO YOU KNOW ?

Hydrogen, a clean energy source, is liquefied at a cryogenic temperature of -253°C , making it dense enough to be stored and transported as liquid hydrogen since its gaseous volume is reduced by 800 times when liquified. Hydrogen is recognized as the ultimate solution to the environmental challenges of clean transportation: reduction of greenhouse gases, pollution in cities, and dependency on fossil fuels.

INOXCVA, a leading cryogenic equipment and solutions manufacturer, flagged-off the largest bulk liquid hydrogen storage tank ever made in India on 22nd August 2022. Built with a storage capacity of 238 cu.m., the tank has embarked on its journey from INOXCVA's Kandla facility to its destination for a clean energy demonstration project in South Korea.

This bulk cryogenic storage tank is built to European Standards and meets the Korean Gas Safety (KGS) requirements.

In 2020, Doosan Corporation of South Korea signed an agreement with Air Liquide Engineering & Construction, France, to build their very

first hydrogen liquefaction plant with a capacity of 5 tons per day. This is to fast track the country's clean transport development initiatives. Under this framework, Air Liquide Engineering & Construction had placed their order for the design, manufacturing and supply of a liquid hydrogen tank to INOXCVA.

Siddharth Jain, Director, INOXCVA said, "We are honoured to have designed, engineered and manufactured the largest liquid hydrogen tank ever made in India, and become a part of a global clean energy initiative. We have demonstrated our world-class cryogenic capabilities for projects of such magnitude."





MIKHAIL GORBACHEV



the last leader of the Soviet Union

His efforts to democratize his country's political system and decentralize its economy accelerated the downfall of communism and the breakup of the USSR into 15 independent republics in 1991.

Michael Sergeyevich Gorbachev (1931-2022) born to a peasant family was elected as General Secretary of the Communist Party of Soviet Union in 1985 and was effectively **the last leader of USSR** (Union of Soviet Socialist Republics). He passed away on 30th August 2022.

During his presidency, he introduced *perestroika* to reform the economy and *glasnost* to reform the political system and to make peace with the capital west.

His efforts to democratize his country's political system and decentralize its economy accelerated the **downfall of communism** and the breakup of the USSR into 15 independent republics in 1991.

1987 -Signed an agreement with US President Ronald Reagan for the two countries to destroy all existing stocks of intermediate-range nuclear-tipped missiles.





Cold War (1947 - 1991) was an ongoing political rivalry between the US and USSR and their respective allies that developed after World War II ; a state of conflict without direct military action but through economic, political actions etc.

1988-89- Oversaw the withdrawal of Soviet troops from Afghanistan. He agreed to the unification of East and West Germany.

1990 - Received the Nobel Peace Prize for his crucial role in ending the cold war.

Soviet Republics	Independent Countries
Armenian SSR	Armenia
Azerbaijan SSR	Azerbaijan
Byelorussian SSR	Belarus
Estonian SSR	Estonia
Georgian SSR	Georgia
Kazakh SSR	Kazakhstan
Kyrgyz SSR	Kyrgyzstan
Latvian SSR	Latvia
Lithuanian SSR	Lithuania
Moldavian SSR	Moldova
Russian SFSR	Russia
Tajik SSR	Tajikistan
Turkmen SSR	Turkmenistan
Ukrainian SSR	Ukraine
Uzbek SSR	Uzbekistan
** SSR - Soviet Socialist Republic	
**SFSR - Soviet Federative Socialist Republic	





LIZ TRUSS

becomes

UK's PM



After Margaret Thatcher and Theresa May, Liz Truss became the third woman to hold United Kingdom's top spot in politics. The 39th Prime Minister beat her rival, former Finance Minister Rishi Sunak, in an internal leadership contest sparked by Boris Johnson's resignation in July.

Born in Oxford to a mathematics professor and a nurse, she played the role of Margaret Thatcher in a mock election in school. Truss attended Oxford University, where she studied Philosophy, Politics and Economics and became active in student politics.

Truss entered Parliament in 2010 and has had a rapid rise through the political ranks since then. Before becoming the Foreign Secretary, she has also held the positions of Secretary of State for Justice between 2016 and 2017. She was also the Chief Secretary of the Treasury for two years.

Her promises as Prime Minister include not introducing any new taxes, scrapping the increasing corporate tax, boosting the innovation in enterprise by introducing low taxes and low-regulation zones.





Two antibodies to fight COVID-19 identified

What is an antibody?

Antibody, also called immunoglobulin, is a protective protein produced by the immune system in response to the presence of a foreign substance called an antigen. Antibodies recognize and latch onto antigens in order to remove them from the body. A wide range of substances are regarded by the body as antigens, including disease-causing organisms and toxic materials such as insect venom.

A group of researchers in Israel have isolated two antibodies from the immune system of recovered COVID-19 patients that are effective in neutralizing all known strains of the virus, including the Delta and the Omicron. This discovery might eliminate the need for taking repeated booster vaccinations.

The research was led by Dr. Natalia Freund and doctoral students Michael Mor and Ruofan Lee of the Department of Clinical Microbiology and Immunology at the Sackler Faculty of Medicine. This study was published in the Nature Journal Communications Biology.

In the preliminary study, the researchers isolated nine antibodies that the patients in Israel had produced. The most effective antibodies were those that bound to

the virus's 'spike' protein. But most of these antibodies were rendered useless by the new variants of the virus.

In the current study, two other antibodies which bind the viral spike protein in a different area from the region where most of the antibodies were concentrated until now (and were therefore less effective in neutralizing the original strain) are actually very effective in neutralizing the Delta and Omicron variants.

"COVID-19 infection can cause serious illness, and we know that providing antibodies in the first days following infection can stop the spread of the virus. It is therefore possible that by using effective antibody treatment, we will not have to provide booster doses to the entire population every time there is a new variant," said Dr. Freund.





QUEEN ELIZABETH II

Queen Elizabeth II, the UK's longest-serving monarch, passed away at Balmoral (her Scottish estate), aged 96, after reigning for 70 years.

Born Elizabeth Alexandra Mary Windsor, in Mayfair, London, on 21st April 1926, she ascended the throne at the young age of 25, after the death of her father King George VI on 6th February 1952. Her son, King Charles III, aged 73, succeeds her as the King and head of state in 14 Commonwealth realms.

Queen Elizabeth II's term as the Head of state spanned the severity of post-World War II, the transition of UK from an empire to Commonwealth, the end of the Cold War (Between the US and erstwhile Soviet Union and their respective allies) and finally, UK's entry into - and subsequent with-drawal from - the European Union (founded in November 1993, currently with 27-member nations that are located primarily in Europe).

She was queen regnant of 32 sovereign states during her lifetime and 15 at the time of her death. Her reign of 70 years and 214 days is the longest of any British monarch, the longest recorded of any female head of state in history, and the second-longest verified reign of any sovereign in history.

Her reign spanned 15 prime ministers starting with Winston Churchill, born in 1874, and including UK's Current Prime Minister Ms. Liz Truss, born 101 years later in 1975.

The Queen celebrated two birthdays each year: her actual birthday on 21st April and her official birthday on (usually) the second Saturday in June. This is because it is traditional for British monarchs who are not born in summer to celebrate twice, with a second official birthday.





Maitree Super Thermal Power Plant



PM Modi and Bangladesh Prime Minister Sheikh Hasina jointly unveiled the Maitree Super Thermal Power Project on 9th September 2022. It is a 1,320 MW coal-fired power station under construction in Rampal, Bangladesh. Following the unveiling of Unit 1 of the power plant, its commercial operations will begin from early October 2022. Unit 2 of the thermal power plant known as the Rampal coal-fired power project, will be commissioned next year.

The power plant is being set up by BIFPCL (Bangladesh India Friendship Power Company Limited) which is a 50:50 joint venture between India's state owned National Thermal Power Corporation (NTPC) and Bangladesh Power Development Board (BPDB). BIFPCL awarded an EPC contract to Bharat Heavy Electricals Limited (BHEL) valued

at over USD 1.49 billion for setting up of the Maitree Super Thermal Power Project.

Bangladesh and India agreed to equally share up to 30% of the capital of this project as equity. The rest is through USD1.6 billion loan from the Export-Import (EXIM) Bank of India.

While providing a huge boost to Bangladesh, the plant's proximity (14km) to the Sunderbans, a UNESCO heritage site which is the home to one of the largest mangrove forests, has been a cause of great concern for environmentalists.

While the preconditions of the project are that the plants must be outside a 25-kilometre radius from the outer periphery of an ecologically sensitive area, the Bangladesh government says it will ensure minimal emission levels of greenhouse gases and protection of the surrounding ecological systems.



Hooghly Cochin Shipyard inaugurated



This shipyard would also open up opportunities for setting up of ancillary industries to support the yard.

On 16th August 2022, Sarbananda Sonowal Union Minister of Port, Shipping and Waterways, dedicated the 180 crore state-of-the-art ship building facility **Hooghly Cochin Shipyard Limited (HCSL)** at Nazirgunge, Howrah. This is expected to give a great impetus to water transport connectivity to the North-Eastern states.

This shipyard will provide a boost in meeting the requirements of new generation, high technology, greener vessels to propel further growth in inland water transport along the national waterways.

The development of the national waterways will provide business opportunities for cargo movements, passenger vessel construction and operations, cruise operations, ship repairs etc. Further, under **Pradhan Mantri Matsya Sampada Yojana**, there is an opportunity to build deep sea fishing vessels at HCSL.

HCSL aims to position itself as a lead player in inland waterway

vessel construction in the country. It will serve the inland water transport sector by construction of inland water vessels for transporting passengers and material along and across the National Waterways, mainly Ganga and Brahmaputra.

HCSL will also aid in the indigenous construction of green vessels including hybrid and pure electric operated vessels, non-conventional fuels and fuel cells technology operated vessels, coastal and inland river vessels, river cruise vessels, river container vessels.

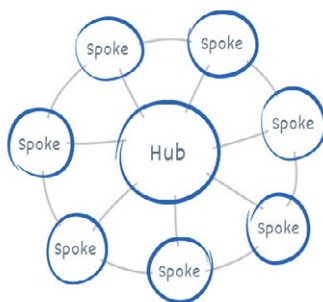
HCSL can provide comprehensive support to clients by not only constructing technologically advanced vessels, but also by providing life cycle support for maintenance and upkeep of the vessels.

This shipyard would also open up opportunities for setting up of ancillary industries to support the yard. It will generate considerable employment in the vicinity.





Food grain storage modernisation 'Hub and Spoke' model silos



The transportation from Spoke to Hub is undertaken through road and from Hub to Hub by means of rail.

With a view to modernize storage of food grains and to ramp-up the storage capacity in India, a new 'Hub & Spoke' Model for implementation in Public Private Partnership (PPP) mode has been proposed.

Hub and Spoke Model is a transportation system which consolidates the transporting of assets from standalone locations referred to as "Spoke" to a central location named as "Hub". Hubs have a dedicated railway siding and container depot facility. The transportation from Spoke to Hub is undertaken through road and from Hub to Hub by means of rail. This model helps harnessing the efficiency of railway siding, improved cost efficiency through

bulk storage & movement, reducing cost and time of handling and simplifies operational complexities. In addition, it boosts economic and infrastructure development, and employment generation in the country.

It is seen that under Hub and Spoke model, the Department has proposed to develop a capacity of 111.125 LMT (Lakh Metric Tonne) of Hub and Spoke model silos at 249 locations across the country under Design, Build, Fund, Own & Transfer (DBFOT) (FCI's land) and Design, Build, Fund, Own & Operate (DBFOO) (Land of concessionaire/other agency) mode, through implementing agency i.e., Food Corporation of India (FCI).

The entire project is estimated to cost ₹9,200 crore.



Silos vs. Grain Bins



Silos

- ▶ **Taller and slimmer** structures used for fermentation
- ▶ **Metal, concrete, wood or brick**
- ▶ **3 primary types:**
 - ▷ Bunker
 - ▷ Bag
 - ▷ Tower
- ▶ **Store silage** and sometimes grain, wood chips or cement

Grain Bins

- ▶ **Wider, shorter cylindrical** buildings with a peaked roof used to keep products dry
- ▶ **Corrugated or smooth metal**
- ▶ **Include more ventilating** and grain handling components:
 - ▷ Temperature systems
 - ▷ Cushion boxes
 - ▷ Flow valves
 - ▷ Slide gates
- ▶ **Store grain products** like barley, soybeans, oat, etc.



Silo – a tall tower on a farm to store grains.

Silage - grass or other green fodder compacted and stored in airtight conditions.

FCI will use the silos for storage, through a lease of 30 years with private entities. Fixed storage charges will have to be paid by the FCI to private entities, based on a per tonne, per year basis, keeping in mind the other bidding parameters. Since land acquisition becomes an important and crucial part of DBFOO project, the Ministry has taken up with the concerned State Governments regarding the identification and availability of surplus land which is to be provided to the concessionaires.

Officials in the Food Ministry have said that if food grains are stored in silos and transported in bulk, losses due to theft, pilferage and transportation would be negligible compared to food grains stored in warehouses. As part of a pilot initiative, two rice silos with a combined storage capacity of 25,000 tonne are currently being built at Buxar and Kaimur in Bihar by private entities for the FCI.

This initiative of the Central Government will ensure minimising losses and ensuing better storage and availability of food grains to the needy. This will add a fillip to the growth of the economy.



Advances in 3D Bio-printing

These technologies can be used to print tissues, organs and models to help in research of drugs, potential treatments and even in the production of transplant capable organs.

India's first 3D-printed Cornea

Researchers from the L V Prasad Eye Institute (LVPEI) of IIT Hyderabad and Centre for Cellular and Molecular Biology have made history by developing India's first 3D printed cornea.

The very cutting edge of medical and biological development is in the field of bioprinting, a process by which living biological tissue can be printed to serve as replacement for organs and tissue in the human body.

This 3D printed cornea has already been successfully transplanted into a rabbit's eye and has been proven to work as a suitable replacement.

This is of great significance because of the delicate nature of the cornea. Made of a unique biometric hydrogel and stem cells from the

human eye, this 3D printed cornea can, upon successful human testing, serve as a boon for patients who require transplantation.

IISc partners with Cellink for 3D Bio-printing in India

The process involved in 3D bioprinting is expensive and exacting. The Indian Institute of Science has partnered with Swedish company Cellink to set up a centre of excellence for 3D bioprinting.

Cellink is a global leader in 3D bioprinters and is expected to provide top of the line technology to the centre for BioSystems Science and Engineering (BSSE) in Bangalore, enabling researchers from around the country access to systems that will accelerate developments in the field. These technologies can be used to print tissues, organs and models to help in research of drugs, potential treatments and even in the production of transplant capable organs.

As part of the partnership IISc and Cellink will conduct workshops and advise on research projects involving many fields such as tissue engineering, regenerative and personalised medicine and drug discovery. With these advancements the centre expects to focus on solving issues related to heart conditions and cancer.





BIOGAS

Projects in India



Asia's Largest Compressed Biogas Plant Begins Commercial Operations in Sangrur, Punjab.

To restrict air pollution caused by the burning of paddy straw and stubble and to move towards using clean and green energy, the New and Renewable Energy Ministry of India commissioned Asia's Largest Compressed Biogas Plant in April 2022 to be established in Sangrur.

The Plant's construction began on 13th August 2022, with an operational capacity of 33.23 tonnes CBG per day.

The Plant converts paddy straws and agricultural residues to make usable biogas. Its by-products will be used as organic manure or fertilizers, further helping the environment and promoting green energy.

It would attract investments worth ₹1200 crores and would also go on to boost the rural economy by creating employment opportunities for around 8000 skilled and unskilled workers.

Rajasthan: HPCL Commences its first 'Cow Dung to Compressed Biogas' Project under Centre's Gobar-Dhan Scheme.

Hindustan Petroleum Corporation Limited (HPCL) commenced its first 'Cow dung to Compressed Bio Gas' Project at Sanchole, Rajasthan, under its Waste to Energy Portfolio, on 23rd August 2022. The Plant is proposed to utilize 100 tons per day of dung to produce biogas which can be used as automotive fuel. This project is said to commence in a year.

The **Gobar (Galvanizing Organic Bio-Agro Resources)-Dhan** scheme was launched in April 2018. It aims to positively impact village cleanliness, generate wealth and energy from cattle and organic waste and develop the rural economy.

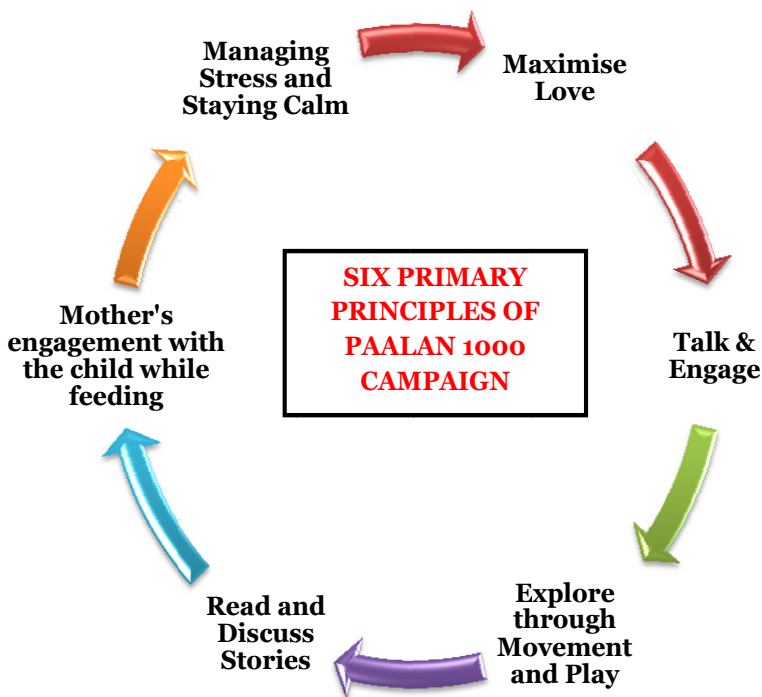




Paalan 1000 launched

The Central Government has launched the Paalan 1000 Campaign focusing on cognitive development of children, emphasising responsive care and focusing interventions on the first 1000 days, right from the time of conception till the first two years of life.

The Paalan 1000 Mobile App was also launched which assists parents and families in developing a routine for their child that can aid in cognitive development. It contains a number of resources and materials that can assist parents in resolving various concerns about their child's development.

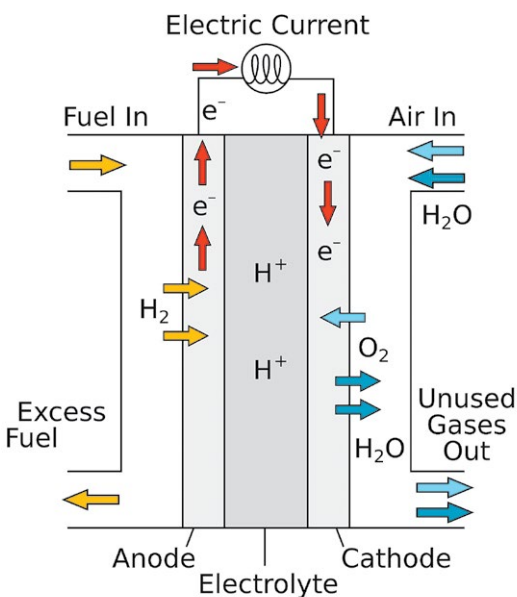


Importance of Early Childhood Development

- The first 1000 days lay the foundation for a child's physical, mental, emotional, cognitive, and social well-being.
- The process of a baby's brain development begins during pregnancy and is influenced by the health, nutrition, and environment of the pregnant woman.
- Every day of this journey is unique and influences how a baby develops, grows, and learns - not just now, but for the rest of its life.



Indigenous Hydrogen Fuel Cell Bus unveiled



Vehicles that run on hydrogen fuel are a great way to get rid of on-road emissions. India's first hydrogen fuel cell bus developed indigenously was unveiled by Union Minister of State (Independent Charge) for Science and Technology, Dr. Jitendra Singh.

The fuel cell, which was created by KPIT-CSIR in Pune, uses hydrogen and air to produce electricity, which powers the bus and the only effluent is water.

For comparison, a single diesel bus plying on long-distance routes typically emits 100 tons of CO₂ annually, and there are over a million such buses in India.

Additionally, fuel cell trucks and buses have lower operating costs per kilometre than diesel-powered vehicles thanks to the high efficiency of fuel cell vehicles and the high energy density of hydrogen.

How does it work?

- Hydrogen fuel cells produce electricity by combining hydrogen and oxygen atoms. The two gases react across an electrochemical cell similar to a conventional battery cell to produce electricity, water and small amounts of heat.
- This electricity is used by electric motors to propel the vehicle forward.
- Hydrogen fuel cell electric vehicles (FCEV) only emit water vapour and warm air.



Bihar's Mithila Makhana receives GI Tag



The Indian government, on 20th August 2022, awarded a GI tag to Bihar's Mithila Makhana. Commonly known as foxnuts, Mithila Makhana are used as ingredients in Indian sweets and savouries and are also eaten on their own as a snack. They are specifically popular during Navaratri as they are used as offerings to gods.

Primarily produced in Bihar, foxnuts are processed parts of the lotus flower, specifically their seeds, known to be highly nutritious.

There is a complex process involved in the collection and processing of the seeds and are commonly done by the Mallah community in Bihar.

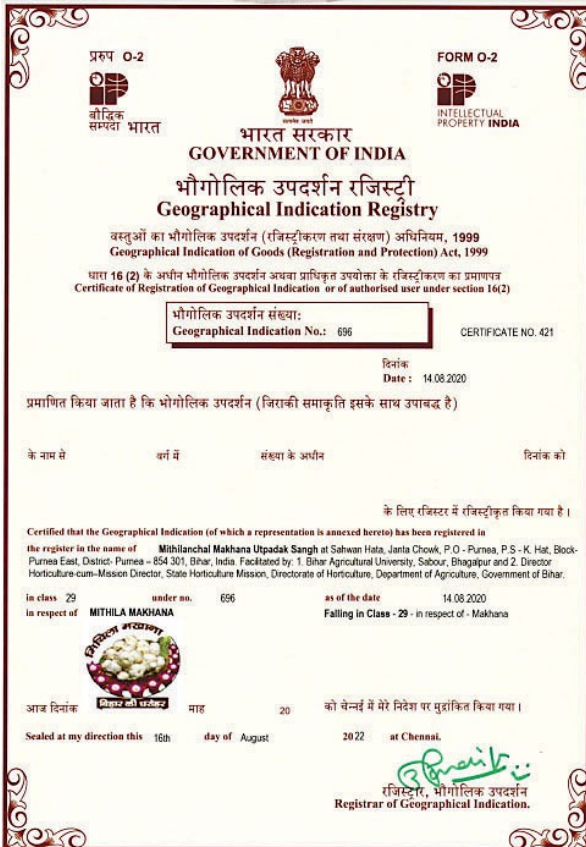
Seeds are collected, cleaned, stored, sieved and finally fried for preservation. This process gives them their traditional white puffed look and also ensure that they can be stored for long periods of time.

GI Tag

A Geographical Indication (GI) tag is a sign used by the World Intellectual Property Organization (WIPO) to indicate that a product has a specific geographical origin and possesses qualities or a reputation due to that origin.

It is significant because it provides exclusive production and selling rights of that particular product only to authorised or registered sellers and also provides legal protection to prevent unauthorised usage of the product.

With Mithila Makhana receiving a GI Tag, it will be regulated to stricter standards, and will ensure that the people who benefit from the sale are the farmers involved in their production, not unauthorised third parties.



प्ररूप 0-2
बौद्धिक सम्पदा भारत
भारत सरकार
GOVERNMENT OF INDIA
भौगोलिक उपदर्शन रजिस्ट्री
Geographical Indication Registry
वस्तुओं का भौगोलिक उपदर्शन (रजिस्ट्रीकरण तथा संरक्षण) अधिनियम, 1999
Geographical Indication of Goods (Registration and Protection) Act, 1999
धारा 16 (2) के अधीन भौगोलिक उपदर्शन अथवा प्राधिकृत उपयोग के रजिस्ट्रीकरण का प्रमाणपत्र
Certificate of Registration of Geographical Indication or of authorised user under section 16(2)

भौगोलिक उपदर्शन संख्या:
Geographical Indication No.: 696
CERTIFICATE NO. 421

दिनांक
Date: 14.08.2020

प्रमाणित किया जाता है कि भौगोलिक उपदर्शन (जिसकी समाकृति इसके साथ उपाब्ध है)


के नाम में वर्ग में संख्या के अधीन दिनांक को

के लिए रजिस्टर में रजिस्ट्रीकृत किया गया है।

Certified that the Geographical Indication (of which a representation is annexed hereto) has been registered in the register in the name of **Mithilanchal Makhana Utpadak Sangh** at Sahwan Hata, Janla Chowk, P.O - Purnea, P.S - K. Hat, Block - Purnea East, District - Purnea - 854 301, Bihar, India. Facilitated by: 1. Bihar Agricultural University, Sabour, Bhagalpur and 2. Director Horticulture-cum-Mission Director, State Horticulture Mission, Directorate of Horticulture, Department of Agriculture, Government of Bihar.

in class 29 under no. 696 as of the date 14.08.2020
in respect of MITHILA MAKHANA Falling in Class - 29 - in respect of - Makhana

आज दिनांक 18th माह 20 को वेन्दर् में मेरे निदेश पर मुद्रांकित किया गया।
Sealed at my direction this 18th day of August 2022 at Chennai.


रजिस्ट्रार, भौगोलिक उपदर्शन
Registrar of Geographical Indication.





Smt Sumathi Ramakrishnan 

First Indian female to fly over the North Pole

Captain Zoya Agarwal, a senior Air India pilot of aircraft Boeing-777, is the first Indian woman pilot to fly an aircraft above the North Pole, covering a record-breaking distance of around 16,000 kilometres.

According to the International Society of Women Airlines, India holds the largest proportion of female pilots in the world, accounting for around 12.4 % of all pilots, compared to 5.5 % in the US.

The San Francisco Luis A Turpen Aviation Museum (SFO Museum) commemorated Zoya Agarwal's extraordinary career in aviation and her advocacy for promoting women's empowerment across the world.



Capt. Zoya Agarwal

- Associated with Air India since 2004.
- Became the first youngest female commander to fly Air India's Boeing 777 aircraft (2013).
- First woman commander to fly a Boeing 777 over the Hindu Kush mountain range.
- Flew the plane on the world's longest air route (San Francisco to Bangalore via North Pole) (2021).



One Nation One Fertilizer Scheme

Bharat Urea - Options



DO YOU KNOW ?

Unlike manure, fertilizer is an inorganic salt (does not contain carbon-hydrogen bonds) that are prepared in factories. It does not provide any humus to the soil, but is rich in plant nutrients like nitrogen, phosphorous and potassium.

In order to standardize the fertilizer brands across the nation and to avoid the industrial diversion of fertilizer brands, GOI under Ministry of Chemicals and Fertilizers has launched “One India One Fertilizer” scheme.

Under the “Single brand” and “Single bag design” all the fertilizer bags, will sport the brand name “Bharat” i.e., “Bharat Urea,” “Bharat Di Ammonium Phosphate (DAP)” etc. The concept is brought under the centre’s fertilizer subsidy scheme i.e., Pradhan Mantri Bhartiya Jan Urvarak Pariyojana and applies to both private and public sectors.

Benefits to farmers

- All bags of compost from different manufacturers will now be known by a single brand name- “Bharat,” avoiding confusion among farmers.
- Black marketing and theft of fertilizers can be stopped.
- Government has made it mandatory to sell the bags through bar codes on the bags (read by machine) to get fertilizer subsidies provided by the government.
- On-time and subsidized fertilizers for farmers.



Project Arth Ganga Connecting People

The project's interventions are also in accordance with India's commitment towards the UN Sustainable Development Goals.

The Arth Ganga project focuses on the sustainable development of the Ganga and its surrounding areas, by involving the local community with a focus on economic activities related to the river.

This concept was initially introduced by PM Modi during the first National Ganga Council meeting in Kanpur in 2019.

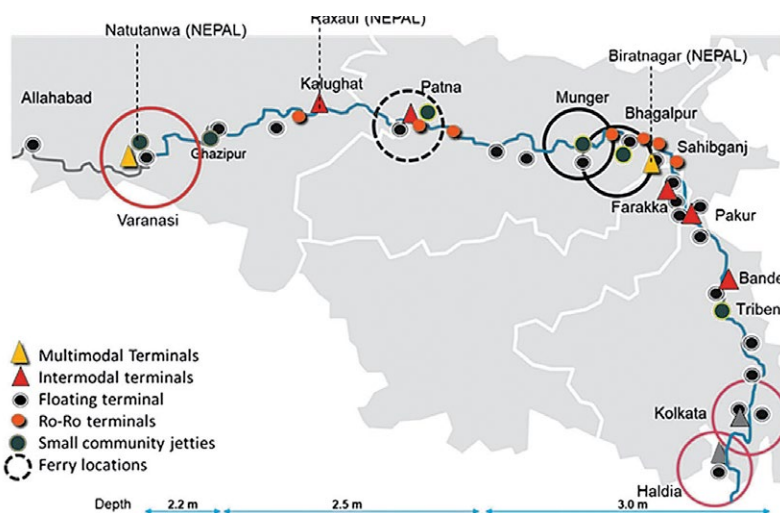
HIGHLIGHTS

- Zero budget natural farming focused on chemical-free farming on 10 km on either side of the river and the promotion of cow dung as fertiliser through the

GOBARDhan scheme.

- The Monetization and Reuse of Sludge & Wastewater, which seeks to reuse treated water for irrigation, industries and revenue generation for Urban Local Bodies (ULBs).
- Promotion of cultural heritage and tourism of Ganga and its surroundings, through boat tourism, adventure sports and yoga activities.
- Livelihood generation opportunities, by creating *haats* where people can sell local products, medicinal plants and ayurvedic products.
- Promote institutional building by empowering local administration for improved water governance.
- Enhance public participation by increasing interactions between the stakeholders involved with the river.

Asok Kumar, the Director General of the National Mission for Clean Ganga, stated that it strives to contribute at least 3% of the GDP from the Ganga Basin itself. And the project's interventions are also in accordance with India's commitment towards the UN sustainable development goals.





WORLD'S FIRST *Solar Powered* AIRPORT AT COCHIN



On 18th August 2022, Cochin International Airport Limited (CIAL) announced that it will run completely on solar power, making it the first airport in the world to do so. This will make it "**absolutely power neutral**"- which means that it can create as much energy as it consumes.

A 12MW solar plant was constructed at the airport itself to produce enough energy to run the entire facility. The plant is located in the cargo complex and has 46,150 solar panels covering 45 acres of space.

The solar plant cost CIAL about USD10 million to build, but given how much electricity the airport currently uses each day, they will be able to recoup this cost in about 5 years.

Given that the solar panels should last for about 25 years, this plan will allow the airport to save a lot of money over the course of at least two decades in addition to helping the environment.





New CRAB *species discovered*

The total number of crab varieties in the world is 125, out of which 75 are Indian crab species.

The 75th crab in India *Ghatiana dwivarna* (dual-tone colour), has been discovered by Gopal Krishna Hegde, a wildlife enthusiast and Parashuram Bhajantri (forest guard) from Yellapur taluk of Uttara Kannada in Karnataka.

Coincidentally, the discovery got scientific acceptance on 15th August 2022 when India celebrated 75 years of independence.

With this, the total number of crab varieties in the world sums up to 125.

Out of which, 75 are Indian crab species, notably 14 are from the *Ghatiana* genus including *Dwivarna*.

Features

- A freshwater crab that belongs to the *Ghatiana* genus.
- Has a white head and purple body named *Dwivarna* (dichromatic).
- Female crab is about 29x15mm whereas male crab is 24x13mm.
- Found in the holes in laterite rocks on the elevated mountains of the Central Western Ghats
- Feeds on mosses, algae and small insects of the mosquito family.

The term laterite means a red rock formed by the decomposition of different kinds of rocks in wet and tropical areas.





Floating Artificial Leaf

to turn CO₂ into fuel

The artificial leaf floating on water produces hydrogen and syngas using sunlight and CO₂ plucked from air.

Quadrupling of world crude oil prices, frequent armed conflicts in the regions rich in reserves of crude, fears of shortage etc., heralded research into alternate fuels. Biofuels was one of them.

The feedstocks like soya, sugarcane, algae, switch grass, prairie grass etc., were considered to produce bio fuel. The competition between food crops and fuel crops, soil erosion and so on were important issues to be factored in. Now the research into biomimicry of photosynthesis.

Photosynthesis, the process by which plants produce their food has often kindled the imagination of plant biologists to tweak it and make it produce

fuel, fit enough for combustion. “We view the plant genome (the complete set of genes in a cell or living thing) as a software or even an operating system,” opined J. Craig Venter, the man who hastened human genome sequencing. A leaf could be rewired to function as a synthetic species.

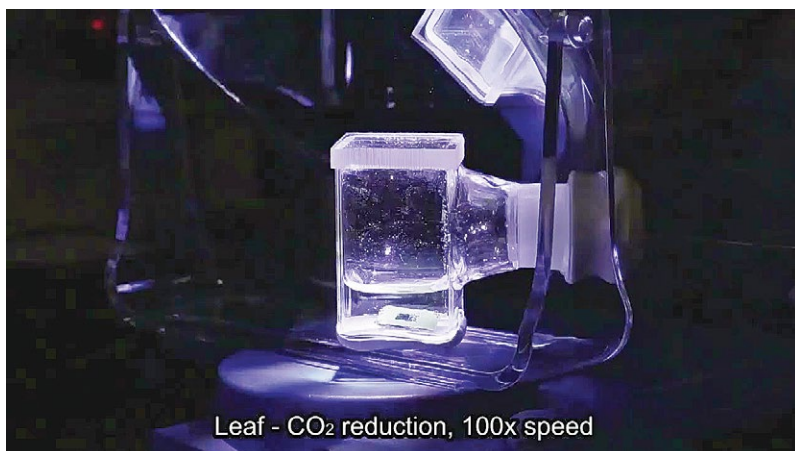
Researchers at Cambridge University have developed an artificial leaf that floats on water, producing hydrogen and syngas using sunlight and CO₂ plucked from air.

The device splits water to produce hydrogen or converts CO₂ into syngas (a mixture of carbon monoxide and hydrogen), depending on the catalyst used.

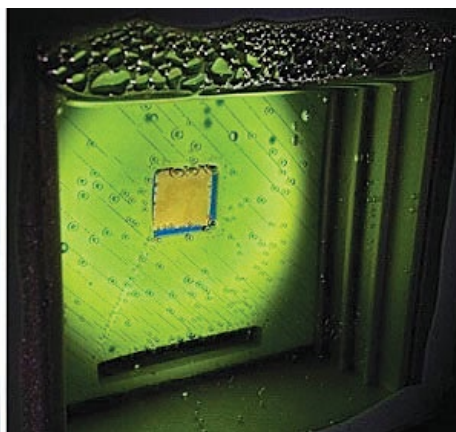
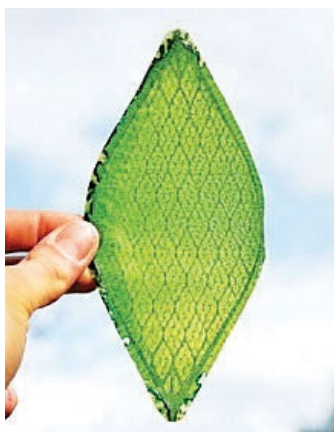


Perovskite - a yellow, brown or greyish-black mineral form of calcium titanate with some rare-earth elements, which is used in certain high-temperature ceramic superconductors.

A **perovskite solar cell (PSC)** includes a perovskite compound, most commonly a hybrid organic-inorganic lead or tin halide-based material as the light-harvesting active layer. Perovskite materials are cheap to produce and simple to manufacture.



With commercial scale production, the artificial leaf might become another renewable source of energy.

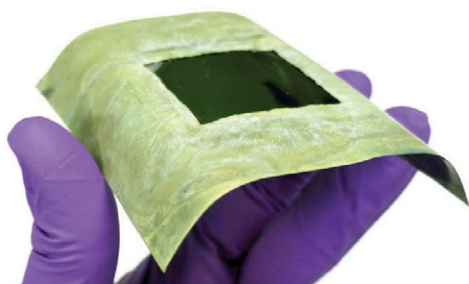


They used **perovskite light absorbers**, with platinum or cobalt as catalyst for the reaction. Platinum catalysed the splitting of water into oxygen and hydrogen, in the presence of sunlight. Cobalt catalyses the reduction of CO₂ and water into syngas.

While it represents a major advance, the efficiency needs scaling up. The artificial leaf developed functions at an efficiency

level of 0.5 to 0.6% per gm, whereas natural photosynthesis is at 0.5 to 1% per gm.

The advantage is, one doesn't need land to mount these. This artificial leaf can float on any water body and keep producing hydrogen and syngas. With commercial scale production, it might become another renewable source of energy.





DASPARA

India's first Bio -village

The concept of bio village is considered to be the best practice to achieve sustainable goals.

Amongst the many unique features of India, the ratio of its rural to urban population size is truly amazing, considering the fact that it is the world's 5th largest economy. 900 million Indians live in its 6 lakh and more of its villages.

On hindsight it is obvious that villages, the backbone of India, have maintained a fierce independent streak for a very long time. The vulnerability of Indian villages and its residents are exposed only during periods of extreme weather like heavy rain, floods and prolonged drought. Their local administration, use of draught power, efforts to preserve soil fertility, traditional knowledge have been important

elements in its sustainability and resilience. Augmentation of these by incorporating technologies developed to make villages climate smart is indeed important.

Tripura Government plans to set up at least 100 bio-villages. Of these, 10 bio-villages have been already been completed, of which the first has been established at Daspara. This bio village in Daspara has been developed as a hamlet, consisting of 64 families solely dependent on agriculture and fisheries.

This concept of bio village is considered to be the best practice to achieve sustainable goals. It has been set up by the Directorate of Biotechnology under the Science and Technology Department.



Objectives of the bio village project

- Ensure wholistic socio-economic development of rural communities.
- Lessen the impact of climate change and its ill effects.
- Induce economic growth and development with the benefit of ₹5000/- per month.
- Utilise renewable energy sources within the village.
- Encourage utilisation of solar-powered agricultural equipment, energy-saving electrical devices, biogas and biofertilizers.
- Ensure sustainable livelihood and food security.
- Establish successful use of appropriate sustainable technologies.
- Boost the use of biotechnological interventions such as biofertilizers, biopesticides and mushroom spawn cultivation.

More and more Indian villages need to adopt sustainable practices.





India's first intranasal COVID-19 vaccine

B BV154, a novel adenovirus vectored intranasal vaccine gets approval from DGCI (Drugs Controller General of India) for emergency use for those aged above 18 years.

Highlights

- An intranasal replication-deficient chimpanzee adenovirus (ChAd) SARS-CoV-2 vectored vaccine.
- It is supported by the Department of Biotechnology (DBT) and the Biotechnology Industry Research Assistance Council (BIRAC).
- Under the COVID Suraksha mission the vaccine is implemented to accelerate COVID-19 vaccine development efforts as a part of **Atmanirbar 3.0**.
- National Institute of Immunology (NII), New Delhi and Interactive Research



School for Health Affairs, Pune researched to check the response and to quantify the availability of antibodies for the virus in three trial sites.

- Stimulates a broad immune response by neutralizing the antibodies Immunoglobulin G(IgG), mucosal IgA, and T cell responses essential for blocking infection and transmission of COVID-19.
- Non-invasive and needle-free; easy to administer as it does not require trained health care workers; needle associated risks are eliminated.

Replication- deficient chimpanzee adeno virus (ChAd) vectors represent an attractive vaccine platform against several infectious diseases.





Superconducting Magnet System for MRI Machines

◆ **MRIs** are used to scan almost any part of the body such as the heart and the rest of the vascular system, the skeletal structure and even the brain and the spinal cord.

◆ **The bore**, which is the horizontal tube in an MRI through which a patient enters, contains a strong magnet all the way through. This provides a strong, stable magnetic field, which is used to produce detailed photographs of the inside of the human body.

In a huge contribution to 'Atmanirbhar Bharat', scientists from the Inter-University Accelerator Centre (IUAC) have succeeded in developing India's first superconducting magnet system to be used in Magnetic Resonance Imaging (MRI) machines.

Currently, India imports MRI machines from other countries such as China. "In India, there are 1.5 MRI machines per million population whereas in developed countries it is more than 10 MRI per million," claimed Professor Avinash Chandra Pandey, the IUAC director.

A single unit of 1.5 Tesla capacity costs around ₹ 5-6 crores, while a single unit of 3 Tesla capacity costs ₹9-11 crores. So, the development of an indigenous technology such as this will enable their cheaper production in India.

Developed by the IUAC Center based in Delhi, the 1.5 Tesla machines will place India among the select countries capable of producing such machines.

Such indigenous production would help bring down the exorbitant costs of MRI scans and also help India in exporting the technology to third-world countries, thus providing them easier and cheaper healthcare.

According to Prof. Pandey, a few Indian industries are willing to build commercial magnets using the IUAC-developed technology.

"This along with cryogen-free technology and artificial intelligence will lead to lighter and cheaper whole-body scanners which can be mounted on a mobile van for rural healthcare in the future," he added.



Indian entrants in UNESCO Global Network of Learning Cities 2022

The UNESCO GNLC is an international policy-oriented network providing inspiration, know-how and best practices.

Telangana's **Warangal**, Kerala's **Thrissur** and **Nilambur** have become India's first entrants to the UNESCO **Global Network of Learning Cities (GNLC) 2022** list. The cities were part of the 77 cities from 44 countries recently inducted into the UNESCO GNLC list. In total, the list consists of 294 cities across the world.

The UNESCO GNLC is an international policy-oriented network providing inspiration, know-how and best practices. Learning cities at all stages of development can benefit greatly from exchanging ideas with other cities. The network encourages the accomplishment of all 17

Sustainable Development Goals (SDGs). Other cities that have joined the network are **Kyiv** (capital of Ukraine), **Durban** and **Sharjah**.

Warangal, the historic city is the second-largest urban centre in Telangana.

Nilambur is known for its eco-tourism sites and a mix of rural and urban populations. It is most renowned for its healthcare facility development and also trying to fulfil its commitment to UN SDG 2 of "zero hunger."

Thrissur, known as the cultural capital of Kerala, is home to India's most renowned academic and research institutes. It is also known for its gold and jewellery sectors.

KARTAVYA PATH

inaugurated



Kartavya Path, formerly known as the Rajpath or Kingsway, is a ceremonial road that runs from Rashtrapati Bhavan to India Gate in New Delhi. It used to serve as a symbol of India's oppression at the hands of the British Raj but, on the 75th year of Indian Independence, it has become a symbol of empowerment.

On 8th September 2022 PM Modi inaugurated Kartavya Path, unveiling a statue of Netaji Subash Chandra Bose, newly installed near India Gate. "Today, we are filling the picture of tomorrow with new colours, leaving behind the past," he remarked.

Speaking on the occasion, he explained how the statue was placed there to **celebrate a man who earned the respect of the**

country through his courage and ideals. Carved from a monolithic block of granite, the jet-black statue stands 28 feet tall under the canopy of India Gate.

"It is our effort that Netaji's energy should guide the country today. Netaji's statue on the 'Kartavya Path' will become a medium for that," the PM added.

He spoke about how, over the years India has strayed from the ideals of Netaji. By looking back at the first head of Akhand Bharath, who made history by freeing Andaman before 1947 and hoisted the tricolour flag, we can recapture the glory of India. This wiping out of the 'weak past' will help Indians look towards a truly bright and powerful future.



Ni-kshay Mithra

Community support to TB Patients



Tuberculosis (TB) is an infectious disease caused by *Mycobacterium tuberculosis* commonly affecting the lungs and, in some cases, other parts of the body. It is a curable disease. India has the world's highest tuberculosis patients, with an estimated 26 lakh people contracting the disease and approximately 4 lakh people dying from it every year.

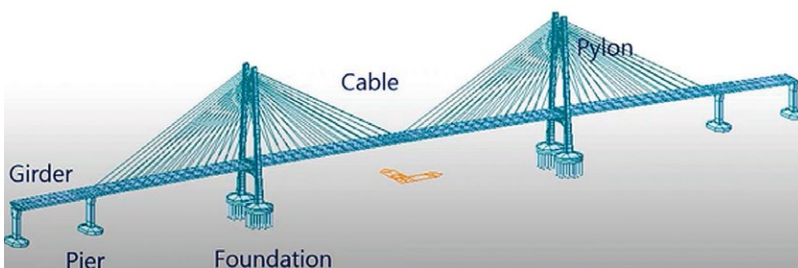
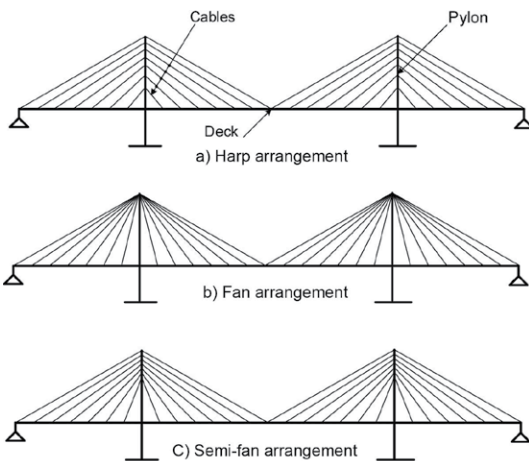
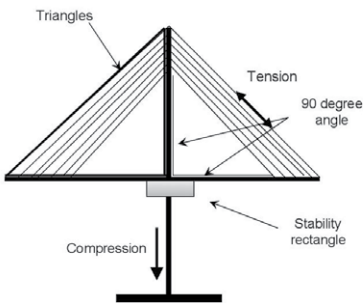
In order to speed up the country's fight against tuberculosis and achieve the target set by the prime minister to eliminate the disease by 2025, the President has launched the **Pradhan Mantri TB Mukta Bharat Abhiyaan** virtually.

Eradication is possible when patients are given good nutritional support, better living and working conditions and an increase in access to diagnostic and treatment services. Although the efforts of the government are yielding significant results, the community and the institutions in the society must play a critical role in addressing the issues.

For effective engagement of the community, Ministry of Health and Family Welfare is implementing the "**Community Support to TB patients**" and roping in donors under **Ni-kshay Mitra** - for this programme from various groups of the society.



Cable - Stayed bridge across Chambal river



Union Minister for Road Transport and Highways Shri Nitin Gadkari said the project for the construction & maintenance of a cable-stayed bridge across River Chambal on Kota Bypass on NH-76 of East-West Corridor in Rajasthan is completed. The 1.4 km long cable-stayed bridge was built at an initial investment of approximately ₹214 crore and inaugurated in 2017 by the Prime Minister.

The bridge stretches from Porbander (Gujrat) to Silcher (Assam). The bridge comes with a state-of-the-art systems

A cable-stayed bridge has one or more towers with cables supporting the bridge deck. In terms of cable arrangements, the most common type of cable stayed bridges are fan, harp and semi fan bridges.

capable of handling extreme traffic-jam situations, heavy rains, storms and is even equipped with earthquake notification which is sent to the control room of the bridge.

The cables of the bridge are aerodynamic in nature and have the ability to be neutral in stormy winds. To prevent disturbance to wildlife, a 7.5 m noise barrier with approximately 70% visibility in 700 m length on both side of the bridge has been installed. He said the project has not only benefitted residents of Hadoti region of Rajasthan but has also contributed to reducing the traffic congestion in Kota city.



Waveline Magnet

FOR HARNESSING ELECTRICITY

At full capacity these waveline magnets can become a cost-effective alternative to fossil fuels.



As the effects of climate change and global warming continue to manifest themselves, industries across the world have begun to make concerted efforts to move away from non-renewable sources of energy. While there are many reliable sources of renewable energy such as solar and wind, they are not nearly as widely adopted.

One area of untapped potential in terms of renewable energy, is that of tidal energy. Sea Wave Energy Limited (SWEL) has developed a ground-breaking technology in the form of a spine-shaped mechanical floating device that converts tidal and wave power into electricity.

Still in the early stages of development, the waveline magnet

works by floating on rough seas and converting the motion of water into electrical energy, with outputs of up to 1p/kilowatt-hour. At full capacity these waveline magnets can become a cost-effective alternative to fossil fuels, capable of matching the required energy output. The prototype made of recycled materials claims to require low maintenance and low production cost.

While still not deployable at a large scale and having further challenges that SWEL will have to overcome such as the offloading, transfer and storage of energy generated to the required industries, the waveline magnet is a promising step forward in harnessing one of the largest sources of untapped renewable energy - the ocean.





Kum Kavya R



Indian Army *inducts* Swarm Drones



Soon, swarm drones will become part of regular operations as part of the Mechanised Division of the Indian armed forces.

The future of warfare is unmanned. As technology has advanced, the way we approach warfare both from a technical and logistical perspective has changed.

The Union Defence Ministry officially green lit the induction of swarm drones in the Indian army. Procurement proposals worth ₹28,000 crore have been approved by the Defence Acquisition Council headed by Defence Minister Rajnath Singh. **These drones are made under the Make in India initiative by two Indian start-up companies.**

Unmanned Aerial Vehicles (UAV) have become a common sight in the armies of most countries. Commonly known as drones, UAVs have been primarily used for long range reconnaissance and terrain mapping missions. While UAVs have been used for nearly a decade now, developments in drone technology have enabled the manufacture of smaller, more lightweight drones with advanced communication capabilities. These

smaller drones work together in groups, often controlled from the same station to perform surveillance, carry payloads and even perform aerial attacks.

Swarm drones have distinct advantage over single drone operations. They are smaller and have higher speed and agility. Capable of offensive and defensive operations and retrofitting on the go, they are also equipped with Artificial Intelligence features such as Automatic Target Recognition, which helps them, as a collective unit gather intelligence about a target and identify it in difficult conditions.

These advantages make them particularly suited for mountain warfare preparedness. Soon, swarm drones will become part of regular operations as part of the Mechanised Division of the Indian armed forces. They will provide advanced reconnaissance and over watch capabilities for any ground operations in difficult terrain and weather conditions.



INS VIKRANT



India on 2nd September 2022 joined the array of select few nations with the capacity to design and construct Indigenous Aircraft Carriers (IAC) with the commissioning of INS VIKRANT. The maritime dream of becoming a 'Blue Water Navy' commenced sometime in late 1990s.

Here's a chronology of events:

- 1999 - Ship's design began.
- 2009 – Keel (the steel frame that provides the shape and balance) was laid.
- 2004 – Took shape.
- 2011 - Floated out of its dry dock.
- 2013 - Launched
- 2021 - Maiden Seatrials successfully completed.
- 2021 - 2022 - Third phase trials. Endurance testing of propulsion machinery, electrical & electronic suites, deck machinery, lifesaving appliances, ship's navigation and communication systems were undertaken.
- 10th July 2022 - Fourth phase of sea trials successfully completed.
- 28th July 2022 - Cochin Shipyard Limited (CSL) formally handed over INS Vikrant to the Navy.



INDIA'S FIRST INDIGENOUS AIRCRAFT CARRIER

A **Blue Water Navy** is one with capability to project force over a much larger area than that defined by its maritime boundaries. It has all the essential components including aircraft carriers, tankers, fleet support ships, destroyers, frigates, submarines, corvettes, offshore patrol vessels, missile boats, interceptor boats, seaward defence boats and harbour patrol craft. It includes aircraft—both carrier borne and shore-based, different types of helicopters, and shore infrastructure to support and maintain all types of platforms indigenously.

Also known as IAC-1, it was named as a tribute to India's first aircraft carrier, Vikrant (R11). The original 'Vikrant', a Majestic-class 19,500-tonne warship was acquired from the UK in 1961 and played a defining role in the 1971 war with Pakistan.

All previous aircraft carriers were built either by the British or the Russians. The 'INS Vikramaditya' the present in service IAC was commissioned in 2013, started out as the Soviet-Russian warship 'Admiral Gorshkov'. The other two earlier carriers, the 'INS Vikrant' (1961) and the





‘INS Viraat’ (1987) were originally the British-built ‘HMS Hercules’ and ‘HMS Hermes’.

Why is it important for India to have an aircraft carrier?

- An IAC is one of the most potent and valuable marine assets of any nation for it enhances a navy’s capability to travel away from home shores to carry out air domination operations.
- A naval aircraft carrier is essential to be considered as a “blue water” navy as they project the nation’s long-range capability, strength and power across the high seas.
- Presently only five or six nations currently have the capability of manufacturing an aircraft carrier.



The flight deck of INS Vikrant is equivalent to two football grounds in size

2,300 compartments, designed for a crew of around 1,700



- AIR ASSETS ON SHIP**
- MiG-29K fighter aircraft
 - Kamov-31 Air early warning helicopters
 - American-built MH-60R multirole helicopters

All amenities for urban living

Advanced sewage treatment plant

Dedicated hospital complex

Height 59 metres

Length 262 metres

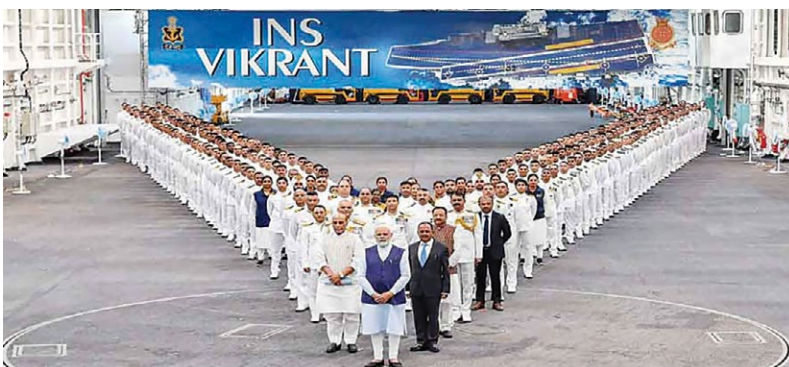
Width 62 metres

WEIGHT 45 thousand tonnes	TOP SPEED 28 knots	CRUISING SPEED 18 knots	ENDURANCE 7,500 nautical miles
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Commissioning of INS VIKRANT

PM Modi, while dedicating INS Vikrant to the nation, described it as a testimonial of Atmanirbhar Bharat and added that it is a "proof of 21st century India's effort and talent."



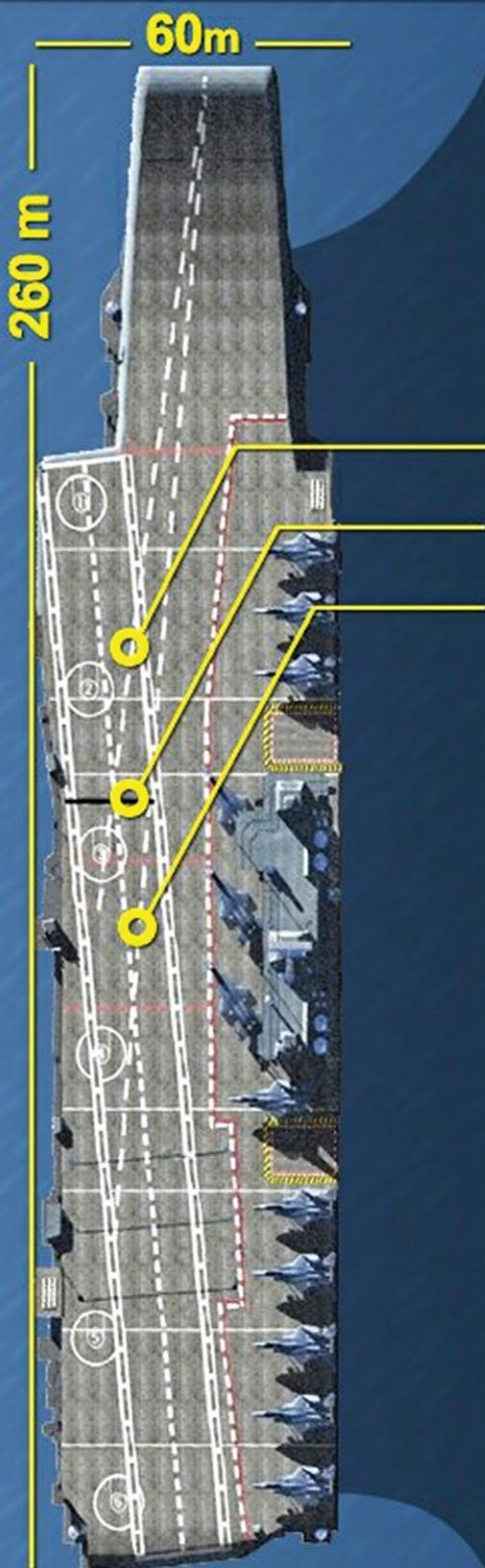
Highlights

- 262m long and 62m wide, it uses a STOBAR launch assembly with a ski jump ramp for aircrafts. The flying deck is around 12,500 sq m (roughly the size of 10 Olympic sized pools or two-and-a-half hockey fields).
- The 45,000-tonne warship has been built at a cost of ₹20,000 crores and has a range of 15,000 km.
- It is powered by four General Electric LM2500+ gas turbines on two shafts producing over 80 megawatts (1,10,000 hp) of power. The cabling on board is all made in India and is 2,600 km long. The power generated by the ship can light up a small town.
- With three automated galleys (kitchens) around 16,000 chappatis are churned out. On an average 6,000 idlis and 4,800 meals can be prepared on a daily basis.
- The indigenous content of VIKRANT is 76% which includes almost 23,000 tonnes



INS Vikrant

India's first indigenous aircraft carrier



Displacement at launch: **18,500 t**

Electric power: **24 MW**

Max speed: **28 knots**

Short take off position **145m**

Landing Runway

Long take off position **206m**

Carried: **20 fighters**

10 helicopters

(MiG-29K, Light Combat Aircraft and Kamov 31 could fly from the carrier)

Built at: **Cochin Shipyard Limited**

Planned cost: **\$500 million**



Will cost: **\$2.2 billion**




Extensive sea trials: **In 2016**


Inducted into the Navy: **By 2018**




INS VIKRANT



Designer
Warship Design
Bureau (WDB)



Built by
Cochin Shipyard
Limited (CSL)




Width: **62 m**

Height: **59 m**


Length: **262 m**

Cost



₹ **20,000**
CRORE

Weight



40,000
TONNES

- ◆ Israeli BARAK 8 Missile for Air Defence
- ◆ Israeli Elta EL/M-2248 Multifunction Radar for Electronic Warfare.
- ◆ Shakti Domestic EW SUITE.
- ◆ MAREECH TORPEDO System
- ◆ KAVACH Anti- missile System
- ◆ Portable Diver Detection Sonar
- ◆ AK-630 Rotary Canons
- ◆ Aviation Fleet comprises
 - 30 MIG 29K Multi-Role Fighter Jets
 - Helicopters- KAMOV31, MH60-R, SEAKING and ALH



INS VIKRANT
PERFORMANCE

TOP SPEED

28 KNOTS

ENDURANCE

7,500
NAUTICAL MILES

CRUISING SPEED

18 KNOTS



★
★
★

INS VIKRANT will soon emerge as the spearhead of the Carrier Battle Group (CBG)- a force highly potent to project our nation's military might. As a modern CBG, it will be invincible with surface, air and undersea escorts and effectively be able to combat diverse overhead, surface and submerged threats.

The commissioning of VIKRANT is a glowing testimonial of our nation's indigenisation ambition and industrial ecosystem wherein apart from the major industrial houses numerous MSMEs were involved in its construction.

★
★
★

STOBAR system is used to launch and recover an aircraft from an aircraft carrier. It combines elements of vertical landing and short take off.

of steel. Warship grade steel has been used to build the carrier which was developed by the Indian Navy, DRDO and SAIL.

- India is looking for 26 new fighter aircraft soon – the French Rafale M or the US

FA-18 Super Hornet are being shortlisted.

- The IAC has around 2,300 compartments, special facilities for women officers and built to host 1700 on board crew.



Indian Navy's new Ensign

**"A good navy is not a provocation to war.
It is the surest guarantee of peace."**

- Theodore Roosevelt

India has been a major seafaring country since the ancient period. The earliest reference to maritime activities is found in the Rig Veda. Several Indian rulers like Rajaraja Chola and Chhatrapati Shivaji maintained powerful navies to safeguard their territories.

The earliest form of Indian Navy, called Bombay Marine, was organised by the East India Company in 1612. With the establishment of the British Raj after the Revolt of 1857, it was transformed to "His Majesty's Indian Navy", then "Her Majesty's Indian Marine", and finally the "Royal Indian Marine". In 1934, Royal Indian Marine was re-organised in to the Royal Indian Navy.

When India became a republic on 26th January 1950, the name was

changed to the Indian Navy.

A naval ensign is a flag used by naval ships of various countries to denote their nationality.

The ensign used by the Indian Navy had some elements of our colonial past. We adopted the white ensign of the British Navy with some modifications.

It consisted of Saint George Cross on a white background with flag of India in the canton and National Emblem at the intersection of the cross.

On 2nd September 2022, the Prime Minister unveiled a new ensign for the Indian Navy at the commissioning event of INS Vikrant in Kochi. In a bid to do away with the "colonial past", the Saint George's Cross has been removed. Instead, it now features the national

emblem with the tricolour on the upper canton.

The national emblem is encompassed by an octagonal shield and sits atop an anchor. Beneath it is the Navy's motto '**Sam No Varunah**' (May Varuna, the God of water bless us!).

The golden border surrounding the national emblem draws inspiration from the seal of Indian emperor Chhatrapati Shivaji and depicts steadfastness. The octagonal shape of the national emblem represents eight directions, symbolising the multi-dimensional operational capability of the Indian Navy.

Change in the ensign is one of the several steps initiated by our government to ascertain our identity as a proud nation.



INDIA, CHINA

begin Disengagement

- The Ladakh Crisis

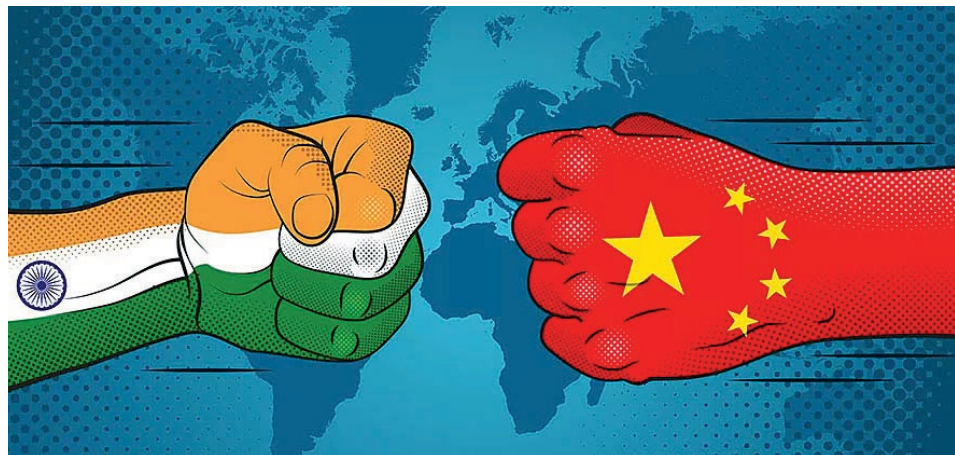
A consensus was reached on 8th September 2022, during the 16th round of India-China Corps Commander level Meeting, according to which the Indian and Chinese troops in the area of Gogra-Hot springs (PP-15) began to disengage in a coordinated and planned manner.

The Sino-Indian conflict – considered the most serious confrontation between the two sides since the 1962 war – commenced on April-May 2020 with China amassing a large number of troops along the Line of Actual Control in multiple areas including Finger area, Galwan valley, Hot springs, Kongrung Nala flouting the 1993 and 1996 bilateral agreements for maintaining peace and tranquillity along the Line of Actual Control pending the resolution of the boundary dispute.

The Indian Army's counter-deployment to resist aggressive moves by the PLA troops led to several confrontations and a violent

hand-to-hand combat in June 2020 at Galwan valley. Multiple rounds of talks led to disengagement from some areas in North and South PangongTso and Galwan.

likely to create a buffer zone or a no-patrolling zone. While India has reiterated that resolving the standoff at the border is necessary for the overall improvement of bilateral

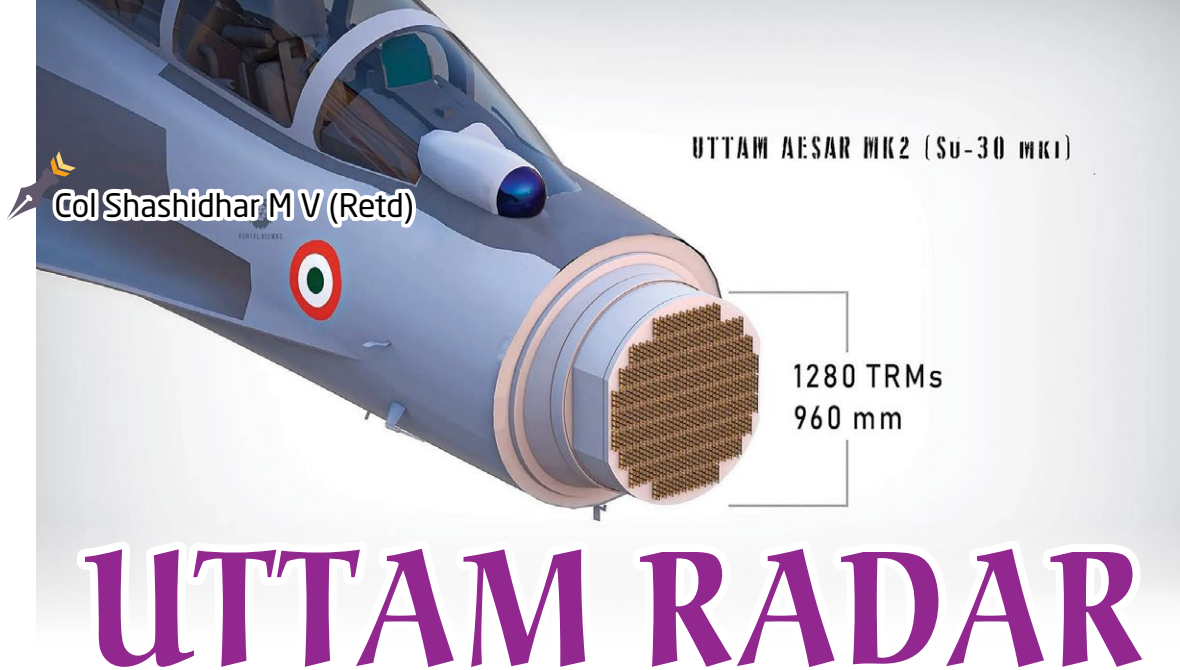


Though a disengagement pact for the Hot Springs area (PP-15) was perceived to be easily doable after the withdrawal at Gogra Post in August 2021, the two sides could not agree on it for more than a year.

As at other friction points where disengagement of troops has happened, here too the two sides are

relationship, China has called on India to put aside the border dispute and normalize relations.

The Ladakh crisis has shown that while India would like to work in an atmosphere which is conducive to the peace and tranquillity in the border areas, it will not be at the cost of its sovereignty.



On 26th August 2022, the Defence Research & Development Organization (DRDO) completed transfer of technology (ToT) for the production of the Uttam Active Electronically Scanned Array (AESA) radar to Hindustan Aeronautics Limited (HAL). It was developed by Electronics & Radar Development Establishment (LRDE). The radar will equip the IAF's Tejas Mk1A fighters from 2024. It has successfully completed more than 100 hours of flying on a hired aircraft and nearly 25 hours on Tejas test platform.

First unveiled at Aero India 2009, it is slated to replace the hybrid passive electronically scanned array radar EL/M-2032 currently equipping (Light Combat Aircraft) LCA Tejas.

Uttam features an Active Phased Array (APAR) giving it superior scanning performance over the passive phased array radar with capabilities like Identification friend or foe (IFF), electronic and communication support measures, C-band line-of-sight and Ku-band SATCOM datalinks, etc., similar to those on the Airborne Warning

And Control System (AWACS) and Conformal Airborne Early Warning & Control Systems (CAEW) systems.

Specifications

- X-band (8–12 GHz)
- diameter 650 mm (0.65 m)
- Peak power 10 KW
- Weight 4.8 kg



Active Phased Array Radar employs an antenna composed of an array of elements, each with their own amplifier functions.

A passive phased-array radar's elements receive microwave energy from one transmitter source.

C band radars operate on a wavelength of 4-8 cm and a frequency of 4-8 GHz. The dish size can be small.

Ku band (Kurtz-under band) is a frequency range or segment of the radio spectrum (11 to 17 GHz), often used for satellite communications and some types of satellite antennas.

The indigenous Uttam AESA (Active Electronically Scanned Array) radar system has been fully flight-tested for all air to air, air to ground, weather & terrain avoidance conditions and operates in the surface surveillance and air surveillance modes.

HIGHLIGHTS

- The sensor has the ability to search, track-while-scan, priority tracking and high-performance tracking.
- In priority tracking, the targets will be placed in full track mode despite across the primary surveillance area.
- With active aperture technology, the radar provides a fast-beam agile system that can operate in several modes concurrently.
- The array temperature is controlled by a liquid coolant circulation system.
- Electronic configuration makes it maintenance-friendly. It can be conveniently scaled up or down depending on antenna size requirement.
- Indigenous Uttam competes with the Israeli Elta radar.





CUSTOMER PROTECTION for *digital banking transactions*

Shravan and Gita were cleaning their house for the upcoming festival. They piled up clothes that were too small into a big bag. They sorted out books that they had read several times, books that did not interest them anymore.

“Doesn’t my cupboard look neat?” Gita asked proudly.

“Yes. Mine too. I am now able to easily find things that I need,” Shravan added.

Grandpa looked at the sorted bags and smiled. “Good. We’d be giving these clothes and books to children who need them.”

Grandpa had organised a collection drive in their society and tied up with an NGO to pick up the bags that weekend.

“Children, can you go to Usha Raman’s house in the first floor and collect the clothes bag? She said she’d have it ready this morning.”

Shravan and Gita went to the first floor and rang the bell. No response. They heard Raman shouting at the top of his voice, “Careless, money lost, fraud.”

They ran up to tell their grandpa.

Grandpa came along and rang the bell. Raman opened the door, his face anxious. His wife was sitting at the dining table staring at her mobile.

“What happened?” Grandpa asked.

“Uncle, see how careless she has been! 20,000 rupees gone from our bank account.” Raman banged his fist on the table and shouted again, “Gone!!” Usha came up to grandpa, her hands shaking. “Uncle, I wasn’t careless.”

Grandpa pacified them. “Maybe we can complain to the bank and recover the money. Can you tell me what happened?”

Raman picked up the mobile and showed it to Grandpa. “Uncle, see this message. We got it a few minutes ago.”

Grandpa read the SMS aloud.

“Dear Customer, Rs.20,000 withdrawn at IDB ATM ID 065001 from A/c XX0023 on 23 Sep 2022. Transaction number 221897685.

If not withdrawn by you, forward this SMS to 92230083333/ call 18001111109 to block your card.”

Grandpa looked up at Usha. “Is your debit card with you? Did you give it to anyone or find it missing for some time?”

Usha answered. “My debit card is here with me. I have neither given the card nor shared the PIN with anyone. I don’t understand ...”

Grandpa smiled. “Do not worry. We can get the money back. Call the customer care number given in the SMS immediately, register a complaint and block the card. Do it now.”

Usha looked up with hope. She called up the customer care number and lodged her complaint. She answered the questions confidently and waited as they put her on hold.

“Take down the complaint number. It’s important.” Grandpa prompted her.

She nodded, answered a few more queries and heaved a sigh of relief as she noted down the complaint number.

“The bank officer says that they will investigate this complaint and reverse our money within a week to ten days.”

Raman jumped up. “They will reverse the amount? All of it?”

“Yes!” his wife nodded. “It is such a big relief! We thought our money was gone.”

Protection to customers against fraud – Zero liability

Grandpa nodded. “The Reserve Bank of India has taken initiatives to protect customers against fraudulent transactions through digital banking. The RBI has advised banks to monitor digital transactions, notify the transactions to customers through SMS and email, and enable customers to complain immediately if there is a problem.

You see that in the SMS from the bank, they have given the number that you have to call in case the transaction is not done by you. This is to facilitate the customers to report a fraud immediately to the bank.

Banks are required to reverse the transaction within ten days and the customer will have zero liability, provided:

- The customer is not at fault, has not shared account details, card, PIN or OTP with anyone.
- The customer has reported the fraud to the bank within 3 days.

RBI is taking initiatives to spread awareness about this zero-liability feature to customers. There are advertisements coming up in newspapers and magazines and these details are also available on RBI website under the banner **RBI Kehta Hai**. Look at this advertisement.”

“Oh. This is Umesh Yadav. I’ve seen this advertisement in the newspaper,” Shravan exclaimed.

Usha nodded. “We’ve seen it too but we were so upset when we saw 20,000 debited from our account that we couldn’t think properly. Thanks, Uncle, for coming at the right time and guiding us.”

Grandpa smiled. “Don’t worry. Your money will be credited to your account within ten days.”

Shravan was curious. “Grandpa, how could someone withdraw money through ATM when the card is with Usha aunty?”


Raman and Usha were also curious.

Grandpa answered. “This is a skimming fraud. The fraudster could have attached a skimming machine in the ATM to capture data or taken the data when you handed over your debit card for payment at some place.”

Usha shook her head. “I haven’t used this card at any shop. I used it to withdraw cash at the ATM a week ago.”


“Then the fraud has happened at the ATM. Good that you reported the fraud immediately. The bank would be able to stop further losses once they inspect the ATM.”

Don't get clean bowled by a fraudulent or an unauthorised transaction in your bank account
Notify the bank immediately



Umesh Yadav
Indian Cricketer and RBI Employee

- The longer you take to notify the bank, the higher will be the risk of loss
- If the fraudulent transaction is due to your negligence, you will bear the loss till you report to the bank
- When you notify the bank of a fraudulent transaction, ask for an acknowledgment. The bank should resolve your complaint within 90 days from the date of its receipt
- Always keep your bank's contact details handy to report fraudulent transactions



**RBI Kehta Hai...
Jaankar Baniye,
Satark Rahiye!**

For more details give a missed call to 14440
or visit www.rbi.org.in/limitedliability
For feedback on this advertisement, write to rbikeptahai@rbi.org.in

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www.rbi.org.in



“Then, is it safe to use debit cards?” Raman looked worried.

Grandpa answered. “RBI wants to promote digital banking transactions as it is efficient, cost effective and convenient for bankers and customers. RBI has asked banks to put in place adequate controls in their systems and procedures to prevent frauds. If the customer is not at fault, yet suffers a loss due to fraud, then customers get protection.”

Do's and Don'ts for customers in digital banking transactions

It is important for customers to follow the guidelines issued by RBI and take necessary precautions while doing transactions. **Check out these do's and don'ts.**

Customers have to be diligent

and careful while doing digital banking transactions.

Grandpa got up. “Children, let's go!”

“Just a minute, Uncle.” Usha ran in and brought two bags of clothes. The children collected the bags. “Thanks, Uncle.” Raman shook hands with grandpa. “Did you know that our next-door neighbour Mr. Ravi Shankar lost Rs 30,000 last week to an online fraud? He was trying to sell his old sofa online and got duped by a fraudster. The bank said that it was his fault that he entered the UPI PIN on his mobile and so the bank will not bear the loss.”

Grandpa nodded. “There are a number of frauds that are being reported where customers have


inadvertently shared information or allowed fraudsters to get access to their bank account details.

The RBI Banking Ombudsman department has published a financial awareness series called “**Raju and the 40 thieves.**” These are cartoon stories that talk about the forty different types of digital banking frauds to warn customers.”

“We love cartoon stories. We'll read them.” Shravan and Gita said.

Raman smiled. “You read the stories and then share the stories with all of us in the society. I think it's important that we spread the awareness to more people. Your grandpa can add his views and answer questions. We'll arrange a session on digital banking frauds in the society hall next week.”

Dos and Don'ts for Electronic Banking Transactions



ONLINE AND MOBILE BANKING

✓ Dos


- Always type your bank's URL using only verified and trusted browsers and HTTPS secured websites for payments (S stands for Secure). Look for secure sign (lock) in the URL window (image)
- Make your passwords difficult to guess, by using alphanumeric and special characters (#, *, @, \$ etc.)
- Ensure that you change your password frequently
- Always keep your payment transaction Apps (banks, non-banks, Wallets etc) updated with the latest version
- Link your mobile number and email ID with your bank account and opt for SMS/e-mail alert service
- In case of any unusual/unauthorised transaction, inform the bank immediately

✗ Don'ts

- Never access your bank's website through online search.
- Never store login credentials on phone, also don't enter/store credentials on untrusted portals/service providers
- Avoid transacting through public devices, cyber cafes and on unsecured/open networks like public/free WiFi
- Never share your mobile banking PIN or Internet banking ID, password and OTP with anyone (including bank staff)

Don't let anyone score against you


Never share your Password, PIN, OTP, CVV, UPI-PIN, etc., with anyone



Rasika Raju
Indian Badminton Player and
RBI Employee

Poojisha S. Ram
Indian Badminton Player and
RBI Employee

- Register your mobile number and email with your bank to get instant alerts
- Never store important banking data in mobile, email or purse
- Use only verified, secure and trusted websites for online banking
- Avoid banking through public, open or free networks
- Change your online banking password and PIN regularly
- Block your ATM Card, Debit Card, Credit Card, Prepaid Card immediately if it is lost or stolen

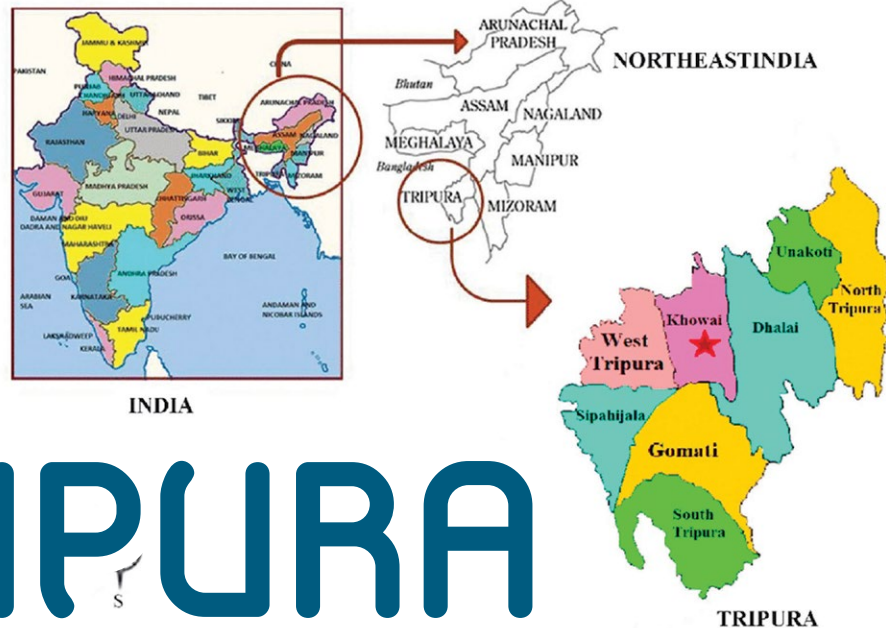


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TRIPURA

DO YOU KNOW ?

Football and cricket are the popular sports of Tripura.

Tennis player **Somdev Devvarman**, who won the gold medal in Men's Singles event at the 2010 Asian Games, has family roots in Tripura.

In 2016, **Dipa Karmakar** from Agartala became the first ever female gymnast from India to qualify for the Olympics.

Dadu was feeding the birds and rejoicing at the sight of birds pecking at the grains and twittering.

Just then,

Balu: [excitedly] Dadu, do you know what happened today at school?

Dadu: [curiously] What happened?

Balu: I made a new friend today; his name is Palash. I learnt that Palash means a flowering tree in Bengali. We had a great time together. He is from Tripura. [with furrowed eyebrows] But Dadu, where is Tripura exactly located and do people there speak Bengali?

Dadu: It's time to learn more about India, Balu!

Tripura is a hilly state in northeast India, bordered by Bangladesh to the west, north and south; Assam to the north-east and Mizoram to the east. Have a look.

Balu: [Thrilled] Dadu! Tell me more.

Dadu: Tripura was a royal state before independence. The tribal kings ruled for hundreds of years until its incorporation into India in 1949. As a revolt against the monarchic rule, the **Ganamukti Parishad movement** was launched. The movement was victorious and Tripura was integrated with India.

Babu: Interesting! Anything unique? What about their culture and art?

Dadu: The main forms of art and craft industries are intricately designed handlooms and bamboo works. The striking feature of Tripura's handloom is vertical and horizontal stripes in varied hues. Furniture, toys, lamp shades, baskets, and Tripuran tribal jewellery make shopping a delightful experience.

Music and dance are integral part of their diverse culture. The largest ethnolinguistic group comprises of Bengalis along with few tribal communities.



Some Local Musical Instruments



Sarinda



Chong Preng



Sumui



Wedding dress of Tripura



Rignai and Risa



Tripuri family traditional attire



Tripuri traditional attire



Mamita



Gorla dance



Hojagiri dance



Lebang Boomani dance



Mosak Sumani dance



Unakoti



Baramura Eco Park



Dumboor Lake



Jampui Hills



Neer Mahal



Kamalasagar Picnic Spot



Sipahijola Wildlife Sanctuary



Ujjayanta Palace

State symbols of Tripura

State animal	<u>Phayre's leaf monkey</u>
State bird	<u>Green imperial pigeon</u>
State tree	<u>Agarwood</u>
State flower	<u>Mesua ferrea</u>
State fruit	<u>Queen pineapple</u>

Area- 10, 491.69 sq.km

Population- 36,73,917 (as per Census 2011)

Capital- Agartala

Principal languages- Bengali, Kokborok and English

Literacy Rate:87.8% (as recorded in 2011 Census). As per recent data, the literacy rate is around 96%

Created as a state :21 January 1972

Religion: Hindus, Muslims , Christians, Buddhists

Ethnic groups: Bengali (63.48%), Tripuri(25.90%), Chakma (2.30%), Hindi(1.54%), others(6.78%)

Balu: Ahh! My guess was correct about Bengali.

Dadu: [beaming] Have a look at their various dance forms.

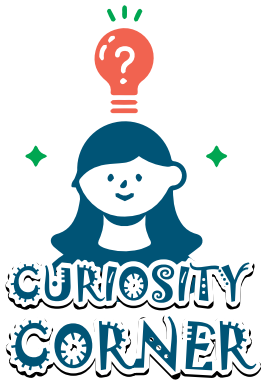
Balu: Fascinating! What do they do for their living?

Dadu: Their economy depends mainly on farming, fishing, tourism and industries- tea and brick. Tripura has considerable reservoirs of natural gas.

Balu: Dadu, are there any interesting places to visit?

Dadu: Oh yes!!! Tripura is known for its picturesque landscape. Have a look!





INDIAN ISLANDS

Some islands that enrich India's topography

1. The island of crows - Kerala



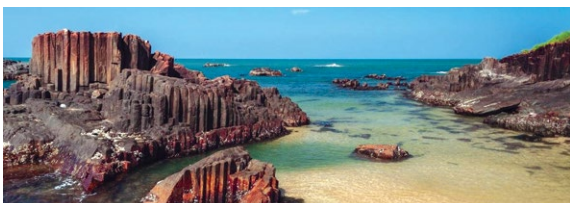
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3. The coral wonder of Lakshadweep



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5. Basaltic rock formations of India - Udipi, Karnataka



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2. The guardian angel to the nearby town of Kakinada



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4. Travelling back in time - Karnataka



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6. The heart-shaped island - Arabian Sea



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7. The place of the gods – Goa



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9. The Andaman's largest island



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11. India's most famous island cluster



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13. The floating island - Manipur



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8. The largest river island in the world - Assam



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10. Host of Asia's longest beach festival - Gujarat



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12. The smallest island in India - Guwahati



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14. Home to a UNESCO World Heritage Site - Maharashtra



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Answers on page 61





MAJOR ENVIRONMENTAL CASES IN INDIA

There are some landmark cases in India where the courts have established important rules and principles regarding environmental law, sustainable development and environmental responsibility. These cases are interesting and informative and give us an idea about the importance that India gives to environmental protection.

1. M.C. MEHTA V. UNION OF INDIA

This case is also known as the ‘Oleum Gas Leak’ case. It is a landmark judgment in which the principle of ‘absolute liability’ was laid down by the Supreme Court. The court believed that no support for bringing out any dangerous industry close to the human occupancy could be given. This judgment was a reason for the Parliament to add a new chapter to the Factory Act, 1948. Additionally, the ‘Public Liability Act’ was also enacted.

2. RURAL LITIGATION AND ENTITLEMENT KENDRA V. STATE OF UTTAR PRADESH

In this case, an NGO had filed a case against limestone quarrying in the valley in 1987. The court

emphasised on the concept of ‘sustainable development’ and it was declared that the assets of humanity are not to be consumed in one period.

The court observed that natural resources should be utilised judiciously so that the right of the future generations to enjoy the environment and will not be affected severely.

3. M.C. MEHTA V. UNION OF INDIA

This case is popularly known as the ‘Ganga Pollution’ case. Here, the petitioner had filed a writ petition in the nature of *mandamus* to prevent leather tanneries from disposing of industrial waste and effluents in the Ganga River. The court ordered the closure of a number of polluting tanneries and ordered other tanneries to establish treatment plants for effective treatment of such waste.

4. M. C. MEHTA V. UNION OF INDIA

This case, also known as the ‘Delhi Vehicular Pollution’ case, was a writ petition requesting the court to pass appropriate orders for the reduction of vehicular pollution

in Delhi. The Supreme Court held that it is the duty of the state to protect the environment and all the persons using automobiles should have a fair idea of the harmful effects on the environment due to emissions caused by their vehicles.

Further, a committee was set up to look into the problem, make an assessment of the technologies available for vehicular pollution control, low-cost alternatives for operating vehicles at reduced pollution levels in the metropolitan cities of India and to make specific recommendations on the administrative and legal regulations required for implementing the recommendations.

5. INDIAN COUNCIL FOR ENVIRO-LEGAL ACTION V. UNION OF INDIA

Here, a writ petition was filed by an NGO before the Supreme Court to look into the toxic untreated effluents being discharged by the factories. The court referred to several earlier cases including the Oleum Gas Leak case and applied the principle of ‘absolute liability,’ ordering closure of factories and to pay damages up to the tune of ₹4 crores for reversal of the harm caused to the ecology of the area.



BHIKAJI CAMA PARSI



As the young generation of this glorious nation, we should spare some time for remembering our heroes without whom the kind of lifestyle and freedom that we enjoy today wouldn't have been possible.

Born in Kolkata to Sorabji Framji Patel and Jaijibai Sorabji Patel, Madam Bhikaji Rustom Cama, was one of the leading figures in the Indian independence struggle.

Madam Cama relocated to Paris, where along with S. R. Rana and Munchersah Burjorji Godrej, she co-founded the **Paris Indian Society**. With the support of other notable members living in exile, Cama wrote, published and distributed revolutionary literature for the movement which was also imported to the Indian French colonies.

She attended the second Socialist Congress at Stuttgart, Germany in 1907, where she described the destructing effects of a famine that had hit India. In her appeal for human rights, equality and autonomy, she unfurled the first version of the Indian national flag—a tricolour of green, saffron and red stripes- what she called the "Flag of Indian Independence".

Bhikaji Cama was high-spirited in her support for gender equality.

Speaking in Cairo, in 1910, she asked, "I see here the representatives of only half the population of Egypt. May I ask where is the other half? Sons of Egypt, where are the daughters of Egypt? Where are your mothers and sisters? Your wives and daughters?". On the issue of the right to vote, Cama said, "Work for Indian's freedom and independence. When India is independent, women will not only have the right to vote, but all other rights."

Bhikaji Cama gave away most of her resources to the **Avabai Petit Orphanage for girls**, which is now the **Bai Avabai Framji Petit Girls' High School**.

TRIBUTE

- Several Indian cities have streets and places named after her.
- 26th Jan 1962 - Indian Posts and Telegraphs Department issued a commemorative stamp in her honour.
- 1997 - the Indian Coast Guard commissioned a Priyadarshini-class fast patrol vessel ICGS Bhikaji Cama.
- A high-rise office complex in South Delhi which accommodates major Government Offices and companies is named as Bhikaji Cama Place.

ANSWERS

of page 58 & 59

1. Kakkathuruthu
2. Hope
3. Thinnakara
4. Srirangapatna
5. St. Mary's
6. Netrani
7. Divar
8. Majuli
9. Havelock
10. Diu
11. Lakshadweep
12. Umananda
13. Sendra
14. Elephanta





Gond artist DURGABAI



Durgabai started her artistic journey in 1996 in a group camp, organised at Bharat Bhavan. She has been an active participant in painting camps, workshops in many small and big Indian cities.

She uses bright colours with a distinct and individual style, a deviation from the religious and conventional. Brought up in an environment and tradition of rich folk artistry, her work displays a contemporary aesthetic. Her themes portray interdependence between the animal and plant world.

Gond paintings with their characteristic dots and fine dashes are typically done using a rotting pen and black ink by other artists. But Durga Bai uses only paint and a

fine brush in her paintings. Each of Durga Bai's paintings tells a story.

Highlights

- 26 works of hers are on display at Likhandra Gallery at the MP Tribal Museum.
- Participated in more than 5 international exhibitions including art galleries in Tokyo and France.
- Depicted the Narmada origin story, the Gond stories of Basin Kanya and Gharsari Mata in the Tribal Museum. 49 year old Durgabai is a first-generation Gond artist. She enjoyed the story-telling performances in her village Barbaspur (near Patan in Madhya Pradesh) that accompanied the art of Bhatti Chitra, wall painting in mud houses, and decided to start creating her own paintings.
- Worked for several popular publishers.

Authentic Gond paintings stand out distinctly as they use colours made from natural ingredients extracted from plant sap, leaves, coloured soil, charcoal, flowers and cow dung.

Pointillism is a technique of painting in which small, distinct dots of color are applied in patterns to form an image.





Spotlight of the month

FOREST MAN OF INDIA

Jadvav Molai Payeng born on 31st October 1959, from the Mising tribe in Assam, initially planted 20 bamboo trees and modified the treeless sandbar of the river Brahmaputra region into a forest by planting more, over several decades.

The Molai forest named after him is located near Kokilamukh of Jorhat, Assam and spreads across 1360 acres. At the age of 19, he encountered a large number of snakes that died due to excessive heat after floods washed them on to the treeless sandbar. He started planting trees continuously to develop a forest there.

The forest has Bengal tigers, Indian rhinoceros, deer, rabbits and monkeys and several varieties of birds including vultures. The several thousand trees include bamboo which covers over 300 acres.

A herd of more than 100 elephants regularly visits the

forest every year and stays for six months. They have also given birth to 10 calves in the forest recently.

Payeng's efforts came to light in 2008 when forest officials went in search of 115 elephants that had retreated into the forest. Surprised at the large dense forest, the officials visited the site regularly then.

Molai, who has cattle and buffalo on his farm and sells milk for his livelihood once mentioned that he had lost around 100 of his cows and buffaloes to the tigers in the forest. However, he continued to plant trees to develop a forest and insists that encroachment and destruction of forests should be stopped. **In 2015, he was honoured with the Padma Shri award.** He was also awarded an honorary doctorate from Assam Agricultural University and Khaziranga university for his contribution.



THE DEMON FLOWER

**Scientific name:**

Nepenthes khasiana

Kingdom: Plantae

Trade name: Indian Pitcher plant, Tiew rakot (demon-flower or devouring-plant).

Habitat:

- Meghalaya (Khasia & Jaintia hills)
- Found at an altitude of 1000-1500 m
- Prefers acidic and nitrogen deficient soil, high rainfall and warm climate.

The plant has long, oblong-lance shaped leaves. Some leaves first normal, then develop a tendrill at their tip, and finally the tip of the tendrill develops an amazing pitcher, with a lid on top. As the pitcher matures, the lid turns a reddish hue. When an insect goes inside, the lid closes, and the insect is eventually digested. *Nepenthes*, Venus fly trap and Sundew plants are commonly referred to as insectivorous plants. Growing in nitrogen deficient soils, they obtain their nitrogen supply by trapping and digesting insects and other animals!!

Attenborough's pitcher plant, the largest carnivorous plant, reaching up to 1.5 m can capture and digest rodents and other small animals.

LEH PALACE, LADHAK



Place of interest :

Leh Palace also known as Lachen Palkar Palace.

Location:

Ladakh

When to visit:

- April to June
- September to October

How to reach there:

4.5 km from the airport. By cab or a walk through the beautiful city.

The Leh Palace is a 17th century former royal palace built under the patronage of King Sengge Namgyal. Built in 1665, this palace, with huge walls and wooden balconies, is a great example of medieval Tibetan architecture and boasts of nine storeys. While the upper floors were used as the residence of the royal family members, the lower floors comprised of stables and storerooms.

The structure is entirely made up of hard bricks, mud, wood and sand. The unique style of construction allows the palace to illuminate itself naturally during the day. The material used is such that the temperature inside remains soothing and pleasant. The entrance to the palace is adorned with intricate wood-carved figurines.

Though slightly in ruins, the small compartments, carved



entrances, capacious rooms and expansive corridors have not lost their charm. The bigger corridors and rooms have now been turned into exhibition halls. Stunning murals on the walls of the palace depict the magnificence of its original times.

The palace also comprises a monastery that features a statue of Lord Buddha, old paintings as old as 450 years created by using colors that were made from powdered gems and stones.

It stands as testimony to the rich cultural heritage of Ladakh.





AJWAIN

A spice and a medicine



When mixed with lemon juice and black pepper and then dried, it serves as a mouth freshener.

Ajwain also known as carrom seeds, *omam*, thymol seeds are the seeds from an annual herb whose leaves are also consumed. The ajwain seeds are actually the fruits of the herb.

Ajwain is slightly green to brown colour and are highly nutritious and are rich in fibre, minerals, vitamins and antioxidants.

Ajwain is used in Indian cuisine especially in dishes like Dal-Tadka. When fried in ghee, it imparts a wonderful flavour to the food. When mixed with lemon juice and black pepper and then dried, it serves as a mouth freshener. It also helps in maintaining digestive health. Ajwain contains thymol whose antiseptic and anti-inflammatory properties make it useful for relieving tooth pain as well.

Ajwain is widely used as medicine or treatment for cold and cough. It can be used in babies as small as three months old making it a very useful herb.

Ajwain can be used in different ways to treat cold and chest congestion:

As potli: Dry roast some ajwain on a tawa and once you get the aroma, transfer them into a clean cotton cloth. Tie it like a potli and press it on the chest to relieve congestion.

Steaming: Ajwain when infused in hot water can be used for steaming.

Decoction: Boil some tulsi or basil leaves with ajwain and chopped ginger for about 15 minutes. After that, strain the mixture and cool it and use it as decoction.

Oil massage: Mix some Ajwain in hot oil and use it for massaging for relieving chest congestion.

With jaggery: Mix a spoonful of jaggery with roasted ajwain powder and it can be taken for cold relief.

Ajwain can be easily grown at home:

- Ajwain is generally grown from seeds, though you can use cuttings.
- To grow from seed, plant 1/4-inch deep in rich, potting soil, or scatter on top of the soil.
- Use a mister to water, to avoid washing all the seeds into a corner of the pot.
- Mist daily for a week or two, until germination occurs.





10TH SEPTEMBER
**WORLD
FIRST AID
DAY**



Be a hero. Save lives.
First aid for everyone, everywhere.



+ World First Aid Day is observed on the second Saturday in September every year

+ The Day aims to raise awareness of how first aid can save lives

+ World First Aid Day 2022 is celebrated under the theme 'Lifelong First Aid'

Be of help to yourself and others.

Make sure that you learn first aid.

Warm wishes on World First Aid Day!

August 20

Indian

Akshay Urja Day



*The future is green energy,
sustainability, renewable energy.*