

My Notes....

NATIONAL

GEOSPATIAL ENERGY MAP OF INDIA

NITI Aayog on 18 October 2021 unveiled a **geospatial energy map** of the country capturing data on **all sources of energy**, making it a key tool for policymakers, investors, conservationists, financial institutions and disaster management authorities. NITI Aayog said that so far, the **energy maps** available in the country were **fragmented and scattered** across multiple departments or ministries.

About the Map

- The energy ministries have developed maps about the sectors they are engaged in for their own consumption such as the **National Power Portal, Online Coal Block Information System and India Online Exploration Database**.
- These maps are extensive in the area they cover but are unable to provide a **holistic picture of the entire energy sector**.
- Besides, the available maps were static in their format as a result of which they were unable to show the **associated features of the topography** where critical energy attributes may be located.
- The **geographic information system-based map** developed by **NITI Aayog** and the **Indian Space Research Organization** with the support of the **energy ministries and departments** represents a **holistic picture of all energy resources**.
- The **web-based geospatial energy map** includes **visualization of spatial and non-spatial data** on **renewable and non-renewable power plants**, oil and gas downstream sector, **renewable energy potential**, fossil fuel resources, and other energy assets in the country.

Benefit of Energy Map

- It is likely to be useful for **planning of resource**, including infrastructure planning for upcoming **solar parks, coal blocks, crude oil and natural gas pipelines**.
- It is also likely to aid investment guidance for financial institutions, ensuring safety of **energy assets** and for disaster management of possible energy disruption.
- This may also help in **resource and environmental conservation measures** and inter-state coordination on infrastructure planning including different corridors of energy and road transport highway.
- Energy markets have **immense potential to bring in efficiency gains**. Therefore, GIS-based mapping of energy assets will be advantageous to all concerned stakeholders and will help in accelerating the policy-making process.

BSF JURISDICTION EXTENDED

The **Ministry of Home Affairs (MHA)** has **extended the jurisdiction** of the **Border Security Force (BSF) up to 50 km** inside the international borders in **Punjab, West Bengal and Assam**. The BSF's powers — which include arrest, search and seizures — were limited to **up to 15 km** in these states. At the same time, the Ministry has reduced BSF's area of **operation in Gujarat** from 80 km from the border, **to 50 km**.

The BSF exercise in this jurisdiction

- Its jurisdiction has been extended only in respect of the powers it enjoys under **Criminal Procedure Code (CrPC), Passport (Entry into India) Act, 1920** and the **Passport Act, 1967**. BSF currently has powers to arrest and search under these laws.

2. It also has powers to arrest, search and seize under the **NDPS Act, Arms Act, Customs Act** and certain other laws. Its jurisdiction under these laws has not been changed, meaning its powers under these will continue to be **only up to 15 km inside the border** in Punjab, Assam and West Bengal, and will remain as far as 80 km in Gujarat.
3. **In 1969**, the **BSF first got powers** to arrest and search under the **CrPC** with respect to certain laws such as the **Foreigners Act, The Passport Act**, forex laws and Customs Act. BSF sources said even before 2014, they had a jurisdiction of **15 km inside the border in several states**.

FIRST MANNED OCEAN MISSION 'SAMUDRAYAN'

India's first manned ocean mission 'Samudrayan' was launched at Chennai on 29 October 2021 by Union Minister Jitendra Singh and with this the **nation joined an elite club of nations** having such **underwater vehicles** for carrying out subsea activities. The nation has made huge progress in **science and technology** and when an Indian goes up into space as part of the **Gaganyaan programme**, another would dive deep into the ocean.

What

1. **India** joins elite club of select nations **USA, Russia, Japan, France & China** having such underwater vehicles.
2. A new chapter opens to **explore ocean resources for drinking water**, clean energy & blue economy.
3. The mission does not **only increase the scientific capacity** but also gives the nation a sense of esteem that "we are doing something which is no less than any other country of the world."
4. The **Matsya 6000** under **Samudrayan initiative** is capable of carrying **three human beings** in titanium alloy personnel sphere of 2.1 metre diameter enclosed space with an endurance of 12 hours and an additional 96 hours in case of emergency situation.
5. The niche technology facilitates carrying out **deep ocean exploration** of non-living resources such as **polymetallic manganese nodules, gas hydrates, hydro-thermal sulphides and cobalt crusts**.
6. **Matsya 6000**, the deep sea vehicle, will be ready for qualification trials by December 2024.
7. The **manned submersible** can take three scientists to ocean depths to explore oceans and to survey the ocean bed and collect the data and samples.



INDIA ON GLOBAL FOOD SECURITY INDEX 2021

India is ranked at **71st position** in the **Global Food Security (GFS) Index 2021** of 113 countries, but the country lags behind its neighbours **Pakistan and Sri Lanka** in terms of food affordability. A global report released by **Economist Impact and Corteva Agriscience** on 19 October 2021 said.

According to the report

1. **India held 71st position** with an overall score of 57.2 points on the GFS Index 2021 of 113 countries, **fares better than Pakistan (75th position)**, Sri Lanka (77th Position), Nepal (79th position) and Bangladesh (84th position). But the country was way behind China (34th position).
2. In the **food affordability category**, Pakistan (with 52.6 points) scored better than India (50.2 points). Sri Lanka was also better at 62.9 points on the GFS Index 2021.
3. **In case of availability of food**, quality and safety as well as protecting natural resources for food production, **India scored better than Pakistan**, Nepal, Bangladesh and Sri Lanka on the GFS Index 2021.
4. However, over the past 10 years, **India's incremental gains** in overall food security score were lagging behind that of Pakistan, Nepal and Bangladesh.
5. **Ireland, Australia**, the UK, Finland, Switzerland, the Netherlands, Canada, Japan, France and the US shared the **top rank** with the overall GFS score in the range of 77.8 and 80 points on the index.
6. **China's score improved by 9.6 points** to 71.3 in 2021 from 61.7 in 2012, the report said.

About the Report

1. The **GFS Index** measures the underlying drivers of **food security in 113 countries**, based on the factors of affordability, availability, quality and safety, and natural resources and resilience.
2. It considers **58 unique food security indicators** including **income and economic inequality** calling attention to systemic gaps and actions needed to accelerate progress toward **United Nations Sustainable Development Goal of Zero Hunger** by 2030.
3. The GFSI looks beyond hunger to identify the underlying factors affecting food insecurity around the world.

AYUSHMAN BHARAT HEALTH INFRASTRUCTURE MISSION

Prime Minister launched the **Ayushman Bharat Health Infrastructure Mission**, one of the **largest pan-India schemes** for strengthening healthcare infrastructure, from his parliamentary constituency Varanasi in Uttar Pradesh on 25 October 2021. The prime minister also inaugurated various development projects worth more than Rs 5,200 crore for his constituency.

About the Mission

1. The **Pradhan Mantri Ayushman Bharat Health Infrastructure Mission** is one of the largest pan-India schemes for strengthening healthcare infrastructure across the country. It is in **addition to the National Health Mission**.
2. Its objective is **to fill gaps in public health infrastructure**, especially in **critical care facilities** and primary care in both **urban and rural areas**.
3. It will provide support for **17,788 rural health and wellness centres** in **10 high focus states**. Further, **11,024 urban health and wellness**

Why is the scheme significant?

1. India has long been in need of a **ubiquitous healthcare system**.
2. A study ('State of Democracy in South Asia (SDSA)-Round 3') by **Lokniti-CSDS** in 2019 highlighted **how access to public health care remained elusive** to those living on the margins.
3. The study found that **70 per cent of the locations** have public healthcare services. However, availability was less in **rural areas (65 per cent)** compared to urban areas (87 per cent).

centres will be established in all the states.

- Through this, **critical care services** will be available in **all the districts** of the country with more than **five lakh population** through exclusive critical care hospital blocks, while the remaining districts will be covered through referral services.
- People will have access to a full range of diagnostic services in the public healthcare system through a **network of laboratories across the country**, and integrated public health labs will be set up in all the districts.
- Under the scheme, a **national institution for one health**, four new national institutes for virology, a regional research platform for **WHO South East Asia Region**, **nine biosafety level-III laboratories**, five new regional national centre for disease control will be set up.

FOURTH GENERAL ASSEMBLY OF ISA

The **fourth general assembly** of The **International Solar Alliance (ISA)** begins virtually on 18 October 2021 to 21 October 2021. It is presided by **Shri R.K. Singh**, Minister for Power, New and Renewable Energy, Government of India and the **President of the ISA Assembly**.

What

- The **Fourth Assembly of the ISA** deliberated on the key initiatives around the operationalisation of the **One Sun, One World, One Grid (OSOWOG) initiative**, the **\$1 trillion Solar Investment Roadmap for 2030**, and approval of a **Blended Financial Risk Mitigation Facility**.
- Prime Minister in his Independence Day address last year, reiterated the **mega plan of having OSOWOG** or a **transnational electricity grid** supplying solar power across the globe.
- The idea was **first announced by the PM in 2018** during the first assembly of another international entity, the ISA.
- The ISA also discussed the partnership with **Global Energy Alliance (GEA)** to scale up technical and financial support to LDCs and SIDS.

Flashback

- The **Assembly is the apex decision-making body of ISA**, in which each member country is represented.
- This body makes decisions concerning the implementation of the **ISA's Framework Agreement** and coordinated actions to be taken to achieve its objective.
- Officially announced during the **COP21 in Paris in 2015**, the ISA is a partnership of solar resource-rich countries.
- Currently, 121 countries** have agreed to be members of ISA. Most of these are countries with a large participation from Africa, South-east Asia, and Europe.
- Pakistan and China are not members of the ISA. It is **headquartered in Gurugram**.

RULES TO ENSURE SUSTAINABILITY OF POWER SECTOR

The **Ministry of Power** on 23 October 2021 announced new rules to **sustain economic viability** of the sector, **ease financial stress of various stakeholders** and ensure timely recovery of costs involved in electricity generation. The ministry notified rules for the **sustainability of the electricity sector** and **promotion of clean energy** to meet the India's commitment towards climate change.

What the rule said

1. The rules notified by the Ministry of Power under **Electricity Act, 2003** are in the interest of the electricity consumers and the stakeholders.
2. The rules include **Electricity (Timely recovery of costs due to Change in Law) Rules, 2021**.
3. The other rule is **Electricity (Promotion of generation from renewable sources of energy by addressing Must Run and other matters) Rules, 2021**.
4. The ministry explained timely recovery of the costs due to change in law is very important as the **investment in the power sector** largely depends upon the timely payments.
5. At present, the pass through under change of law takes time. This impacts the **viability of the sector** and the developers get financially stressed. The rules would **help in creating investment friendly environment** in the country.

Flashback

1. The **energy transition** is happening across the globe. India has also made commitments to bring about energy transition.
2. India has also announced international commitment to set up **175 GW of RE capacity by 2022** and **450 GW by 2030**.
3. The ministry said these rules will **help in achieving the targets of RE generation**. This will ensure that the consumers get green and clean power and secure a healthy environment for the future generation.

NO RIGHT TO CADRE OF CHOICE: SC

Successful IAS aspirants have **no right to be allocated to a cadre of their choice**, the Supreme Court ruled on 22 October 2021. A bench of **Justices Hemant Gupta** and **V Ramasubramanian** said this while setting aside a Kerala High Court order, which asked the Centre to grant Kerala cadre to IAS officer A Shainamol. She had been allotted Himachal Pradesh cadre.

What

1. The top court pointed out that in the **1995 case of Union of India and Ors v. Rajiv Yadav, IAS and Ors**, a three-judge bench had laid down that **allotment of cadre is not a matter of right**.
2. The court had said that “a selected candidate had a right to consider the appointment of the IAS but he had no **such right to be allocated to cadre** of his choice or to his home state. Allocation of cadre was an **incidence of service**.”
3. Allowing the Centre’s appeal challenging the HC decision of 29 February 2017, the bench said Shainamol “as a candidate for All-India Service...has opted to serve anywhere in the country”. It said that “**once an applicant gets selected to service**, the **scramble for home cadre starts**”.
4. Rejecting arguments that her home state — Kerala — was not consulted before allocating her Himachal cadre, the court said the State has “**no discretion of allocation of a cadre at its whims and fancies**”, and “therefore, the Tribunal or the High Court should have refrained from interfering with allocation of cadre on the argument of alleged violation of the allocation circular”.

INTERNATIONAL

INDIA, UK, AUSTRALIA LAUNCH IRIS AT COP26

India, along with **Australia, the UK and Small Island developing states (SIDS)** was launched a new initiative for **Infrastructure for Resilient Island States (IRIS)** on the sidelines of the upcoming **Conference of Parties (COP26)**. The platform is aimed at creating a coalition for putting in place infrastructure that can withstand disasters and lessen economic losses in island nations.

What

1. **Australia, India and the UK** have committed an initial funding of **\$10 million for IRIS**.
2. More countries, including Japan, are expected to contribute to the initiative.
3. **IRIS is currently at the inception stage** and resources will be aligned to the requirement of projects.
4. Prime Minister, who is expected to be in Glasgow for the United Nations climate change conference for two days, is likely to launch IRIS.
5. We have to put the concerns of the **most vulnerable nations and communities first**.
6. In this regard, the **Small Island Developing Nations** that are already experiencing the impacts of worsening disasters must have easy access to all the technology, knowledge and assistance that they consider necessary.
7. **For SIDS**, losses from disaster, including infrastructure, is the highest as a percentage of **gross domestic product (GDP)**.

Flashback

1. **SIDS, comprising 58 countries** in the Caribbean, Pacific, Atlantic, Indian Ocean, Mediterranean and South China Sea regions, are among the most vulnerable countries to geophysical and hydro-meteorological hazards.
2. The impact of climate change in the form of tsunamis, cyclones, earthquakes and heavy rains are more frequent and intense in many of these countries.
3. Susceptibility to very high relative economic losses due to disasters averages in the range of 1-10 per cent of GDP annually.
4. **SIDS accounts for two-thirds of the countries in the world** that suffer the highest relative losses due to disasters.

RENEWABLE ENERGY CORRIDORS ON GREEN HYDROGEN

India and Italy have agreed to explore **development of green hydrogen**, setting up **renewable energy corridors**, and joint projects in the **natural gas sector** as the two nations sought to strengthen partnership in energy transition. A joint statement issued after Prime Minister Narendra Modi held the first in-person meeting with his Italian counterpart Mario Draghi on the sidelines of the **G20 Summit in Rome**.

What

1. They agreed to "initiate a dialogue to support the development and deployment of **green hydrogen** and related technologies in India" as well as to "**consider working together** to support a **large size green corridor project** in India to capitalize on India's target to produce and integrate **450 GW of renewable energy by 2030**."
2. The two leaders also agreed to "**encourage Italian and Indian companies** to develop joint projects in **natural gas sector, technological innovation for decarbonisation**, smart cities and other specific domains (i.e.: electrification of urban public transport)."

3. India set an **ambitious target** of building capacity to generate **450 gigawatts of electricity from renewable sources** such as **solar and wind** and more than double the share of natural gas in its energy basket to 15 per cent by 2030 as its transitions to a low carbon emitting economy.
4. It is also looking at **scaling up hydrogen production** from all sources, **particularly green hydrogen** as part of its energy transition pathway.
5. The two leaders also agreed to "**share useful information and experiences** especially in the field of policy and regulatory framework, including possible means to facilitate the transition to cleaner and **commercially viable fuels/technologies, long-term grid planning**, incentivizing schemes for renewables and efficiency measures, as well as with regard to financial instruments for accelerating clean energy transition."
6. They acknowledged significant progress in bilateral relations since the adoption of the **Action Plan** for an enhanced Partnership between **India and Italy (2020-2024)** on November 6, 2020.

UNSC ADOPTS RESOLUTION FOR ARMED CONFLICT

The **UN Security Council** on 29 October 2021 **adopted a resolution** on the **protection of education in armed conflict**. Resolution, which won the unanimous support of the **15-member council**, strongly condemns all violations of applicable international law involving the recruitment and use of children by parties to armed conflict as well as their re-recruitment, killing and maiming, rape and other forms of sexual violence, and abductions.

What the Resolution said

1. It also condemns attacks against **schools and hospitals** as well as denial of humanitarian access by parties to **armed conflict** and all other violations of international law.
2. The resolution urges UN member states to **develop effective measures** to prevent and address attacks and threats of attacks against schools and education facilities, and, as appropriate, **develop domestic legal frameworks** to ensure respect for their relevant international legal obligations.
3. It condemns the **military use of schools** in **contravention of international law**, and recognizes that use by armed forces and armed groups may render schools legitimate targets of attack, thus endangering children's and teachers' safety as well as their education.
4. The resolution calls on member states to **halt and prevent recruitment** and re-recruitment of children by parties to conflict, through, inter alia, quality education provided in a safe environment in conflict areas.
5. It underlines the **importance of providing assistance to children** with disabilities who are affected by armed conflict, and encourages member states to take appropriate measures to ensure access to education on an equal basis provided in the context of armed conflict.
6. It emphasizes the need for member states **to facilitate the continuation of education** during armed conflict, including, when feasible, through distance learning and digital technology.

ECONOMY

INDIA IN GLOBAL PENSION SYSTEMS

India has ranked **40th out of 43 pension systems** across the world in the **2021 Mercer CFS Global Pension Index survey**, suggesting the need for strategic reforms in India

to revamp the pension system so as to ensure adequate retirement income. India had stood at **34th position out of 39 pension systems** rated in 2020.

What

1. India had an **overall index value of 43.3** among the countries analysed, lower than the index value of 45.7 for 2020.
2. Globally, **Iceland was ranked highest** with an overall index value of 84.2 while Thailand had the lowest overall index value at 40.6.
3. The index highlights key strengths of **retirement pension systems** around **three sub-indexes - adequacy, sustainability and integrity**, where India scored 33.5, 41.8 and 61.0 respectively.
4. The **adequacy sub-index** represents the adequacy of the benefits that are being provided, the **sustainability sub-index** represents the likelihood that the **current system is able to provide benefits in the future**.
5. The **integrity sub-index** includes **many legislative requirements** that influence the overall governance and operations of the system which affect the level of confidence that citizens have in their system.
6. As per the survey, the **workforce in India manages pension savings on its own** for the most part as the coverage under private pension arrangement is just about **6% in India**.
7. **With over 90% of the total workforce** being in the **unorganised sector**, measures should be taken to get a larger workforce under pension savings.

Flashback

1. **Mercer Consulting**, a leading global management consulting firm, comes up with the **annual index** to benchmark each retirement income system using **more than 50 indicators**.
2. This year's index edition added **four new retirement systems** – Iceland, Taiwan, UAE and Uruguay.

INDIA IN CLIMATE TECH INVESTMENT

India ranks ninth in the list of **top 10 countries** for **climate technology investment** over the past five years and Indian climate tech firms received \$1 billion in venture capital (VC) funding from 2016 to 2021, according to a new report released in London on 26 October 2021.

What

1. **Five Years On: Global climate tech investment** trends since the Paris Agreement, by London & Partners and Dealroom.Co, analysed the **trends in the sector** since the last **United Nations Conference of Parties (COP)** in Paris and ahead of the **COP26 summit** in Glasgow next week.
2. It found that **venture capital investment into climate tech companies** globally has skyrocketed since the Paris Agreement, with the US and China leading the global top 10 with \$48 billion and \$18.6 billion investment between 2016 and 2021 respectively.
3. The **UK comes in at No. 4** with \$4.3 billion after Sweden at \$5.8 billion.

Flashback

1. Overall, global climate tech VC investment soared from **\$6.6 billion in 2016** to **\$32.3 billion in 2021**, an increase in funding by almost five times.
2. According to the report, which analyses technology companies working to reduce **Greenhouse Gas emissions** or addressing the impacts of climate change, 2021 investment levels have already exceeded the whole of 2020 for global climate tech investment, **demonstrating the importance of the global tech industry** in the fight against climate change.

- Countries around the world need to work together so that we can collectively change business practices and **commit to net zero emissions**.
- The **global tech industry** plays a **pivotal role** in accelerating this global transformation and this is demonstrated in the rapid growth of VC investment into global climate tech companies.
- It is fantastic to see the **UK and India** among the top 10 countries for climate tech investment globally, with London leading the way in Europe for the number of climate tech companies and dedicated VC funds.
- The **global top 10** is completed by **France at No. 5 (\$3.7bn)**, **Germany at No. 6 (\$2.7bn)**, Canada at No. 7 (\$1.4bn), the Netherlands at No. 8 (\$1.3bn) and Singapore tenth (\$700m), after India.

INDIA MOST COST-EFFECTIVE GLOBALLY IN RTSPV

A global study has found that **India is the most cost-effective country** for generating **rooftop solar energy** at USD 66 per megawatt-hour, while the cost in China is marginally higher at USD 68 per megawatt-hour. Due to the lower cost, **rooftop solar photovoltaics (RTSPV) technology**, such as roof-mounted solar panels used in homes, and commercial and industrial buildings, is currently the fastest deployable energy generation technology.

What

- This, according to this global study, is projected to fulfil up to **49 per cent** of the global electricity demand by 2050.
- Over the past decade, the massive drop in deployment cost coupled with **policy-driven initiatives** has led to a rapid uptake of **RTSPV globally**.
- Between 2006 and 2018, the installed capacity of the RTSPV has grown from **2.5 gigawatts (GW) to 213 GW**.
- With an additional capacity installation of 41 GW, **RTSPV currently accounts for 40 per cent** of the global cumulative installed capacity of the solar energy and nearly **one-fourth of the total renewable capacity** additions since 2018, which is more than the combined new installed capacities of both coal and nuclear.
- At the same time, **RTSPV technology** has shown a steep decline in deployment cost, which ranged **between USD 63 and USD 265 megawatt-hour in 2019**. It is a reduction of 42-79 per cent over 2010 value.
- Rooftop solar photovoltaics** account for **40 per cent of the global solar photovoltaics** installed capacity and one-fourth of the total renewable capacity additions.

EAC-PM RECONSTITUTED

The government has reconstituted the seven-member **Economic Advisory Council** to the PM for a **period of two years** after its term came to an end last month. **Bibek Debroy** continues to be the **chairman of the Council**. The reconstitution of the **Economic Advisory Council to the PM (EAC-PM)** for a period of two years or until further orders, whichever is earlier, the cabinet secretariat said in a notification dated 27 October 2021.

As per the notification

- The Council has been tasked to **analyse any issue, economic or otherwise**, referred to it by the PM.
- Besides, it would address **issues of macroeconomic importance** and present views thereon to the Prime Minister.
- This could be **either suo-motu or on reference from the PM** or anyone else, the Council may attend to any other task as may be desired by the PM from time to time.

Flashback

1. The **EAC-PM** is an independent body to advise the government, especially the prime minister, on economic and policy-related matters.
2. It was **set up in September 2017** with a term of two years, replacing the erstwhile PMEAC, which was headed by former Reserve Bank of India governor **C Rangarajan** during the terms of former Prime Minister Manmohan Singh.

SCIENCE AND TECHNOLOGY

FACEBOOK CHANGES NAME TO META

Facebook Inc is now called Meta, the company said on 28 October 2021, in a rebrand that focuses on its ambitions building the "**metaverse**," a **shared virtual environment** that it bets will be the next big computing platform. The new name reflected its ambitions to build the metaverse, rather than its namesake social media service.

What does the 'Meta' means?

1. '**Meta**' in Greek means '**after**' or '**beyond**'. The overall Facebook Company will now simply be **called Meta**.
2. However, the Facebook app will retain its name and there's no change for other apps.
3. But **Instagram, Facebook, WhatsApp, Messenger** are now all under the company 'Meta'— like Google has all its products under the umbrella company **Alphabet**.
4. The company, which has invested heavily in **augmented and virtual reality**, said the change would bring together its different apps and technologies under one new brand. It said it would not change its corporate structure.
5. The tech giant, which reports about **2.9 billion monthly users**, has faced increasing scrutiny in recent years from global lawmakers and regulators.

What is Metaverse?

1. "**Metaverse**," is a **virtual computer-generated space** where people can interact.
2. It includes other growing businesses that aren't its namesake site, such as virtual reality hardware branch **Oculus and Horizon Worlds**, virtual reality software that's still in beta testing mode.
3. The **metaverse**, a term first coined in a **dystopian novel three decades ago** and now attracting buzz in Silicon Valley, refers broadly to the idea of a **shared virtual environment** which can be accessed by people using different devices.

AGNI-5 SUCCESSFULLY TEST-FIRED

India on 27 October 2021 successfully test-fired the recently inducted **Agni-V**, the nuclear-capable **intercontinental ballistic missile (ICBM)**, amid rising tensions with China along the **Line of Actual Control (LAC)**. The successful launch of the **surface-to-surface ballistic missile**, which has a **range of over 5,000 km**, was done at the **APJ Abdul Kalam Island** in Odisha.

What

1. This is the **first user launch of the missile**, which was last **tested in 2018**, before it got inducted into the **Strategic Forces Command** that looks after India's nuclear arsenal.
2. The successful test of **Agni-V** "is in line with **India's stated policy** to have **credible minimum deterrence** that underpins the commitment to '**No First Use**'".

DELHI: VIJAY NAGAR 9717380832 & OLD RAJENDER NAGAR 9811293743 | JAIPUR: 8290800441
 BENGALURU: KORMANGALA 7619166663 & CHANDRA LAYOUT 7619136662 | BHOPAL: 7509975361
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- The missile, which uses a **three-stage solid-fuelled engine**, is capable of striking targets at **ranges up to 5,000 kilometres** with a very high degree of accuracy.
- Agni-V** has the capability to reach almost **every part of China**, in 2018, when the missile was tested last by its developer, the **Defence Research and Development Organisation (DRDO)**.

Flashback

- The launch on 27 October 2021 comes just months after India also test-fired the **Agni Prime**, the **next generation nuclear-capable ballistic missile** in the nuclear arsenal.
- While the **Agni Prime** and the rest of the Agni series is **focussed primarily on Pakistan**, the **Agni-V is a much larger strategic weapon**, capable of striking at much longer ranges.
- With Agni-V**, India has joined an exclusive club of countries, with the others being **China, US, Russia, Britain and France**, to have ICBMs.
- Agni-V** is programmed in a way that after **reaching the peak of its trajectory**, it will turn towards Earth to continue its journey towards the intended target with increased speed **due to the attraction of the Earth's gravitational pull**.

FIRST COMMERCIAL SPACE STATION

Billionaire **Jeff Bezos-owned Blue Origin** on 25 October 2021 unveiled plans to develop a commercial space station called "**Orbital Reef**" with Boeing, aiming to launch the spacecraft in the second half of this decade. The venture will be built in partnership with **Sierra Space**, the spaceflight wing of defense contractor Sierra Nevada Corp, and will be backed by **Redwire Space**, Genesis Engineering Solutions and Arizona State University.

About the Space Station

- Orbital Reef** will be operated as a "**mixed use business park**", and plans to provide the infrastructure needed to **scale economic activity** and open **new markets in space**.
- Seasoned space agencies**, high-tech consortia, sovereign nations without space programs, media and travel companies, funded entrepreneurs and sponsored inventors, and future-minded investors all have a place on **Orbital Reef**.
- Sierra in April announced plans to offer the **first free-flying commercial space station**.
- In July, **Blue Origin** had a successful debut **space tourism flight**, with Bezos and three others aboard.
- Earlier this month, 90-year-old US actor **William Shatner** - Captain James Kirk of Star Trek fame - became the oldest person in space aboard a rocketship flown by **Blue Origin**.

1ST MISSION TO DISTANT ASTEROIDS

NASA's newest **asteroid probe**, named **Lucy**, blasted off from **Kennedy Space Center** in Florida to embark on a **12-year mission** to study **two different clusters of asteroids** around Jupiter known as **Trojans**. These swarms represent the final **unexplored regions of asteroids** in the solar system.

What

- Lucy**, acting as a **robotic archaeologist**, will help to answer questions about **how the giant planets formed**.
- Perched atop a **United Launch Alliance (ULA) Atlas V rocket**, the refrigerator-sized spacecraft lit up the predawn skies above Cape Canaveral as it leapt off its launch pad on 16 October 2021.

3. Lucy will spend the **next six years cruising through the solar system**, looping around the Earth twice in order to build up enough momentum to reach Jupiter.
4. The spacecraft will fly by a total of **eight different asteroids (seven Trojans**, which are located in two separate swarms, ahead of and behind the massive planet in its orbit, and one main belt) in order to help scientists better understand **how the solar system evolved**.
5. Researchers believe that the **Trojans are perfectly preserved cosmic time capsules** and hope that studying them could shed more light on the **origin of the solar system** and how the giant planets formed.
6. The reason why [the Trojans] are important scientifically is that they were essentially **leftovers**, Hal Levison, Lucy's principal investigator said.
7. To date, space agencies around the world have **explored a variety of small bodies** from the **asteroid belt to near-Earth asteroids** (using projects like Japan's Hayabusa mission and NASA's OSIRIS-REx) to the icy expanse of the **Kuiper belt**.

Flashback

1. The mission is named "**Lucy**" as a nod to the **3.2 million-year-old hominin skeleton** discovered in **1974** by a paleoanthropologist named Donald Johanson.
2. At the time, the **skeleton was the oldest and most complete hominin** discovered and it revealed some secrets of human evolution.
3. NASA named its newest spacecraft Lucy because it hopes that the **robotic probe** can help unlock some secrets of solar system evolution.

ABHYAS TEST SUCCESSFULLY

India on 22 October 2021 successfully flight-tested the indigenously developed **High-speed Expendable Aerial Target (HEAT)**, **ABHYAS**, from the **Integrated Test Range (ITR)**, Chandipur off the coast of Bay of Bengal in Odisha. The vehicle can be used as an **aerial target** for evaluation of **various missile systems**.

What

1. The performance of the **target aircraft** was monitored through telemetry and various tracking sensors including **Radars** and **Electro Optical Tracking System (EOTS)**.
2. The **current test** was carried out as a part of **developmental flight trials**. Expression of interest for production of the vehicle has already been floated for bidding by Indian companies.
3. This **indigenous target aircraft**, once developed, will meet the requirements of **High-speed Expendable Aerial Targets (HEAT)** for Indian Armed Forces.
4. **ABHYAS** is designed and developed by **DRDO's Aeronautical Development Establishment (ADE)**, Bengaluru.
5. The **air vehicle** was launched using twin under-slung boosters which provide the **initial acceleration** to the vehicle.
6. It is powered by a **gas turbine engine** to sustain a long **endurance flight** at **subsonic speed**; the target aircraft is equipped with **MEMS (Micro-Electro-Mechanical Systems)** based **Inertial Navigation System (INS)** for navigation along with the Flight Control Computer (FCC) for guidance and control.
7. The vehicle is programmed for **fully autonomous flight**. The check-out of air vehicle is done using laptop-based **Ground Control Station (GCS)**.

MISCELLANEOUS

MISCELLANEOUS

WORLD FOOD DAY 2021

World Food Day is celebrated every year on **16 October** to commemorate the date of the **founding of the United Nations Food and Agriculture Organisation** in 1945. The day is also **observed by organisations** like World Food Programme and International Fund for Agricultural Development.

What

1. **Since 1981, World Food Day** has celebrated various themes to highlight the **importance of food security**, with most of them revolving around agriculture.
2. The **theme** for World Food Day this year is **"Our actions are our future- Better production, better nutrition, a better environment and a better life."**
3. FAO mentions on its website, **"The Covid-19 pandemic** has underlined that an urgent change of route is needed.
4. It has made it even **harder for farmers** — already grappling with climate variability and extremes — to sell their harvests, while rising poverty is pushing an increased number of city residents to use food banks, and millions of people require emergency food aid.

INDIA OCCUPIES TOP SPOT GLOBALLY IN EMISSIONS

India is ranked at the top in emissions related to **crop burning**, accounting for **13 per cent of total global emissions** for the 2015-2020 periods, according to a new report released by **climate tech startup Blue Sky Analytics**, which is also part of global coalition **"Climate TRACE"**.

What

1. The data in the report reveals **new insights into recent trends in biomass fires**, including emissions from forest and crop residue fires in India.
2. For example, the data verifies the downward trend in crop fires being observed between 2016 and 2019, citing a **reduction in the GHG emissions** due to **cropland fires** by 11.39 per cent in the period.
3. However, it also points to an **increase in emissions by 12.8 per cent** in 2019-20, increasing **India's global contribution to 12.2 per cent**.
4. The emissions estimates from Blue Sky Analytics **cover both fires caused by human activities**, including **burning in forest areas** for conversion to agricultural land or of crop residues and wildfire activity, producing a comprehensive picture of fire emissions.
5. By combining multiple **satellite data sources** for active fire identification and characteristics with **higher resolution global land cover maps**, these estimates

Flashback

1. **Blue Sky Analytics**, the **Indian climate tech startup** founded by an **IIT alumnus**, also pointed towards a 12.2-per cent contribution by India to cropland fire emissions in 2020.
2. **Climate TRACE** is a **global coalition with a mission to accelerate climate action** by providing independent high-resolution and **near-real-time (GHG) emissions data**.
3. Its innovative approach fills **critical knowledge gaps for all countries** that rely on the patchwork system of self-reporting that currently serves as the basis for most existing emissions inventories.

supplement the existing country-level reporting methods, which rely primarily on seasonal estimations and ground measurements of the burned area.

UNITED NATIONS DAY 2021

24 October is observed as the **United Nations Day every year**. 2021 will mark this intergovernmental organization's (dedicated to the crucial role of primarily ensuring global peace and security) **76th year** since the foundation. On this special occasion that commemorates the inception of this global organization.

What

1. **In 1945**, 24 October, the **United Nations** was officially established. 2 years later, the **United Nations General Assembly** in 1947 announced the **Charter of the United Nations** as the one which "shall be devoted to making known to the people of the world the aims and achievements of the United Nations and to gaining their support for its work".
2. The **UN Charter** was ratified by **majority of signatories** (including the 5 permanent members of the Security Council).
3. After 2 decades, **in 1971**, the organisation adopted United Nations Resolution and declared that the **United Nations Day** ought to be an international observance.
4. The resolution suggested that the **United Nations' member states** observe 24 October as a public holiday too.
5. The **United Nations** at the time of inception **had 51 members**. Presently it consists of **193 member states**; each of which is a member of the General Assembly.
6. The General Assembly, the Security Council, the **Economic and Social Council**, the **Trusteeship Council**, the **International Court of Justice**, and the **UN Secretariat** are the various bodies of the organization.
7. The United Nations is the centre of coordination for all the other countries. It is responsible for **maintaining and improving** friendly relations among countries.

INDIA'S BIGGEST AROMATIC GARDEN

India's biggest aromatic garden boasting of **140 species** has been developed at **Lalkuan** in Nainital district. The garden has been developed over an area of three acres by the research wing of the **Uttarakhand Forest Department**. The project has been funded under **Centre's compensatory afforestation scheme (CAMPA)**.

What

1. **Initiated in 2018**, it aims to conserve various **aromatic species**, create awareness about them, promote research, and link them with livelihood of local people.
2. Lalkuan was selected as the site for the garden to offset perpetual stench that comes from the **paper industries** in the area.
3. The aromatic garden has a '**Tulsi vatika**' which contains more than 20 species of tulsi, including Rama tulsi, Shyam tulsi, van tulsi, Kapoor tulsi as well as **African, Italian and Thai tulsi**.
4. Besides **Tulsi Vatika**, it has eight different sections comprising **aromatic leaves** (lemon balm, rosemary, Kapoor and various mint species), aromatic flowers (chameli, mogra, rajnigandha, kewda), aromatic trees (chandan, neem chameli, naglingam, parijat) etc.
5. The extracts of these aromatic plants are used in **cosmetics for flavouring and fragrance purposes**.
6. These plants are also of **great utility** in making spices, pesticides and repellents.

51ST DADASAHEB PHALKE AWARD

Actor **Rajinikanth** was conferred with the **51st Dadasaheb Phalke Award** on 25 October 2021. He received the prestigious award from Vice President M Venkaiah Naidu for his stupendous contribution to Indian cinema.

What

1. The **Dadasaheb Phalke Award for 2019** was to be announced last year but was postponed because of the **Covid-19 pandemic**.
2. The prestigious Dadasaheb Phalke, awarded for **excellence in cinematic achievement**, is the highest honour in film and is awarded by the government.
3. The **recipient of the 2018 award** was actor Amitabh Bachchan, who has shared screen space with Rajinikanth in the 1991 action-drama Hum.
4. Rajinikanth is also the recipient of **Padma Vibhushan**, the second-highest civilian award of the Republic of India.
5. He had made his debut in 1975 with **K Balachander's Apoorva Ragangal** and has completed more than 45 years in the Tamil film industry.

INDIA REJECTS NET ZERO CARBON EMISSIONS TARGET

India on 27 October 2021 **rejected calls to announce a net zero carbon emissions target** and said it was more important for the world to lay out a pathway to reduce such emissions and avert a dangerous rise in global temperatures. **India**, the **world's third-biggest emitter of greenhouse gases** after China and the United States, is under pressure to announce plans to become carbon neutral by **mid-century**.

What

1. The **United States, Britain** and the **European Union** have set a target date of **2050** to reach net zero, by which point they will **only emit an amount of greenhouse gases** that can be absorbed by **forests, crops, soils** and still-embryonic "**carbon capture technology**".
2. **China and Saudi Arabia** have both set targets of **2060**, but these are largely meaningless without tangible action now.
3. Between now and the middle of the century the **United States will release 92 gigatons of carbon** into the atmosphere and the **EU 62 gigatons**, China would have added a **staggering 450 gigatons** by its net zero target date.
4. India has committed to **cutting the emissions intensity** of its GDP by **33%-35% by 2030 from 2005 levels**, achieving a **24% reduction by 2016**.
5. Some environment experts say India could consider lowering its emissions intensity by as much as **40 percent dependent on finance** and whether it has access to newer technologies.

Flashback

1. **Net zero** means achieving a **balance between the greenhouse gases** put into the atmosphere and those taken out.
2. Reaching net zero, requiring us to **balance the amount of greenhouse gases we emit with the amount we remove**. When what we add is no more than what we take away we reach net zero.
3. This state is also referred to as **carbon neutral**; although **zero emissions and zero carbon** are slightly different, as they usually mean that no emissions were produced in the first place.

PUBLIC AFFAIRS INDEX 2021

Four of the top five positions in the sixth edition of Public Affairs Index 2021 (PAI 2021) are occupied by the southern States which was released on 29 October 2021. Apart from looking at governance performance in the context of sustainable development defined by equity, growth and sustainability pillars.

As per the PAI 2021

1. PAI 2021 also features analysis of five Centre-sponsored schemes that aid in key development parameters of health, education and livelihoods (Mahatma Gandhi Rural Employment Guarantee Scheme, National Health Mission, Integrated Child Development Services, Samagra Siksha Abhiyan, and Midday Meal Scheme).
2. The report also includes ranking of the states on the basis of their performance during the COVID-19 pandemic, apart from a Delta Analysis measuring year-on-year performance and Cluster Analysis of states.
3. Kerala, Tamil Nadu and Andhra Pradesh occupy the top three spots due to their consistent performance across both pillars.
4. Karnataka dropped to the seventh rank in the Public Affairs Index 2021.
5. PAI 2021 provides State-specific rationale for strategic interventions in investing in those sectors and spaces that are most in need of help.