



## News Analysis (04 Jan, 2021)

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### Fighting Drug Addiction

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#### Why in News

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Recently, people in a few villages of **Jodhpur district's Bilara block, Rajasthan** have come together to tackle **Drug Addiction** among the youth.

#### Key Points

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- **Steps Taken By the Villagers:**
  - **Boycott** of persons consuming **liquor, tobacco and narcotics.**
  - **Imposition of a penalty** on the **sellers and buyers** of these **substances.**
- **Drug Addiction:**
  - It refers to the **condition of being addicted to a drug**, particularly narcotic drugs.
  - These are **generally illegal drugs** that **affect the mood and behaviour of a person.**
  - **Drug abuse** refers to the **use of certain chemicals for the purpose of creating pleasurable effects on the brain.**
  - There are over **190 million drug users around the world** and the problem has been increasing at alarming rates, especially among young adults under the age of 30.

- **Drug Menace In India:**

- The menace of drug addiction has **spread fast among the youth of India.**
- India is sandwiched between two **largest Opium producing regions** of the world that is **the Golden triangle on one side and the Golden crescent on**

**other.**



- The **golden triangle** area comprises **Thailand, Myanmar, Vietnam and Laos.**
- The **golden crescent** area includes **Pakistan, Afghanistan and Iran.**
- As per the report **Magnitude of Substance Use in India** released by **All India Institute Of Medical Science (AIIMS)** in 2019:
  - **Alcohol** is the most abused substance in India.
  - Around **5 crore** Indians reported to have **used cannabis and opioids** at the time of the survey (conducted in the year 2018).
  - It has been estimated that there are about **8.5 lakh people who inject drugs.**
  - Of the total cases estimated by the report, **more than half** of them are contributed by states like **Punjab, Assam, Delhi, Haryana, Manipur, Mizoram, Sikkim and Uttar Pradesh.**
  - About 60 lakh people are estimated to need help for their opioid use problems.
- More and more children are taking to alcohol consumption and the **highest percentage of children who are addicted to alcohol are in Punjab followed by West Bengal and Uttar Pradesh.**
- **Major Reasons for Drug Abuse:**
  - To be accepted by the peers.
  - Increasing economic stress.
  - Changing cultural values.
  - Experimentation.
  - Neurotic pleasure.
  - Ineffective Policing.

- **Impacts of Drug Abuse:**
  - Higher risk of unintentional **injuries, accidents, domestic violence incidents, medical problems, and death.**
  - **Economic potential** gets wasted.
  - **Affects relationships** with family, friends creating emotional and social problems
  - Increases **financial burden.**
  - Drug abuse seriously **affects our health, security, peace and development.**  
Increase in **diseases like Hepatitis B and C, Tuberculosis**
  - Drug dependence, low self esteem, hopelessness can **lead to criminal action and even suicidal tendencies.**
- **Challenges to Curb the Drug Menace:**
  - **Legally Available Drugs:**  
Such as **tobacco** is a huge problem which is usually seen as a **gateway drug** which children take just to experiment with.
  - **Lack of Availability of Rehabilitation Centres:**  
There is a lack of rehabilitation centres. Also, NGOs operating de-addiction centres in the country, have failed to provide the required kind of treatment and therapy.
  - **Smuggling of Drugs:**  
Smuggling of drugs through the states like Punjab, Assam and Uttar Pradesh which share the border with neighbouring countries.

- **Government Initiatives to Tackle Drug Addiction:**

- It constituted the **Narco-Coordination Centre (NCORD)** in November, 2016 and revived the scheme of “**Financial Assistance to States for Narcotics Control**”.
- Narcotics Control Bureau has been provided funds for developing a new software i.e. **Seizure Information Management System (SIMS)** which will create a complete **online database of drug offences and offenders**.
- The government has constituted a fund called “**National Fund for Control of Drug Abuse**” to meet the expenditure incurred in connection with combating illicit traffic in Narcotic Drugs; rehabilitating addicts, and educating the public against drug abuse, etc.
- The government is also conducting a **National Drug Abuse Survey** to measure trends of drug abuse in India through the Ministry of Social Justice & Empowerment with the help of **National Drug Dependence Treatment Centre of AIIMS**.
- '**Project Sunrise**' was launched by the **Ministry of Health and Family Welfare in 2016**, to tackle the **rising HIV prevalence** in north-eastern states in India, especially among people injecting drugs.
- **The Narcotic Drugs and Psychotropic Substances Act, (NDPS) 1985**: It prohibits a person from producing, possessing, selling, purchasing, transporting, storing, and/or consuming any narcotic drug or psychotropic substance.
  - The **NDPS Act** has since been **amended thrice** – in **1988, 2001** and **2014**.
  - The Act extends to the whole of India and it applies also to all Indian citizens outside India and to all persons on ships and aircraft registered in India.
- Government has also announced the launch of the '**Nasha Mukh Bharat**', or **Drug-Free India Campaign** which focuses on community outreach programs.

- **International Treaties and Conventions to Combat Drug Menace:**

India is signatory of the following International treaties and conventions to combat the menace of Drug Abuse:

- **United Nations (UN) Convention on Narcotic Drugs (1961)**
- **UN Convention on Psychotropic Substances (1971)**.
- **UN Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances (1988)**
- **UN Convention against Transnational Organized Crime (UNTOC) 2000**

## Way Forward

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- Addiction should not be seen as a character flaw, but as an ailment that any other person could be struggling with. Therefore, **the stigma associated with drug taking needs to be reduced**. Society needs to understand that drug-addicts are victims and not criminals.
- Certain **crop drugs** which have more than 50% alcohol and opioids **need to be contained**. **Strict action is required from police officers** and the excise and narcotics department to **curb the problem of drug menace in the country**. There is a need to **strictly implement the NDPS Act**.
- **Radical political decisions** like that one of alcohol prohibition in Bihar may be another solution. When people do not exercise self-control, a state has to step in, as part of the **Directive Principles of State Policy (Article 47)**.
- **Education curriculum should include chapters on drug addiction**, its impact and also on de-addiction. Proper Counselling is another alternative.

**Source:TH**

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## **Lithium-ion Technology**

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### **Why in News**

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India, through a newly-floated state-owned company **Khanij Bidesh India Ltd**, has inked a pact with an **Argentine firm** to jointly **prospect lithium in Argentina**, a country that has the **one of the largest reserves** of Lithium in the world.

### **Key Points**

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- **Khanij Bidesh India Ltd** was incorporated in August 2019 by three state-owned companies, **NALCO, Hindustan Copper and Mineral Exploration Ltd**, with a specific mandate to **acquire strategic mineral assets such as lithium and cobalt abroad**.  
It is also learnt to be exploring options in **Chile and Bolivia**, two other top lithium-producing countries.
- Lithium is a crucial building block of the **lithium-ion rechargeable batteries** that power **electric vehicles (EVs)**, **laptops** and **mobile phones**.
- Currently, India is **heavily dependent on import of these cells** and the move to ink sourcing pacts for lithium is also seen as a move to **reduce its dependency on China** which is a **key source of both the raw material and cells**.
- India is seen as a late mover as it attempts to enter the lithium value chain, coming at a time when **Electric Vehicles** are predicted to be a **sector ripe for disruption**.  
2021 is likely to be a **turning point for battery technology**, with several potential improvements to the **Li-ion technology**, and alternatives to this tried-and-tested formulation, under **advanced stages of commercialisation**.

- **About Li-ion Batteries:**

- A lithium-ion battery or Li-ion battery is a type of **rechargeable battery**.
- Li-ion batteries use an **intercalated** (Intercalation is the reversible inclusion or insertion of a molecule into materials with layered structures) lithium compound as one electrode material, compared to the metallic lithium used in a non-rechargeable lithium battery.
- The battery consists of electrolyte, which allows for **ionic movement**, and the two electrodes are the constituent components of a lithium-ion battery cell.
- Lithium ions move from the **negative electrode** to the **positive electrode during discharge and back when charging**.

- **Lithium-ion Battery Applications:**

- Electronic gadgets, Tele-communication, Aerospace, Industrial applications.
- Lithium-ion battery technology has made it the favourite power source for electric and hybrid electric vehicles.

- **Disadvantages of Li-ion Batteries:**

- Long charging times.
- Safety issues as instances of batteries catching fires have been there.
- Expensive to manufacture.
- While the Li-ion batteries are seen as sufficiently efficient for applications such as phones and laptops, in case of EVs, these cells still lack the range that would make them a viable alternative to internal combustion engines.

- **Potential Alternatives to Li-ion technology:**

- **Graphene Batteries:**

Graphene batteries may be an important alternative to lithium-ion batteries, with the latter having limitations due to the frequency with which lithium requires charging. Graphene is a newly stabilized and isolated material.

- **Fluoride Batteries:**

Fluoride Batteries have the potential to last eight times longer than lithium batteries.

- **Sand Battery:**

This alternative type of lithium-ion battery **uses silicon to achieve three times better performance** than current graphite Li-ion batteries. The battery is still lithium-ion like the one found in a smartphone, but it uses silicon instead of graphite in the anodes.

- **Ammonia-powered Batteries:**

- Ammonia-powered batteries may not be coming any time soon, but the chemical commonly known as a household cleaner is still an alternative to lithium in the way it can power fuel cells in vehicles and other equipment.
- If scientists can figure out a way to produce ammonia without creating the greenhouse gas emissions that result right now, they can ship it anywhere in the world to be converted into hydrogen to power those fuel cells.

- **Lithium-Sulfur Batteries:**

Researchers in Australia say they have developed the world's most powerful rechargeable battery using lithium-sulfur, said to perform four times better than the strongest batteries currently available.

- **Vertically Aligned Carbon Nanotube Electrode:**

These are good candidates for lithium-ion battery electrodes which require high rate capability and capacity.

- **Solid-state Batteries:**

- It uses alternatives to **aqueous electrolyte solutions**, an innovation that could lower the risk of fires, sharply increase energy density and potentially take only 10 minutes to charge an EV, cutting the recharging time by two-thirds.
- These cells can extend the driving distance of a compact electric vehicle while maintaining legroom - a quantum leap in battery tech.

**Source:IE**

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## **Report on Lightning Strikes**

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### **Why in News**

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According to a report published by the **Climate Resilient Observing Systems Promotion Council (CROPC)**, the number of **deaths due to lightning strikes reduced by nearly 37%** in 2019-20.

CROPC is a **non-profit organisation** that works with the **India Meteorological Department (IMD)**.

## Key Points

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- **Data Analysis:**

Lightning-linked fatalities formed **33% of total deaths in natural disasters** in **2019-20**.

- **Factors Responsible:**

The rapid **degradation of environment** like **global warming**, **deforestation, depletion of water bodies, concretisations, rising pollution and aerosol levels** have cumulatively pushed the environment to extremes. And lightning is direct promulgation of these climatic extremities.



- **Suggestions:**

- States should participate in **Lightning Resilient India Campaign** and undertake lightning risk management more comprehensively.  
IMD has launched a joint campaign named Lightning Resilient India Campaign along with CROPC and duly supported by Indian Meteorological Society (IMS), NGOs, IIT Delhi and other concerned institutions.
- **Early lightning warning** to farmers, cattle grazers, children and people in open areas.
  - Lightning strikes around a fixed period and almost similar geographical locations in similar patterns.
  - **Kalbaishakhi - Norwesters**, which are violent thunderstorms with lightning - claims life in **eastern India** and **pre-monsoon lightning deaths** occur mostly in **Bihar, Jharkhand, Chhattisgarh and UP**.
- **Implement a local lightning safety action plan** like installing Lightning Protection Devices.
- **Lightning fatalities** should be notified **as a disaster to prevent losses**.  
It needs to be noted that the **Centre has not notified lightning as a disaster**.
- Although the **National Disaster Management Authority (NDMA)** has issued comprehensive guidelines for action plans to states, a large number of losses show that the implementation needs a more “**scientific and focused community-centric approach**”, besides convergence of various departments.
- **Mapping of lightning** is a major breakthrough in identifying the precise risk in terms of lightning frequency, current intensity, energy content, high temperature and other adverse impacts.  
With continuous mapping for at least three years, **a climatology can be established**. This would yield a **Lightning Risk Atlas map** for India which will form the basis for a lightning risk management programme.

## Lightning

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- **Meaning:**

- It is a very **rapid and massive discharge of electricity in the atmosphere**. It is the **process** of occurrence of a **natural ‘electrical discharge of very short duration and high voltage between a cloud and the ground or within a cloud’**, accompanied by a bright flash and sound, and sometimes thunderstorms.
- **Inter cloud or intra cloud (IC) lightning** are visible and **harmless**.
- It is **cloud to ground (CG) lightning**, which is **harmful** as the ‘high electric voltage and electric current’ leads to **electrocution**.

- **Process:**

- It is a **result of the difference in electrical charge between the top and bottom of a cloud.**

The lightning-generating clouds are typically about 10-12 km in height, with their base about 1-2 km from the Earth's surface. The temperatures at the top range from -35°C to -45°C.

- As **water vapour moves upwards** in the cloud, it **condenses into water** due to decreasing temperatures. A huge amount of heat is generated in the process, pushing the water molecules further up.
- As they **move to temperatures below zero**, droplets **change into small ice crystals**. As they continue upwards, they gather mass, until they become so heavy that they start descending.
- It **leads to a system** where smaller ice crystals move upwards while larger ones come down. The **resulting collisions trigger release of electrons**, in a process very similar to the generation of electric sparks. The moving free electrons cause more collisions and more electrons leading to a chain reaction.
- The process **results in a situation in which the top layer of the cloud gets positively charged while the middle layer is negatively charged.**
- In little time, **a huge current**, of the order of lakhs to millions of amperes, starts to **flow between the layers.**
  - It produces heat, leading to the heating of the air column between the two layers of cloud.
  - It is because of this heat that the **air column looks red during lightning.**
  - The heated air column expands and produces shock waves that result in **thunder sounds.**

- **Strikes Earth's Surface:**

- The **Earth is a good conductor of electricity**. While electrically neutral, it is **relatively positively charged compared to the middle layer of the cloud**. As a result, an estimated **20-25% of the current flow is directed towards the Earth**.

It is this current flow that results in **damage to life and property**.

- Lightning **has a greater probability of striking raised objects** on the ground, such as trees or buildings.

**Lightning Conductor** is a device used to protect buildings from the effect of lightning. A metallic rod, taller than the building, is installed in the walls of the building during its construction.

- The **most lightning activity** on Earth is seen on the shore of **Lake Maracaibo in Venezuela**.

At the place where the Catatumbo river falls into Lake Maracaibo, an average 260 storm days occur every year, and October sees 28 lightning flashes every minute - a phenomenon referred to as the **Beacon of Maracaibo or the Everlasting Storm**.

## **Concretisation**

- Concretisation or the **increase in paved surfaces** has a **suffocating impact on trees** and turns a city into an **urban heat island** with **extremely low ground water** and **threats of floods** looming large in monsoons due to surface run-off.

The concrete surface, be it buildings or roads or footpaths **radiate heat waves in the evening**, making nights as hot as days and decreasing the difference between the maximum and the minimum temperatures, resulting in urban heat island effect.

- During concretisation, the **carbon stored in the soil escapes into the atmosphere**, which then gets oxidised to form **carbon dioxide**, a major **greenhouse gas** leading to temperature escalation.

**Source: IE**

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## **Trans Fatty Acids**

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### **Why in News**

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The **Food Safety and Standards Authority of India** (FSSAI) has capped the amount of **trans fatty acids** (TFA) in oils and fats to **3%** for 2021 and **2%** by **2022** from the current permissible limit of **5%** through an **amendment to the Food Safety and Standards (Prohibition and Restriction on Sales) Regulations 2011**.

The **Regulations deal with the prohibitions and restriction on sales of various food products**, ingredients and their admixtures.

## Key Points

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- The revised regulation **applies to** edible refined oils, vanaspati (partially hydrogenated oils), margarine, bakery shortenings, and other mediums of cooking such as vegetable fat spreads and mixed fat spreads.
- As per the **World Health Organisation** (WHO), approximately **5.4 lakh deaths** take place each year globally because of intake of **industrially produced trans fatty acids**.
- The FSSAI rule comes at the time of a **pandemic** where the burden of **non-communicable diseases** (NCD) has risen.
  - Trans-fat consumption is a significant risk factor for cardiovascular diseases.
  - Cardiovascular diseases account for most NCD deaths.
- Previously it was in 2011 that India first passed a regulation that set a TFA limit of **10%** in oils and fats, which was further reduced to **5%** in **2015**.

## Trans Fat

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- Trans fatty acids (TFAs) or Trans fats are the **most harmful type of fats** which can have much more adverse effects on a human body than any **other dietary constituent**.
- These fats are **largely produced artificially** but a **small amount also occurs naturally**. Thus in our diet, these may be present as Artificial TFAs and/ or Natural TFAs.

Artificial TFAs are formed when **hydrogen is made to react with the oil to produce fats resembling pure ghee/butter**.
- In our diet the major sources of artificial TFAs are the **partially hydrogenated vegetable oils (PHVO)/vanaspati/ margarine** while the natural TFAs are **present in meats and dairy products**, though in small amounts.
- **Usage:**

TFA containing oils can be preserved longer, they give the food the **desired shape and texture** and can easily substitute '**Pure ghee**'. These are comparatively far lower in cost and thus add to profit/saving.

- **Harmful effects:**

- TFAs pose a higher **risk of heart disease** than saturated fats. While saturated fats raise total cholesterol levels, TFAs not only **raise total cholesterol levels** but also **reduce the good cholesterol** (HDL), which helps to protect us against heart disease.
- It is also associated with a higher risk of developing **obesity, type 2 diabetes, metabolic syndrome, insulin resistance, infertility, certain types of cancers** and can also lead to **compromised fetal development** causing harm to the yet to be born baby.

Metabolic syndrome includes **high blood pressure, high blood sugar, excess body fat around the waist and abnormal cholesterol levels.**

The syndrome increases a **person's risk of heart attack and stroke.**

- **Efforts to reduce their intake:**

**National:**

- FSSAI launched a **“Trans Fat Free”** logo for voluntary labelling to promote **TFA-free products**. The label can be used by bakeries, local food outlets and shops for preparations containing TFA not exceeding **0.2 per 100 g/ml**.
- FSSAI launched a new mass media campaign **“Heart Attack Rewind”** to **eliminate industrially produced trans fat** in the food supply by the year 2022.

“Heart Attack Rewind” is a follow-up to an earlier campaign called **“Eat Right”**, which was launched in **July, 2018**.

- Edible oil industries took a pledge to reduce the levels of salt, sugar, saturated fat and trans fat content by 2% by 2022.
- **Swasth Bharat Yatra**, an initiative started under the **“Eat Right” campaign is a Pan-India cyclothon** to engage citizens on issues of food safety, combating food adulteration and healthy diets.

- **Global:**

WHO launched a **REPLACE campaign in 2018** for global-level elimination of trans-fats in **industrially produced edible oils by 2023**.

**Source:TH**

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## **Bird Flu Threat**

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### **Why in News**

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Hundreds of crows have died in Rajasthan prompting authorities to sound a bird flu alert in the state.

## Key Points

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- **About:**
  - Bird flu, also known as Avian influenza (AI), is a **highly contagious viral disease** affecting several **species of food-producing birds** (chickens, turkeys, quails, guinea fowl, etc.) as well as pet birds and wild birds.
  - Occasionally mammals, including **humans, may contract avian influenza.**
- **Types:**
  - Influenza viruses are grouped into **three types; A, B, and C.** Only **type A is known to infect animals and is zoonotic**, meaning it can infect animals and **also humans.** Type B and C **mostly infect humans** and typically cause mild disease.
  - Avian influenza virus subtypes include **A(H5N1), A(H7N9), and A(H9N2).**
- **Classification:**
  - Influenza viruses are classified into subtypes based on two surface proteins, **Hemagglutinin (HA)** and **Neuraminidase (NA).** For example, a virus that has an HA 7 protein and NA 9 protein is designated as subtype H7N9.
  - Highly Pathogenic Avian Influenza (HPAI) A(H5N1) virus occurs mainly in birds and is highly contagious among them.
  - HPAI Asian **H5N1** is especially **deadly for poultry.**
- **Impact:**
  - Avian Influenza outbreaks can lead to **devastating consequences for the country, particularly the poultry industry.**
  - Farmers might experience a **high level of mortality in their flocks**, with rates often around **50%.**
- **Prevention:**

Strict **biosecurity measures** and **good hygiene** are essential in protecting against disease outbreaks.
- **Eradication:**

If the infection is detected in animals, a policy of **culling infected** and **contact animals** is normally used in an effort to rapidly contain, control and eradicate the disease.
- **India's Status:**
  - Previously in 2019, India was **declared free from Avian Influenza (H5N1)**, which had also been notified to the **World Organization for Animal Health (OIE).**
  - The status will last only till another outbreak is reported.

## World Organization for Animal Health

- The OIE is an intergovernmental organisation responsible for improving animal health worldwide.

- It is recognised as a **reference organisation by the World Trade Organization** (WTO).
- In 2018, it had a total of 182 Member Countries. India is a member country.
- It is headquartered in **Paris, France**.

**Source:IE**

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## **Smart Classes for Rural Schools**

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### **Why in News**

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Recently, **RailTel** has proposed to the **Ministry of Education** its plan for **equipping rural schools, run by the central government, with the ability to hold ‘smart classes’**.

### **Key Points**

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- **About the Proposal:**
  - The proposal is to **power remote government schools with high-speed broadband and create an “Internet of Things” environment for learning**.
  - The plan is to create **end-to-end e-learning solutions for the schools**, using the **solid Optical Fibre Cable network**, which is the backbone of Indian Railways telecom operations.

Behind the plan is the education sector’s thrust on **leveraging the gains of e-learning** as a mode of instruction, at a time when the **pandemic** has forced teachers and students to migrate to virtual platforms and adopt IT-enabled interactive means for teaching.
  - The cable network **runs along railway tracks**, and so as far as reach is concerned, there is the **capability to impact rural schools anywhere in India**, including the remotest locations which otherwise may not get reliable Internet.

RailTel has **already provided such connectivity to 723 institutions of higher learning under the Centre’s National Knowledge Network programme**, with broadband speed of up to 10 gigabytes per second.
  - It would **impact around 3.5 lakh students** who are enrolled in these schools, which are run by the Central government predominantly for meritorious students in rural India.

- **RailTel:**

- It is a "**Mini Ratna (Category-I) Central Public Sector Enterprise.**
- It is an ICT (Information and Communication Technology) provider and one of the largest neutral telecom infrastructure providers in the country owning a Pan-India optic fiber network on exclusive Right of Way (ROW - for laying telecom cables) along Railway track.
  - The OFC network covers all important towns & cities of the country and several rural areas.
- It has been selected for **implementation of various mission-mode projects** for the Government of India including rolling out the **National Knowledge Network, Bharat Net** and **USOF (Universal Service Obligation Fund) funded optical fiber based connectivity project in North East India.**

Source: IE

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## Banana Grit

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### Why in News

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Recently, scientists at the **Council of Scientific & Industrial Research (CSIR)-National Institute for Interdisciplinary Science and Technology (NIIST)** at Pappanamcode in Kerala have come up with a new product, **Banana Grit or Granules**, developed from raw **Nendran bananas**.

**CSIR is the largest research and development (R&D) organisation in India.**

### Key Points

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- **About Banana Grit:**

Banana Grit and its byproduct can improve **gut health** and is an **ideal ingredient** in a healthy diet. The concept was introduced to **utilise** the presence of **resistant starch in bananas**.

- Starch is a **white, granular, organic chemical** that is produced by all **green plants**. It is a **soft, white, tasteless powder** that is insoluble in cold water, alcohol, or other solvents.
- In humans and other animals, **starch from plants is broken down into its constituent sugar molecules**, which then **supply energy to the tissues**.

- **Significance:**

- By **diversifying the products sourced from Banana**, farmers can **fetch better prices for their harvest**.
- It will help in **maintaining health and well-being**.



- **Nendran bananas:**

- Chengazhikodan Nendran Banana, also known as Chengazhikode Banana, is among the most popular traditional fruits cultivated in **Thrissur district, Kerala**.
- This variety of Nendran Banana is famed for its characteristic **taste, bunch shape and fruit colour**.
- The crop is mainly **cultivated in organic mode** and the crop duration is **13-14 months**.
- The Chengaliodan Nendran banana grown in Kerala got **Geographical indication (GI) Tag** in 2014.

**GI** refers to any indication that identifies the **goods as originating from a particular place, where a given quality, reputation or other characteristic of the goods is essentially attributable to its geographical origin**.

**Source:TH**

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