# Prelim Bits 19-08-2021 | UPSC Daily Current Affairs

## Nuclear Fusion

*An experiment carried out in National Ignition Facility (California) has made a breakthrough in nuclear fusion research.*

- **Nuclear fusion** is defined as the combining of many small nuclei into a large nucleus with the subsequent release of huge amounts of energy.
- It powers our sun and harnessing this fusion energy could provide an unlimited amount of renewable energy.

  Base load energy refers to the minimum amount of electric power needed to be supplied to the electrical grid at any given time.

- Nuclear fusion energy is a good choice as the base load energy in the future as it has many advantages.
- Advantages - Inexhaustibility of resources, inherent safety, no long-lived radioactive wastes, and almost no CO2 emissions.
- In the experiment, lasers were used to heat a small fuel pellets, having deuterium and tritium, in the **inertial confinement fusion** process.
- This pressurised the fuel pellets at conditions similar to that at the centre of the Sun. This triggered the fusion reactions.
- These reactions released alpha particles (positively charged), which in turn heated the surrounding plasma.
- [At high temperatures, electrons are ripped from atom's nuclei and become plasma or the $4^{th}$ state of matter or an ionised state of matter.]
- Heated plasma released alpha particles and a self-sustaining reaction called ignition took place. Ignition amplifies the energy output.
- **Significance** - This could help provide clean energy for the future.
- Reproducing the conditions at the centre of the Sun will help studying the states of matter we were unable to create in the lab before.

## Central Sector Scheme for Industrial Development of J&K

*Department for Promotion of Industry and Internal Trade has notified this new Scheme for J&K and is effective from April, 2021 to March, 2037.*

- The scheme aims to take industrial development to the block level in UT of J&K, which is the $1^{st}$ time in any Industrial Incentive Scheme of India.
- **Applicability** - The scheme is made attractive for both smaller and larger industrial units. It is applicable for,
  1. Any eligible industrial (manufacturing) entity or
  2. Any eligible service sector enterprise other than those run departmentally by

Government, which is registered business enterprise under Goods and Service Tax (GST).

- **Non-Applicability** - Units availing benefits under other Government of India schemes won't be eligible for similar incentives under this Scheme.
- The scheme shall not apply to the units which manufacture the products listed in the negative list.
- **Key Features** - The purpose of the scheme is to generate employment which directly leads to socio-economic development in J&K.
- Smaller units with an investment in plant and machinery upto Rs. 50 crore will get a capital incentive upto Rs. 7.5 crore and get capital interest subvention at the rate of 6% for a maximum of 7 years.
- The scheme has a proper checks and balances by having an independent audit agency before the claims are approved.
- The scheme offers 4 incentives namely,
    1. **Capital Investment Incentive** is given at 30% in Zone-A and 50% in Zone-B on investment on plant and machinery (in manufacturing), or construction of building and other durable physical assets (in service sector).
    2. is provided for investment in plant and machinery for 7 years up to Rs. 500 crore loan, or construction in building and all other durable physical assets for 10 years.
    3. 300% GST Linked Incentive - It is not a reimbursement or refund of GST. Gross GST is used to measure eligibility for industrial incentive to offset the disadvantages that the UT of J&K faces.
    4. Working Capital Interest Subvention will provide all existing units incentive at the annual rate of 5% for maximum 5 years. Maximum limit of incentive is Rs. 1 crore.

# Oil Bonds

*Finance Minister has said that it cannot reduce taxes on petrol and diesel as it has to bear the burden of payments in lieu of oil bonds issued by the previous government to subsidise fuel prices in 2012-13.*

Oil bonds are issued by the government to compensate oil marketing companies (OMCs) to offset losses that they suffer to shield consumers from rising crude oil prices.

- Before fuel prices were deregulated, petrol, diesel, cooking gas and kerosene were sold at subsidised rates.
- Instead of paying subsidy directly to oil marketing companies, the then government issued oil bonds (Rs 1.34 lakh crore) to the state-fuel retailers in a bid to contain the fiscal deficit.

## Reasons for Deregulating Oil Prices

- Fuel price decontrol has been a step-by-step exercise.
    - The government freed up prices of aviation turbine fuel in 2002, petrol in 2010, and diesel in 2014.
- Prior to that, the government would intervene in fixing the price at which retailers were to sell diesel or petrol.
- This led to under-recoveries for oil marketing companies, which the government had to compensate for.
- The oil prices were deregulated to,
    1. Make the prices **market-linked** i.e. linked to global crude prices,

2. Unburden the government from subsidising prices, and
3. Allow consumers to benefit from lower rates when global crude oil prices tumble.

- Price decontrol essentially offers fuel retailers (Indian Oil, HPCL or BPCL), the freedom to fix prices based on calculations of their own cost and profits.

# Recapitalisation Bonds

*These bonds issued by the Central government in 2017 will come up for redemption between 2028 and 2035.*

Recapitalisation bonds, issued by the government, will inject capital into state-owned banks (PSU banks) and other institutions that were stressed by bad loans.

- The money collected by the government goes to banks in the form of equity capital as the government increases its share of equity holding, thereby shoring up banks' capital reserves.
- The money invested by banks in recapitalisation bonds is **classified as an investment** which earns them an interest.
- This instrument does not impact the fiscal deficit, with only interest payment being reflected in deficit calculations.
- Banks once obtained funds, can write-off the bad assets (loans) by using the fund from recapitalisation.
- The government so far has issued recapitalisation bonds to public sector banks and EXIM Bank, IDBI Bank and IIFCL.
- These recapitalisation bonds will come up for redemption between 2028 and 2035.
- To know more about the recapitalisation bonds, click here.

# Global Navigation Satellite System (GNSS)

- This general term describes any **satellite constellation** that provides positioning, navigation, and timing (PNT) services on global or regional basis.
- GNSS is a network of satellites broadcasting timing and orbital information used for navigation and positioning measurements.
    1. Global Navigation Satellite Systems - GPS, GLONASS, BeiDou & Galileo
    2. Regional Navigation Satellite Systems - NavIC and QZSS

**Quasi-Zenith Satellite System**

- It is a regional GNSS owned by Japan and operated by QZS System Service Inc. (QSS).
- QZSS complements GPS to improve coverage in East Asia and Oceania.
- Japan plans to have an operational constellation of 4 satellites by 2018 and expand it to 7 satellites for autonomous capability by 2023.

**Source: PIB, The Hindu, The Indian Express**



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