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*C – Chennai; B – Bengaluru; D – Delhi; H-Hyderabad; T – Thiruvananthapuram
India tests Swedish technology to reduce stubble burning

Foreign firm launches its first pilot project plant in Punjab

JACOB ROUD

Paddy stubble burning in winter is the key contributor to the sharp decline in air-quality in Delhi. But stubble burning continues unabated. To find a solution to this issue, India is testing a Swedish technology – torrefaction that can convert rice stubble into “bio-coal”.

The Office of the Principal Scientific Adviser (PSA) to Government of India has funded a pilot project in Punjab to evaluate the feasibility of the technology. Hindoesta, a Swedish company, has set up a pilot plant at the National Agri-Food Biotechnology Institute in Mohali.

The Punjab and Haryana governments have for years exhorted farmers not to burn stubble, but it continues unabated.

Pg. 4 → Delhi edition

250 degrees Celsius - 350 degrees Celcius. This changes the elements of the biomass into ‘coal-like’ pellets. Singh, so far the technology has only been substantially tested in Scandinavia as a 16,000 ton/year plant.

Part A—Preliminary Examination

Paper I - (200 marks) Duration: Two hours

- Current events of national and international importance.
- Indian Polity and Governance- Constitution, Political System, Panchayati Raj, Public Policy, Rights Issues,
- Economic and Social Development-Sustainable Development, Poverty, Inclusion, Demographics, Social Sector Initiatives, etc.
- General issues on Environmental ecology, Bio-diversity
- General Science.

Part B—Main Examination

PAPER-IV


- Infrastructure: Energy, Ports, Roads, Airports, Railways etc.
- Science and Technology- developments and their applications and effects in everyday life.
- Conservation, environmental pollution and degradation, environmental impact assessment.

News:

- Measure to address stubble burning problem
  - Torrefaction - Swedish Technology
  - Pilot project - funded by office of PSA
  - Plant setup in National Agri-Food Biotechnology Institute, Punjab
- India - Sweden High Level Policy Dialogue
  - “Agri-waste to High Energy Bio-Coal”
  - Under “Waste to Wealth” mission of PM - STIAC
- Bio-Coal
  - Made from unutilized crop waste
  - 10 times lower emissions than conventional coal

Expected Outcomes:

- Improved air quality
- Reduced emissions
- Livelihood opportunities
- Can be used as clean energy input
- Source in thermal power plants, households
- Capacity building
- Employment generation
- Improvement of soil quality
Practice Question – Prelims

Q. The term ‘Torrefaction’ recently seen in news is related to which among the following?

a) New technology for soft landing on moon.

b) Physical property of metals defining their ability to be hammered, pressed, or rolled into thin sheets without breaking.

c) Process for making high energy bio-coal from agri-waste.

d) A method to produce biodiesel.

Torrefaction:

- Thermochemical process → heating of biomass in absence of air
  - Temperature - 200°C to 350°C
- Volatilization → 30% mass of biomass reduced
- Near net zero energy process
- Efficiency of co-firing biomass in large coal-based thermal power plants → higher
  - Incremental investment → lower

Efficiency

- Energy mass balance → increase in energy density 1.3 times
- Capital cost higher than traditional pellets but cost effective

Characteristics:

- Combustion → similar to coal
- High energy density
- Low moisture content
  - Environmental Advantages
- Near-zero sulphur content
- Water repelling properties → longer storage periods (Hydrophobic)
**Slowdown → Slow GDP growth**

- **Recession**
  - Significant decline in economic activity
  - Spread across economy, lasting > few months, visible in Real GDP, Real Personal income, employment, industrial production & wholesale - retail sales

- **Gross Value Added → Q1 - 0.6%; Q2 - 1.0%**
  - Manufacturing sector close to being in recession

**Recession → Structural in nature**

- **Short-term actions & Structural actions**
  - **Short-term actions:**
    - Increase amount of cash in economy
    - PSBs
      - Cash + Interest rate ⇒ Easy Policy Credit
    - Reduction in repo rate
      - Boost aggregate demand
| Practice Question – Mains  
| GS - III |

Q. “Indian economy is in slowdown, not in recession”. In the light of this statement, discuss the structural changes and other measures needed to revive the economy. 
(10 marks, 150 words)

| * Structural Measures: |
| → Skills and Industrial Policy |
|   Eg: Textile Sector → locate textile factories in states - moderately priced - high volume capacity - cheap labour |
|   ↓ |
|   Invest in North & Eastern India (Bihar, Jharkhand, etc.) |
| → Agriculture Sector → Change in business model |

| → Healthcare & Education Section |
|   → Business Model |
|     Using Savings |
|     Supplement by Government |
| → Housing Sector |
|   → Using land to build affordable Housing |

Conclusion:
* Slowdown outcome of Supply-side constraints, not demand-side
News:

* Indian Ocean is likely to be affected by tsunamis generated by earthquakes at two potential source regions

Indian National Centre for Ocean Information Services (INCOIS) or ESSO-INCOIS:

* Autonomous body, established in 1999 at Hyderabad
* Under the Ministry of Earth Sciences
* to provide the ocean information & advisory services to society, industry, government agencies and also to the scientific community

Indian Ocean Tsunami Warning and Mitigation System (IOTWMS)

* Established by the Intergovernmental Oceanographic Commission (IOC) of UNESCO

* Established in response to the tragic tsunami of 26th December 2004

* Funded by UNESCAP Trust Fund (United Nations Economic and Social Commission for Asia and the Pacific)
Practice Question – Prelims

Q. Consider the following statements with reference to “Indian Ocean Tsunami Warning and Mitigation System (IOTWMS)”

1. It was established by the Intergovernmental Oceanographic Commission (IOC) of UNESCO in response to the tragic tsunami of 26 December 2004.
2. It is funded by the United Nations ESCAP Trust Fund for Tsunami, Disaster and Climate Preparedness.
3. The Indian Tsunami Early Warning Centre (ITEWC) established at INCOIS acts as one of the Regional Tsunami Advisory Service Provider (RTSP) along with Australia & Indonesia for the Indian Ocean region.

Select the correct statements using the codes given below

a) 1 and 2
b) 2 and 3
c) 1 and 3
d) 1, 2 and 3
**GST revenues not enough for States’ compensation: Centre**

**Letter to States flags falling collections**

**SPECIAL CORRESPONDENT**

New Delhi

The Centre has written to all States voicing concern that due to the lower Goods and Services Tax (GST) collections, the compensation cess might not be enough to pay for losses arising out of the tax system.

The communication comes at a time when several States, including Rajasthan, Kerala, Delhi, Punjab and West Bengal, have publicly urged the Centre to transfer pending compensation payments as they have

- Mixed record
  - The GST collections went down in September but recovered in the following months.

The government of Punjab has even said that it may take the matter to the Supreme Court if the Centre does not release the dues.

The issue will be discussed in detail at the next meeting of the GST Council, which is scheduled for December.

“Among other issues, the GST revenue position shall be discussed in detail at this meeting,” the Centre’s letter to the States, reviewed by The Hindu, said.

**News:**

- **Central Government → does not have adequate GST collections and Compensation cess collections to compensate the states for the losses arising out of GST system (One of the several concerns)**

- **Some states – Compensation dues from Centre pending for several months**

**Part A—Preliminary Examination**

**Paper I**—(200 marks)

**Duration : Two hours**

- Current events of national and international importance.
- Economic and Social Development—Sustainable Development, Poverty, Inclusion, Demographics, Social Sector Initiatives, etc.

**Part B—Main Examination**

**PAPER-III**

**General Studies- II: Governance, Constitution, Polity, Social Justice and International relations.**

- Functions and responsibilities of the Union and the States, issues and challenges pertaining to the federal structure, devolution of powers and finances up to local levels and challenges therein.

**PAPER-IV**

**General Studies-III: Technology, Economic Development, Bio diversity, Environment, Security and Disaster Management**

- Indian Economy and issues relating to planning, mobilization, of resources, growth, development and employment.

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<tr>
<td>GST</td>
<td>₹ 6,63,343 crore</td>
<td>50% (Approx.)</td>
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<tr>
<td>Compensation Cess</td>
<td>₹ 1,09,343 crore</td>
<td>59%</td>
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- **Cess - Temporary tax levied for a particular purpose**
- **Surcharge - a tax on the income tax**
Practice Question – Prelims

Q. Consider the following statements with reference to the compensation to states for loss on account of implementation of GST Taxation system.

1. The compensation payable to a State shall be provisionally calculated and released at the end of every two months.
2. The Goods and Services Tax Compensation Fund, which shall form part of the public account of India, is a non-lapsable fund.

Which of the above statements is/are correct?

a) 1 only
b) 2 only
c) Both 1 and 2
d) Neither 1 nor 2
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Q. The term ‘Torrefaction’ recently seen in news is related to which among the following?
   
   a) New technology for soft landing on moon.
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