

### GS III

SYLLABUS: E-TECHNOLOGY IN THE AID OF FARMERS..

#### GM-CROPS

THE HINDU, PG.NO: 18.

**News:** "GM crops can help fight hunger depending on farming method."

#### About GM-Crops:

- **GM Crops:** Plants altered through genetic engineering to introduce desirable traits like *pest resistance, herbicide tolerance, improved nutrition, or enhanced yield.*
- **Gene editing technologies** like CRISPR-Cas9 used to alter the genes.
- **GM-crops approved in India:** *Bt cotton, Mustard (DMH-11).*
- **Genetic Engineering Appraisal Committee (GEAC):** Apex body under (MoEFCC responsible for approving GM crop trials and commercial release.

#### Need for GM crops in India:

- **Growing population:** India is the world's most populous country.
- **Yield Stagnation:** rice and wheat yields have grown at less than 1% annually over the past decade — *Ministry of Agriculture report 2020.*
- **Bt Cotton Success:** Bt cotton has led to yield increases of up to 50% in India — *ICAR 2017.*
- GM crops engineered for pest resistance reduce crop losses.
- India imports 60-70% of its edible oil needs — *Economic Survey 2021.*
- GM crops can be engineered to tolerate drought, salinity, and extreme temperatures.
- **Farmers adopting Bt cotton** have seen 50-70% income gains due to higher yields and reduced pesticide costs.
- **Deforestation to plant more crops** to increase production can be checked by GM crops (increases the yield).
- **Overuse of fertilisers & pesticides** leading to contamination of Indian soils and groundwater.

#### Concerns associated:

- Potential introduction of *new allergens or toxins.*
- **Overuse:** pink bollworm resistance to Bt cotton has been reported — *ICAR 2018.*
- **Effects on beneficial insects** like pollinators are a concern.
- **Seed Monopolies** can affect farmer autonomy.
- **Patents on GM seeds** can restrict farmers from saving and reusing seeds — *National Farmers Union 2019.*
- **Skepticism towards GM foods** can affect market acceptance.

21 Nov 2024

### SCHEMES

PRE-CONTEXT

#### PM-VIDHYA LAKSHMI

THE HINDU, PG.NO: 8.

**News:** "How does PM Vidyalaxmi differ from other schemes?"

#### About PM-Vidhya Lakshmi:

- New *Central Sector Scheme.*
- Scheme seeks to provide *financial support* (a 3% interest subvention) to meritorious students applying for higher education.
- **Collateral-free, guarantor-free loans from banks and financial institutions** to cover the full amount of tuition fees and other expenses related to the course.
- **Eligibility:**
  - Students with an *annual family income of up to ₹8 lakh.*
  - *Preference will be given to students from government institutions* opting for technical or professional courses.
  - Under scheme, *only institutions with NIRF ranks* are eligible.
- **Previous schemes offered benefits to only low income groups,** the Vidyalaxmi scheme expands coverage to middle-income families.

21 Nov 2024

### INTERNATIONAL RELATIONS

PRE-CONTEXT

#### CARICOM

THE HINDU, PG.NO: 1.

**News:** "Prime Minister proposes seven key pillars to strengthen ties between India, 'CARICOM!'"

#### About CARICOM:

- **CARICOM,** which stands for *Caribbean Community.* Which is an intergovernmental organisation that is political and economic union of 15 member States.
- **Second India-CARICOM Summit outcomes:**
  - **To strengthen ties in areas such as:**
    - Economic cooperation, agriculture and food security, health and pharmaceuticals, and science and innovations.

21 Nov 2024



## GS III

SYLLABUS: ENVIRONMENTAL POLLUTION AND DEGRADATION.

### GRAP

THE HINDU, PG.NO: 7.

**News:** "Clearing the air on Delhi's pollution crisis."

#### Graded Response Action Plan (GRAP)

- GRAP is an **emergency response mechanism** based on Delhi's Air Quality Index level.
- Plan is framed as per **Supreme Court's order of 2016**.
- GRAP is being **implemented by the CAQM**.
- Under GRAP NCR air quality has been classified as **four different stages**: Poor, Very Poor, Severe, Severe+.

#### Stage in GRAP:

##### Stage 1: 'Poor' AQI: 201-300.

- Strictly enforce NGT / Hon'ble SC's order** on overaged diesel / petrol vehicles and as per extant statutes.
- Implementing rules on **dust mitigation measures** in construction and demolition activities.
- Regular lifting of **Municipal Solid Waste, hazardous waste** etc.
- intensify use of anti-smog guns, water sprinkling** and dust suppression measures.

##### Stage 2: 'Very Poor' AQI: 301-400.

- Ensure focused action** to reduce air pollution in **all identified hotspots in NCR**.
- Strengthen remedial measures** for the sectors causing the most adverse air quality in each hotspot.
- Ensure water **sprinkling along with the use of dust suppressants** (at least every alternate day).

##### Stage 3: 'Severe' AQI: 401-450.

- Strictly restrict** the use of **BS III petrol and BS IV diesel 4-wheelers in Delhi** and nearby districts like Gurugram, Faridabad, etc.
- Switch from **physical to online classes for children up to Class V**.
- Strict ban** on the various categories of **dust generating/ air pollution**.

##### Stage 4: 'Severe +' AQI: >450.

- Only EVs, CNG, or BS-VI diesel registered outside Delhi may enter Delhi**, except for essentials or services.
- Switch from **physical to online classes up to Class XI**.
- Emergency measures** include **closing colleges and educational institutions, and non-emergency commercial activities**.
- Permitting **vehicles to run on odd-even registration number** basis.

#### Major Implementing agencies:

- State Governments in NCR and GNCTD.
- Central and State pollution control agencies CPCB, SPCB.
- Local bodies.
- Land and construction owing agencies.

21 Nov 2024

## ENVIRONMENT

PRE-CONTEXT

### AIR POLLUTION

THE HINDU, PG.NO: 7.

**News:** "Clearing the air on Delhi's pollution crisis."

#### Commission on Air Quality Management in NCR (CAQM):

- A **Statutory body** established under the **NCR & Adjoining Areas Act 2021**.
- This body frames GRAP** (Graded Response Action Plan).
- CAQM is **constituted by Central Govt.** by notification in NCR and adjoining areas.
- Chairperson appointed by **Central govt.**
- No powers to punish activities related pollution.

#### Multiple reasons for winter Air pollution in Delhi:

- Slow wind speed, **temperature inversion** (traps pollutants).
- Bursting of firecrackers, **Stubble burning**.
- Emissions from vehicles (contribute 60%)**, coal-based power plants, brick kilns etc.
- Household sources, **dust (Roads, construction activities)**.
- Of all, **stubble burning** in Punjab and Haryana is **responsible for ~40% of the pollution** during **October and November**.
- In November 2024, **Air pollution in Delhi was 17 times WHO's limit**. Few areas in NCR **reached an AQI of 1700**.
- Partially unburned exhaust of automobiles** with nitrogen oxides leading to ozone formation.

#### National Clean Air Programme:

- Launched by **MoEFCC** in 2019.
- Implementation:** by CPCB under **Air (Prevention and control of Pollution) Act 1981**.
- 131 Non Attainment Cities: cities that exceed the NAAQS for 5 consecutive years**. They are identified by CPCB.
- Aims to **reduce PM10 and PM2.5 concentrations** to 40% by 2025-26.
- PRANA** (Portal for Regulation of Air-pollution in Non Attainment Cities) to monitor the implementation of NCAP.

#### National Ambient Air Quality Standards (NAAQS):

- Air Act 1981** mandated CPCB to set standards for air quality.
- In 1982 **CPCB notified standards for following pollutants** (revised with time).
  - SOx, NOx, PM 2.5 & 10, Ozone, Lead, Cobalt, Arsenic, Nickel, Benzene, Benzopyrene, Ammonia.

#### CPCB:

- Statutory body** created under **Water (Prevention and Control of Pollution) Act 1974**.
- Also entrusted with powers and functions under the **Air Act, 1981**.
- Works under **Ministry of Environment, Forest, and Climate Change**.
- Advices** Central govt., on water & air pollution.

#### Powers of Board:

- Has **nationwide jurisdiction** but works in coordination with **State Pollution Control Boards**.
- Advices, coordinates & technical assistance for prevention of water pollution.
- Amended in 1977:** imposes **"Cess"** on industries.
- Power to **punish, fine & imprisonment**.

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### Functions:

- Setting standards for notified pollutants under **National Ambient Air Quality Standards** for air quality.
- Sets environment criteria for products under **Ecomark scheme**.
- Monitors the usage of **single-use plastics**.

### Initiatives by CPCB:

- **Comprehensive Pollution Index:** ranks industrial clusters based on the level of environmental pollution they cause.
- **National Air Quality Monitoring Program (NAMPA):** Monitors ambient air quality at various locations across India.
- **National Water Quality Monitoring Program (NWMP):** Monitors water quality at different rivers, lakes and water bodies.
- **Graded Response Action Plan (GRAP):** dealing with severe air pollution levels in the National Capital Region (NCR).
- **National Clean Air Programme (NCAP):** to reduce PM10 & PM 2.5 by 20-30% by 2024.

### Note:

- **Ministry of Road Transport and Highways** acts as a nodal agency to **control air pollution from vehicles** under **Motor Vehicle Act 1988**.

### Case study: Beijing's approach to controlling air pollution.

- Beijing was once notorious for its **yellow and thick smog, especially during the winter months**.
- **Now in Beijing, its current AQI is around 60** standing well below global. Recommendations.
- **Approach:**
  - **Targeting primary pollutants**, with the govt playing the main role.
  - **Later, the focus shifts to secondary pollutants**, or particulate matter leading to toxic smog, primarily PM2.5, which requires a regional mechanism.
  - **Beijing's techno-political management system**, which builds public awareness to deal with toxicity.
    - **First**, forecasting severe smog levels through warnings issued at least 24 hours in advance with over 1000 PM 2.5 sensors throughout the city.
    - **Second**, Beijing has over 30,000 low-floor buses, five times the number operated by DelhiTransport Corporation.
    - **Third**, both Beijing and Delhi, as transit centres with no peak-hour traffic, require additional measures to manage regional transportation.

21 Nov 2024

## EXAMPLES FROM TODAY'S NEWS PAPER

THE HINDU, PG.NO: 8

**News:** "Should packaged food content be labelled?"

- **Risk increasing factors in packaged food:** energy, saturated fat, total sugars and sodium.
- **Risk decreasing factors in packaged food:** protein, fibre and fruit, vegetable, nut and legume.

### Concerns:

- Obesity stands at 24% among women and 23% among men—**NHFS-5**.
- Undernutrition, anaemia and micronutrient deficiencies continue to remain pressing problems.
- **Changing diets:** 55% of the total disease burden in India is due to unhealthy diets—**Economic Survey of India 2023-24**.
- Over 50% of Indians cannot afford a healthy diet and at the same time, households' expenditure on processed food increased—**UN and GOI data 2024**.
- Food Safety and Standards (Labelling & Display) Amendment Regulation 2022 pending in Parliament.

### Note:

- **Labelling on the front of packaged food is effective:** in Chile and Mexico for instance, the consumption of sugary beverages decreased after such mandatory labelling.

21 Nov 2024

**Thank you!**