PLUTUS IAS

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FOOD VS FUEL: THE ETHANOL BLENDING DILEMMA

WHY IN THE NEWS?

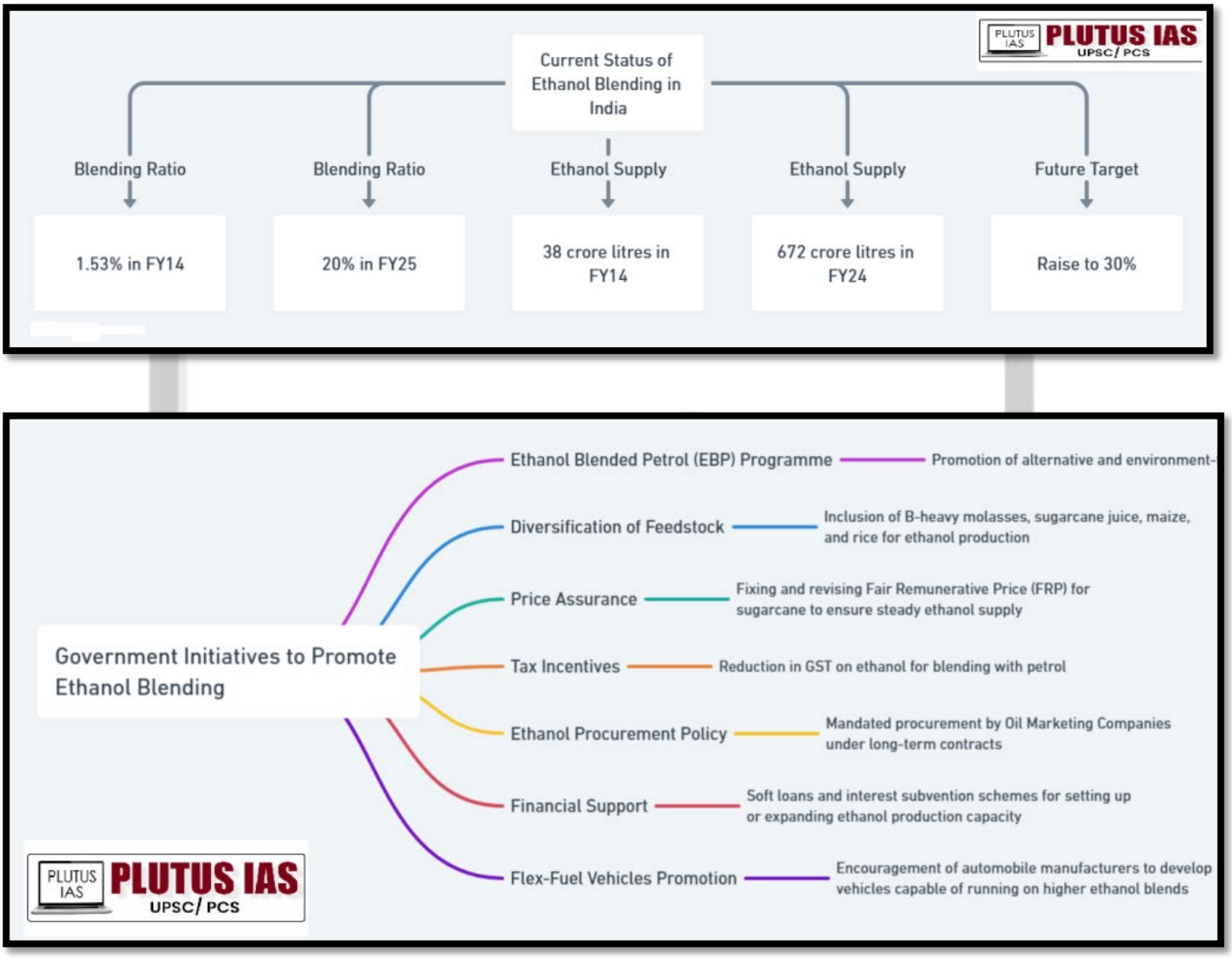
India has achieved its ethanol-blending target of 20% in petrol ahead of the 2025 deadline and is now aiming to raise the target to 30% to reduce fossil fuel dependence. However, this push comes amid a decline in sugarcane production since 2022, leading to increased diversion of sugar for ethanol production. To support farmers, the government recently approved a hike in the Fair Remunerative Price (FRP) for sugarcane. This shift has contributed to a rise in retail sugar prices, raising concerns about its availability for direct consumption and its impact on consumers.

WHAT IS ETHANOL BLENDING?

Ethanol blending refers to mixing ethanol, a biofuel made from plant-based sources like sugarcane molasses, maize, and rice, with petrol to create a cleaner-burning fuel. This process reduces India's dependence on

fossil fuels, lowers carbon emissions, and enhances energy security. The Government of India launched the Ethanol Blended Petrol (EBP) Programme in 2003, aiming initially for 10% blending by 2022, which was achieved ahead of schedule. As of 2024, ethanol blending stands at around 15%, with a target to reach 20% (E20) by 2025. Ethanol production capacity has more than doubled in recent years, reaching over 1,600 crore litres in 2024, supporting this ambitious goal. This initiative has saved over ₹1 lakh crore in foreign exchange and reduced CO2 emissions by 544 lakh metric tons, while also boosting farmers' incomes and rural economies.

THE STATUS OF ETHANOL BLENDING AND THE GOVERNMENT INITIATIVES



WHY NUDGE FOR ETHANOL BLENDING

1. Energy Security and Import Reduction: India is heavily dependent on crude oil imports (over 85% of its needs). Ethanol blending helps reduce this dependency, saving valuable foreign exchange.

2. Environmental Sustainability: Ethanol is a clean-burning biofuel that reduces greenhouse gas emissions and air pollutants. It supports India's commitments under the Paris Agreement and its net-zero targets.

3. Utilisation of Agricultural Surplus: It provides a productive use for excess sugarcane, grains, and other feedstocks.Prevents wastage and supports price stabilisation in the agricultural sector.
4. Doubling Farmers' Income: Ethanol production offers an additional revenue stream to farmers through higher Fair Remunerative Prices (FRP) for sugarcane. Reduces over-reliance on traditional crop markets and mitigates distress sales.
5. Promotion of Circular Economy: Utilises agricultural by-products like B-heavy molasses and damaged grains for fuel production. Encourages sustainable resource use and waste-to-energy models.
6. Industrial and Rural Development: The Establishment of ethanol plants creates jobs and boosts the rural economy. Attracts investment in the agro-processing and renewable energy sectors.
7. Global Commitments and Blending Targets: India has committed to achieving 30% ethanol blending by the early 2030s. Accelerated targets (20% by 2025 achieved ahead of time) reflect this urgency

ETHANOL BLENDING IS A THREAT TO FOOD SECURITY

1. Diversion of Food Crops: Sugarcane, maize, and broken rice are increasingly used for ethanol, reducing availability for consumption.
2. Rising Prices: Sugar prices rose from ₹40/kg (May 2022) to ₹45/kg (May 2025) due to higher diversion for ethanol.
3. Declining Output: Sugarcane production fell from 490 crore tonnes (FY23) to 435 crore tonnes (FY25), tightening supply.
4. Policy-Induced Shifts: Incentives like higher FRP push farmers to grow ethanol crops over food crops, affecting food diversity.
5. Impact on the Poor: Diverting grains affects PDS and nutrition for the vulnerable, worsening food insecurity.
6. Resource Strain: Water-intensive crops like sugarcane add to water stress, impacting sustainable agriculture.
7. Global Concerns: FAO warns that excessive biofuel use can deepen food crises in developing nations.

BALANCING FOOD VS FUEL SECURITY

Aspect	Food Security Concerns	Fuel Security Benefits
Land Use	Ethanol production requires large farmland, equal to Bihar's cropped area, reducing land for food crops.	Helps reduce dependence on imported fossil fuels by using domestic crops for ethanol.
Feedstock	Uses food grains like sugarcane, maize, and rice, diverting them from the food supply.	Promotes the use of surplus/damaged grains, molasses, and agricultural residues for ethanol.
Impact on Food Prices	Diversion of food crops for ethanol raises food prices, affecting affordability for consumers.	Reduces fuel import bills (saving ₹1 lakh+ crore), which stabilises energy and inflationary pressures.
Water Usage	Crops like sugarcane and paddy are highly water-intensive, straining groundwater.	Encourages a shift to less water-intensive crops like maize and sorghum.

Aspect	Food Security Concerns	Fuel Security Benefits
Production Capacity	Declining sugarcane production (due to diseases and climate) affects the food and ethanol supply balance.	Ethanol production capacity doubled to 1,600+ crore litres (2024), supporting 20% blending target.
Environmental Impact	Overuse of food crops may lead to unsustainable farming and environmental degradation.	Ethanol blending cuts CO_2 emissions by 544+ lakh metric tons, supporting India's climate commitments.

CONCLUSION

India's push for higher ethanol blending aims to improve energy security and reduce carbon emissions, while boosting rural development. However, increasing ethanol production raises food security concerns as crops like sugarcane, maize, and rice are diverted for fuel, driving up food prices and affecting availability. To balance food and fuel security, the government needs to ensure efficient use of agricultural resources, promote less water-intensive crops, and protect vulnerable populations from rising food costs. By adopting sustainable farming practices, India can achieve its clean energy goals without compromising food security.

PRELIMS QUESTIONS

Q. Consider the following statements:

1. Ethanol blending in India helps reduce dependency on fossil fuels.
2. The target for ethanol blending in India is to reach 30% by 2025.
3. Sugarcane is the only crop used for ethanol production in India.

How many of the statements given above are correct?

A. Only one
B. Only two
C. All three
D. None

Answer: A

MAINS QUESTIONS

Q. Discuss the challenges and benefits of ethanol blending in India, focusing on its impact on energy security, agriculture, and food security.

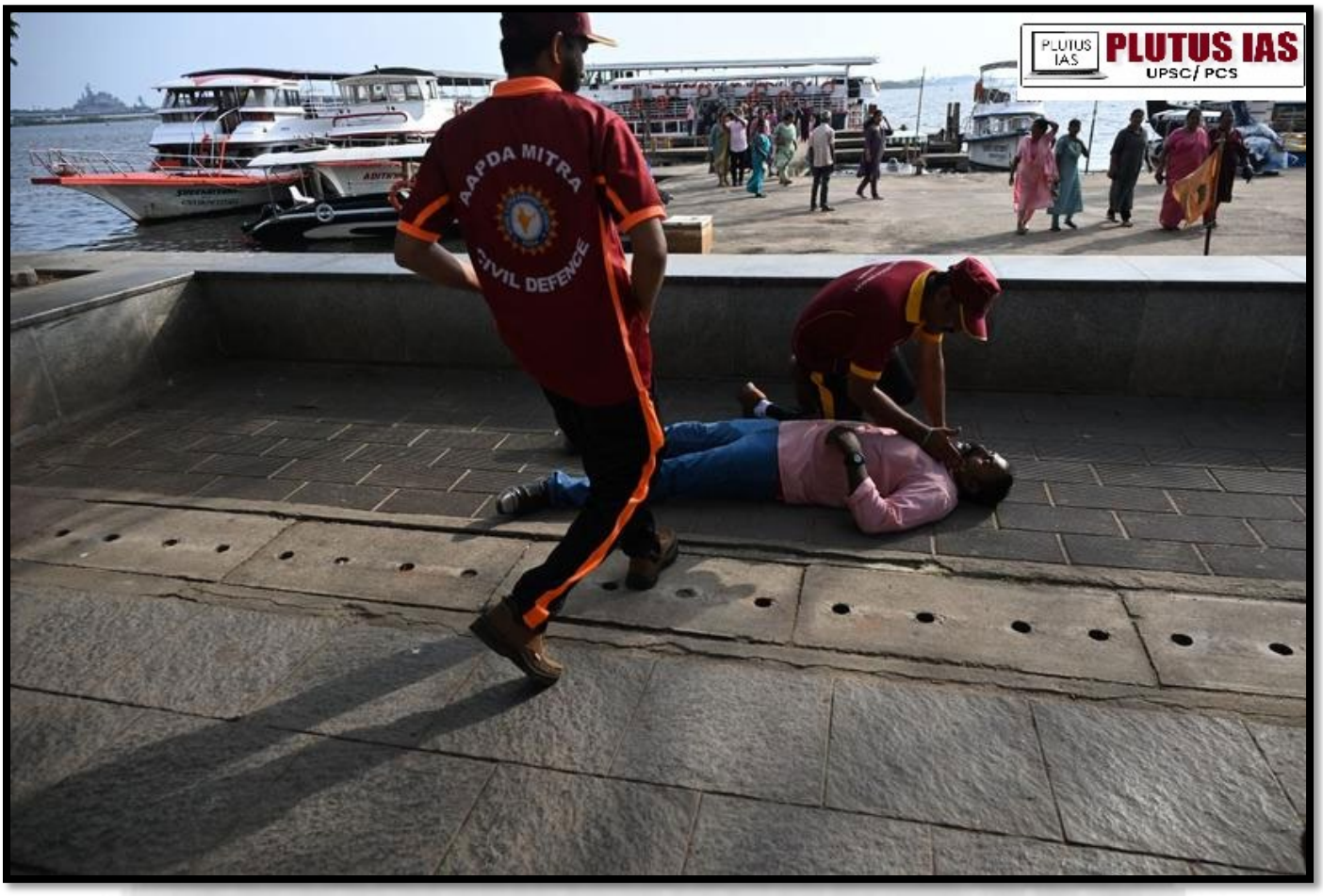
(250 words, 15 marks)

STRENGTHENING PREPAREDNESS: THE ROLE OF CIVIL DEFENCE DRILL IN PUBLIC SAFETY

WHY IN THE NEWS?

The Ministry of Home Affairs has initiated nationwide mock drills, codenamed 'Operation Abhyas', in 244 civil defence districts, following its May 5 directive amid escalating India-Pakistan tensions. The move comes

in the wake of the Pahalgam terror attack in Jammu & Kashmir, which claimed 26 lives. These drills simulate hostile scenarios such as air raids, fire emergencies, and mass evacuations, aiming to bolster civilian preparedness and response capabilities. States like West Bengal, Rajasthan, Assam, Punjab, and J&K are most covered under the exercise, highlighting their high threat perception.



WHAT IS A CIVIL DEFENCE DRILL

A civil defence drill is a planned exercise conducted by authorities to test and enhance the preparedness of both civilians and emergency services during potential threats like air raids, terrorist attacks, or disasters. It includes activities such as sounding air-raid warnings, conducting blackouts, camouflaging vital installations, executing evacuation plans, setting up communication hotlines with the armed forces, and activating emergency control rooms. These drills also involve firefighting, rescue operations, and checking the readiness of bunkers and trenches. The goal is to strengthen coordination, identify security gaps, and ensure a quick and organised response during real emergencies.

HISTORY OF CIVIL DEFENCE DRILL

Period/Year	Event/Development	Details
World War II	Introduction of air raid precautions	Aimed to protect civilians from wartime

Period/Year	Event/Development	Details
(1939–45)	by the British government	bombings, an early form of civil defence.
1962	India-China War	Civil defence measures were initiated in major cities amid fear of air strikes.
1965 & 1971	India-Pakistan Wars	Air raid drills, blackouts, and public awareness campaigns conducted in urban areas.
1968	**Civil Defence Act enacted**	Gave legal backing to organise civil defence activities in peacetime and wartime.
1999	Kargil War	Enhanced vigilance and preparedness in border states; limited drills in civilian areas.
2001	Parliament attack	Civil defence reoriented to include terrorist threat preparedness.
2005 onwards	NDMA establishment	A broader approach included natural disasters; mock drills were incorporated for disaster response.
2008	Mumbai terror attacks	Triggered nationwide mock drills in cities for counter-terror preparedness.
2010	District-level vulnerability assessments initiated	Categorisation of civil defence districts based on strategic and vital installations.
2024–25	Post-Pahalgam terror attack, 'Operation Abhyas' launched	Massive mock drills across 244 districts to test preparedness amid Indo-Pak tensions.

OBJECTIVES OF THE CIVIL DEFENCE DRILL

1. Enhancing Preparedness: To ensure that individuals, families, and communities are equipped to respond effectively during disasters, including natural calamities, man-made accidents, or national security threats.

2. Improving Coordination: To establish and test the coordination between various emergency services, such as police, fire, medical teams, and military, ensuring smooth communication and cooperation in crisis situations.

3. Minimising Loss of Life and Property: To reduce the potential impact of disasters by familiarizing citizens with safety protocols and evacuation plans, thereby minimising casualties and property damage.

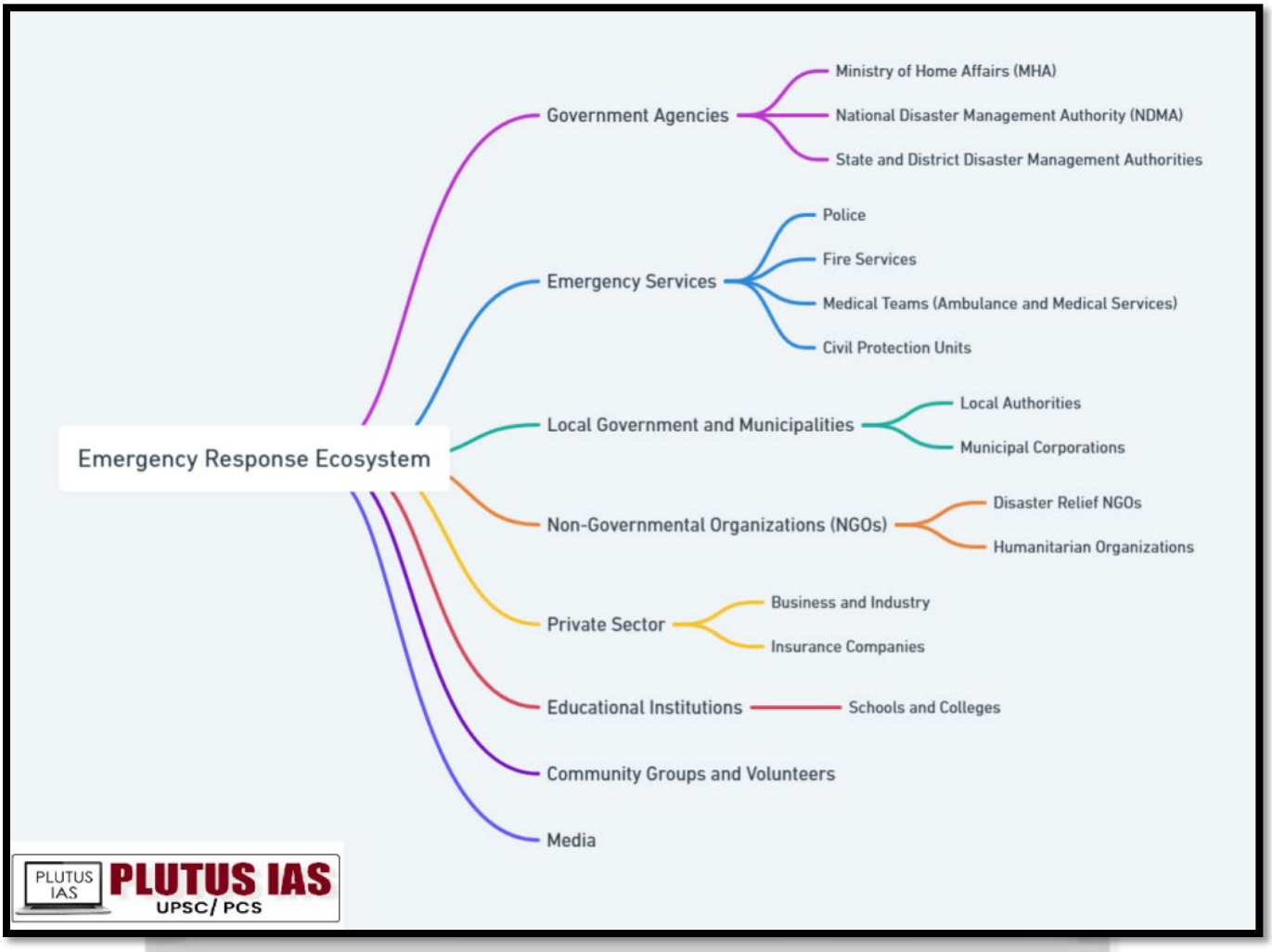
5. Raising Awareness: To educate the public about safety measures, first aid, emergency evacuation routes, and how to respond in different scenarios, helping to mitigate panic during an actual emergency.

6. Testing Response Systems: To evaluate the effectiveness of emergency response systems, including communication networks, resource availability, and overall efficiency during a simulated emergency.

7. Building Resilience: To strengthen the ability of communities to bounce back from disasters, focusing on both immediate responses and long-term recovery plans.

8. Compliance with National Standards: To ensure that emergency drills align with national disaster management policies and standards, improving the country's overall disaster response capabilities.

STAKEHOLDERS INVOLVED



IMPORTANCE OF CIVIL DEFENCE DRILLS

1. Enhances Public Awareness: Educates citizens about emergency procedures, evacuation routes, and first aid, reducing panic during actual crises.

2. Improves Response Coordination: Ensures smooth collaboration between emergency services, government agencies, and community members.

3. Test Emergency Plans: Helps identify gaps in disaster response plans, communication systems, and resource management.

4. Reduces Casualties and Damage: Timely and practised responses help save lives and protect property during disasters.

5. Builds Community Resilience: Strengthens the capacity of individuals and communities to cope with and recover from emergencies.

6. Ensures Policy Compliance: Validates the effectiveness of government disaster management strategies and preparedness measures.

7. Boosts Confidence: Instils confidence among the public and responders in handling real-life emergencies efficiently.

CHALLENGES IN THE EXECUTION OF SUCH A DRILL

1. Lack of Public Awareness: Many citizens are unaware of the purpose or importance of such drills, leading to low participation or confusion.

2. Poor Coordination Among Agencies: Inadequate collaboration between emergency services, local authorities, and other stakeholders can hinder effectiveness.

3. Insufficient Training: First responders and volunteers may lack proper training or experience, reducing the efficiency of the drill.

4. Limited Resources and Infrastructure: Shortage of essential resources like vehicles, communication tools, and shelters can restrict proper execution.

5. Urban Congestion and Accessibility Issues: In crowded urban areas, conducting evacuations or rescue operations becomes challenging due to traffic and narrow roads.

6. Communication Gaps: Delayed or unclear communication during drills can lead to confusion and ineffective responses.

7. Resistance from Local Communities: Some communities may resist participation due to fear, mistrust, or inconvenience.

8. Lack of Realism: Drills may not simulate real-life emergency conditions accurately, reducing their practical effectiveness.

WAY FORWARD

1. Enhance Public Awareness: Conduct regular awareness campaigns through schools, media, and local bodies to educate people about the importance of drills.

2. Strengthen Inter-agency Coordination: Establish clear roles and communication channels among all stakeholders—police, fire services, health departments, and local authorities.

3. Regular and Realistic Drills: Conduct drills frequently with realistic scenarios to ensure preparedness under actual emergency conditions.

4. Capacity Building and Training: Provide systematic training to first responders, volunteers, and community leaders to improve efficiency.

5. Community Participation: Involve local residents in planning and execution to build ownership and enhance responsiveness.

6. Leverage Technology: Use digital tools like early warning systems, GIS mapping, and mobile apps to support planning and communication.

7. Resource Allocation: Ensure adequate funding, logistics, and infrastructure support for conducting large-scale drills.

8. Monitoring and Feedback: After each drill, assess performance, gather feedback, and update disaster management plans accordingly.

CONCLUSION

Civil defence drills are a vital component of a nation's disaster preparedness and internal security framework. In light of rising threats from terrorism, natural disasters, and geopolitical tensions, such as the recent Pahalgam terror attack, initiatives like Operation Abhyas underscore the urgency of proactive planning and community readiness. These drills not only test institutional and community resilience but also foster awareness, coordination, and swift response mechanisms. While challenges such as limited resources,

coordination issues, and low public awareness persist, strategic reforms, inclusive participation, and continuous monitoring can significantly enhance their effectiveness. Strengthening civil defence through regular, realistic, and inclusive drills is key to safeguarding lives, infrastructure, and national stability.

PRELIMS QUESTIONS

Q. Consider the following statements regarding Civil Defence Drills in India:

1. Civil Defence in India is governed by the Civil Defence Act, 1968.
2. The National Disaster Management Authority (NDMA) is the primary agency conducting civil defence drills across the country.
3. Operation Abhyas is a recent initiative aimed at testing preparedness against cyber threats only.

Which of the above statements is/are correct?

A. 1 only
B. 1 and 2 only
C. 2 and 3 only
D. 1, 2 and 3

Answer: A

MAINS QUESTIONS

Q. In the wake of increasing security threats and natural disasters, civil defence drills have become crucial for national preparedness. Discuss the significance, challenges, and the way forward for conducting effective civil defence drills in India

(250 words, 15 marks)