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Candidates write on thi

1. भारत में उच्च राजकोषीय घाटे में योगदान देने वाले कारकों पर प्रकाश डालते हुए, ऐसे घाटे के संभावित परिणामों पर चर्चा कीजिए तथा राजकोषीय समेकन (Fiscal consolidation) सुनिश्चित करने के उपाय सुझाइए।(10 अंक, 150 शब्द)
Highlighting the factors contributing to high fiscal deficit in India, discuss the potential consequences of such deficit and suggest measures to ensure fiscal consolidation.
(10 marks, 150 words)

According to Budget 2024, India has 5.6% fiscal deficit and has target of 4.5% by 2025.

Factors contributing to high fiscal deficit

(1) Populist Policies by both centre and State
(Eg) Freebie or Revdi culture

(2) External Shocks like wars leading to supply risks
(Eg) 'Food, fuel, fodder' due to Russia Ukraine war

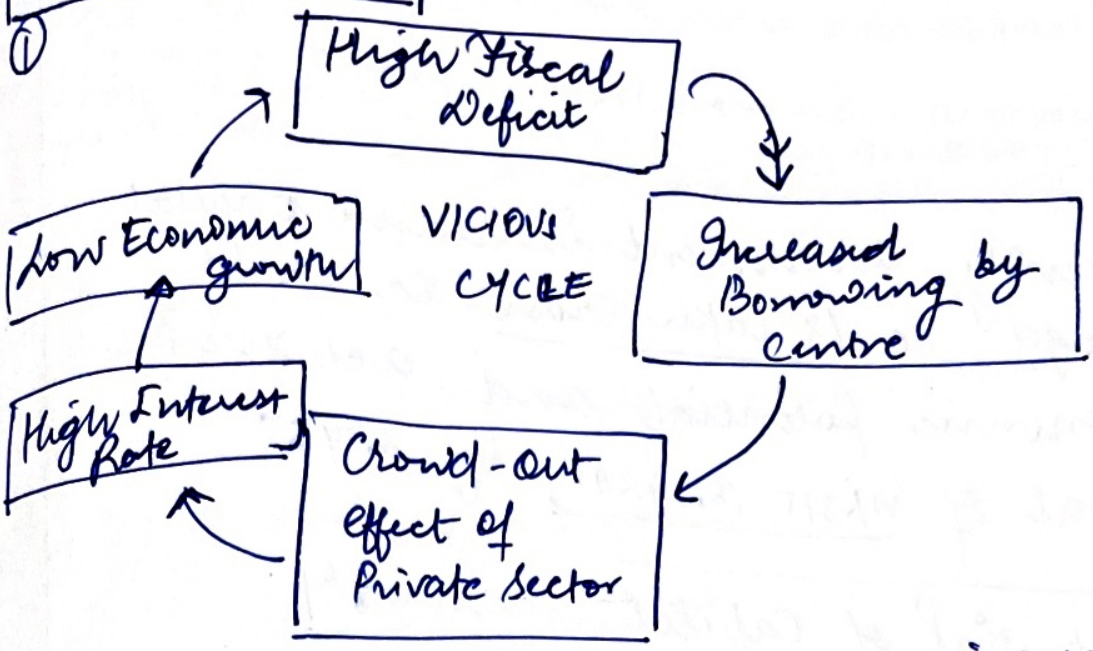
(3) High Borrowing costs due to inflation:
(Eg) Fiscal deficit rose to 9.5% during COVID-19

(4) Debt Burden to governments
(Eg) Budget 2024 reveals 20 paise out of 1 Rupee goes to Interest Payments

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Consequences:

① 

② Debt unsustainability of centre in case of high deficit

③ Tax Burden on future generation (Ricardian Equivalence)

Measures

WAYS

① Rationalise subsidy Burden
   - (E) NITI Ayog – Stop fertilizer subsidy rather give on liquid fertilizer

② Proper planning of expenditure
   - (E) outcome budgeting

③ FRBM Act 2003: mandates target of 3% fiscal deficit

④ Voter awareness to curb freebies.

Thus way ahead is to follow golden rule of fiscal Policy' that is Borrow only to invest in capital

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2. 2047 तक भारत के विकसित राष्ट्र बनने की आकांक्षा महत्वपूर्ण पूँजीगत निवेश पर निर्भर है। इसके आलोक में, इस लक्ष्य को प्राप्त करने में पूँजीगत निवेश की संभावनाओं पर चर्चा कीजिए। इस संदर्भ में भारत के समक्ष क्या चुनौतियाँ हैं?

(10 अंक, 150 शब्द)

India's aspiration to be a developed nation by 2047 hinges on significant capital investment. In light of this, discuss the potential of capital investment in achieving this vision. What are the challenges India faces in this regard? (10 marks, 150 words)

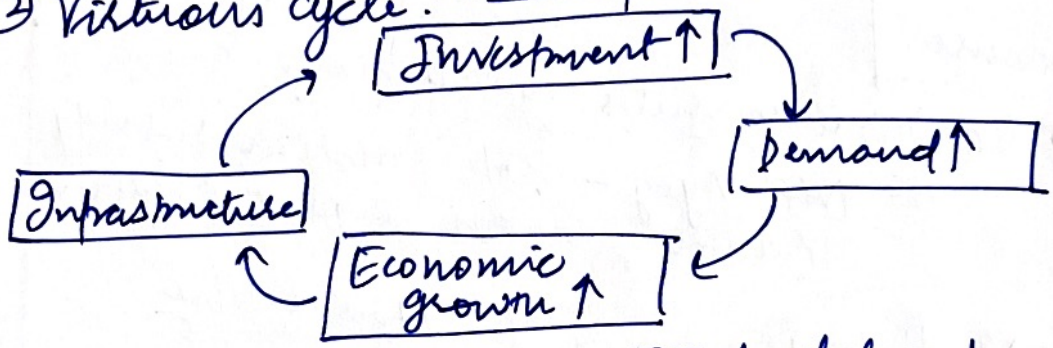
Recently government increased capital budget to 13 lakh crore to boost economic potential and achieve the goal of VIKSIT BHARAT by 2047.

Potential of capital Investment

① Boost in Infrastructure growth

(Ex) National Infrastructure Pipeline
111 lakh crore

② Virtuous cycle: Development Multiplier



Economic Survey 2019: says 5.5 development multiplier

③ Capacity Building: Boost export Potential and give long term dividends.

④ Employment Generation: Demographic Dividend

⑤ Reduce logistic costs ⇒ Ease of doing business

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Challenges :-

1. High fiscal deficit burden
   - Eg 5.9% financial year 2023
2. Diversion of funds
   - Eg NHAI - Scam busted
3. Poor Quality Infrastructure Creation
   - Eg Bihar Bridge collapse
4. Basic Welfare needs require high Revenue expenditure.



Way ahead
- Boost Productivity and thus reducing Incremental capital output ratio (ICOR)
- Recent loan facility to States for 50 year interest free (Fiscal federalism)

Thus capital investment builds a system that is driven by development and fuels the vision of Atmanirbhar Bharat in Amrut Kaal

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3. "नगरीकरण में वृद्धि के साथ, पेरी-अर्बन/परिनगरीय कृषि (Peri-urban agriculture) ताजा कृषि उपज की आवश्यकताओं के लिए एक महत्वपूर्ण योगदानकर्ता के रूप में उभरी है"। इस संदर्भ में, सतत रूप से पेरी-अर्बन कृषि को बढ़ावा देने से सम्बंधित अवसरों और चुनौतियों पर चर्चा कीजिए। (10 अंक, 150 शब्द)

"With growing urbanization, peri-urban agriculture is emerging as a significant contributor to fresh farm produce needs". In this context, discuss the opportunities and challenges associated with promoting peri-urban agriculture in a sustainable manner. (10 marks, 150 words)

According to Census 2011, 31% of Indian population live in cities which would increase to 55% by 2050 (UN-Habitat). Peri-urban agriculture is trending arena in this context.

Peri urban Agriculture → direct delivery → Households

Opportunities:

① Reduce logistics cost of transportation, storage, preservation.

(Eg) 25% of food is wasted due to lack of storage

② Demand supply match boost economic potential

(Proper supply chain Resilience through forward - Backward linkage)

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③ High consumer demand → Better Price Realization

(Eg) County Delight – tender Coconuts.

④ Ease of living ensured through door step delivery (Saves time).

(Eg) Big Basket taking inputs through peri urban agriculture

Challenges

① Adoption Inertia by consumers (lack of trust)

② High cost in beginning to consumers

③ Issues of testability and proper standards.

④ Infrastructure deficit to Remote areas

⑤ Online nature of deliveries (Accessibility gaps)

Way ahead → Awareness generation
→ Use of organic Products to boost nutrition.

Thus, it is an emerging field to boost farmers' income (doubling farmers' income).

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4. दालों और वनस्पति तेलों में आत्मनिर्भरता प्राप्त करने के लिए भारत के कृषि क्षेत्र के समक्ष कौन सी प्रमुख चुनौतियाँ हैं? इन चुनौतियों के समाधान भी सुझाइए। (10 अंक, 150 शब्द)

What are the major challenges faced by India's agriculture sector to achieve self-sufficiency in pulses and vegetable oils? Suggest measures to address these challenges. (10 marks, 150 words)

India is the major importer of pulses and vegetable oils adding to fiscal burden

Major challenges faced by agriculture to achieve self sufficiency

(1) Low Minimum support Price on pulses
   (Eg) 25% Rice Production (Monocropping Patterns)

(2) Lack of ~~inf~~ ecosystem for vegetable oils
   (Eg) Long gestation period – Proper irrigation needs.

(3) Lack of Proper extention services to farmers to grow pulses

(4) Lack of incentives due to low price realization.

(5) Lack of high Quality input seeds as HYV varieties in rice and wheat

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Measures

MEASURES

⇒① MS Swaminathan Recommended Rise in MSP for pulses

⇒② National mission on Oil Palm and Oil seeds as dedicated Scheme

⇒③ PM AASHA Scheme - decentralised procurement for pulses

⇒④ Boost Agricultural Research and Development Expenditure (ARDE) as recommended by Ashok Dalwai Panel

⇒⑤ NITI Ayog Recommended village level procurement in case of pulses

Thus, Self sufficiency in agriculture would come by giving adequate weightage to all crops through Crop diversification

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5. भारत को एक सतत हरित अर्थव्यवस्था बनाने में जैव-विनिर्माण (Biomanufacturing) और जैव-फाउंड्री (Bio-foundry) की संभावनाओं का मूल्यांकन कीजिए। (10 अंक, 150 शब्द)

Evaluate the potential of biomanufacturing and bio-foundry in driving India's future towards a sustainable green economy. (10 marks, 150 words)

Biotechnology is amalgamation of technology using micro-organisms to yield transformative outcomes Biomanufacturing and Biofoundry are two streams.

Potential of Biomanufacturing in Sustainable green economy

1. Manufacturing Biofuel - electricity generation.
   - Eg 4th generation through Genetic engineering.
2. Electric mobility solutions (use in Electric vehicles)
3. Medicine and Drug Discovery through green methods
   - Eg Biopharmas - Biosimilars
4. Use in Disaster Management
   - Eg Biofences in case of floods (Bioshields)

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Potential of Bio-foundry

(1) Preservation of traditional varieties of seeds in wake of high use of chemicals and pesticides

(Eg) Seed Bank – (Seed vault in Ladakh)

(2) Research and Development: through Biofoundries to make new varieties

(Eg) GM Crops – Mustard variety boosting production.

(3) Water-Portability – Bio-membranes can be explored.

(4) Green Hydrogen – Research through 'biofoundry'

Thus, it is a sunrise sector with Department of Biotechnology pushing for research and development in Biotechnology.

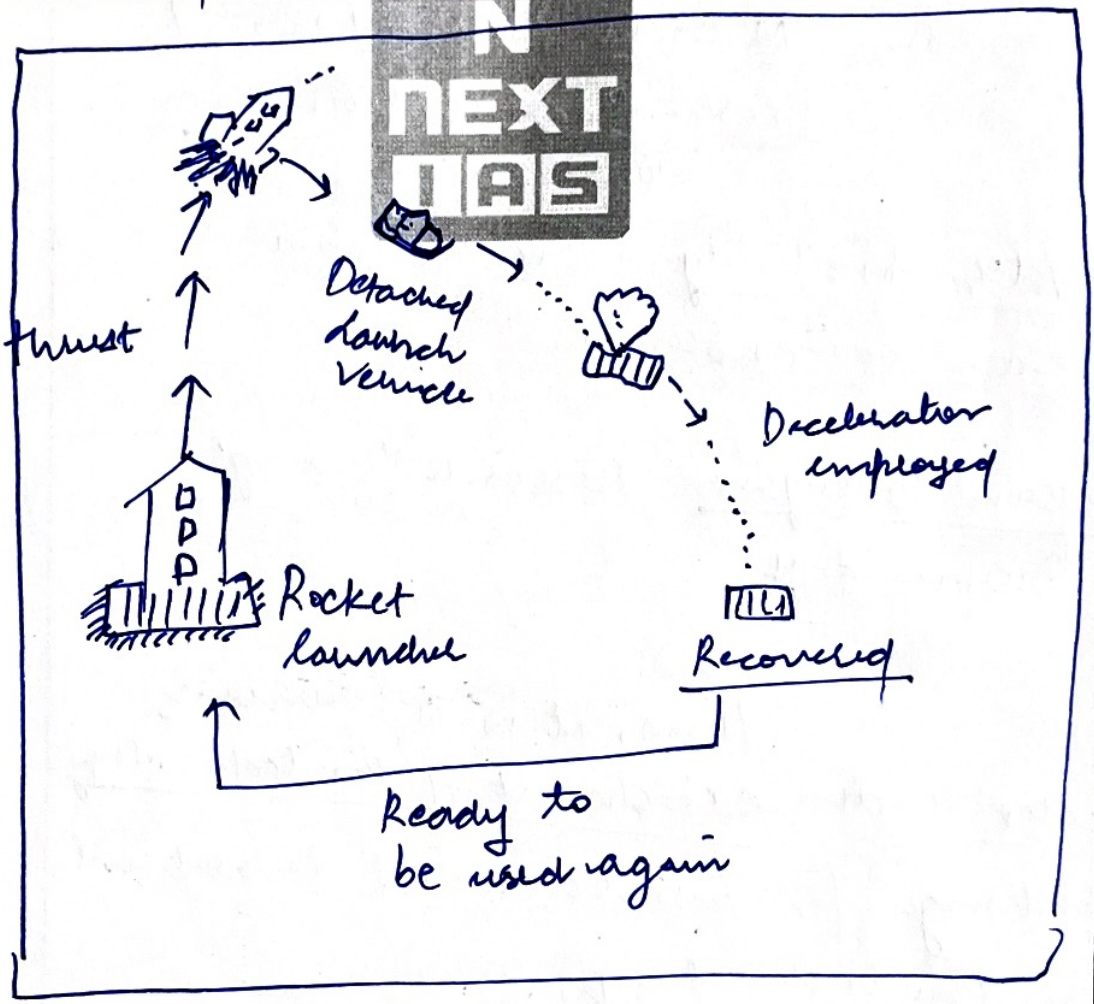
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6. पुन: प्रयोज्य प्रक्षेपण यान (RLV) की कार्यप्रणाली के पीछे क्या सिद्धांत हैं? भारत के अंतरिक्ष वाणिज्य में आर.एल.वी. के उपयोग के महत्त्व और संभावित लाभों की व्याख्या कीजिए। (10 अंक, 150 शब्द)

What are the principles behind the working of Reusable Launch Vehicle (RLV)? Explain the significance and potential benefits of use of RLVs in India's space commerce. (10 marks, 150 words)

India is on the development growth of Space economy in case of launch vehicles from small scale vehicles, to PSLV to GSLV and now Reusable Launch vehicle.

Principles behind its working



Using accelerator and decelerator -

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Significance of RSLV

1. Need of launching satellites for education purpose
   - Eg) Edtech companies - Small classes.
2. Economies of scale : Boost growth
3. Emergence of Private sector and Research development

Potential Benefits

4. Saves costs of mission
   - Eg) SpaceX Reusable Vehicle ₹3000/kg payload
   - NASA → 50,000₹/kg in normal vehicle.
2. Environmentally Sustainable (Reusable)
3. caters to higer scale demand
   - Eg) NSIL needs to cater to nearly 5000 Satellite launches in future

Thus, India's booming Space commerce will thrive with use of Reusable launch vehicles and has come a long way since launching vehicles from 'cycle'

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7. कार्बन क्रेडिट ट्रेडिंग स्कीम (CCTS) 2023 की प्रमुख विशेषताओं का परिक्षण कीजिए। भारत में हरित गृह गैस (Greenhouse gas) उत्सर्जन को कम करने की इसकी संभावनाओं का विश्लेषण कीजिए। (10 अंक, 150 शब्द)
Examine the key features of the Carbon Credit Trading Scheme (CCTS) 2023. Analyze its potential for mitigating greenhouse gas emissions in India. (10 marks, 150 words)

India accounts for 4th largest carbon emissions in the world. Carbon Credit Trading Scheme 2023 is launched to mitigate the effect of Climate Change

Key Features

① Formation of carbon Market with 'carbon credits' as units which can be sold or purchased

② Each company is designated definite limits of carbon emissions and if breached, need to purchase carbon credit

1 CC = 1 million tonnes of carbon emissions

③ In line with Kyoto Protocol - Clean Development Mechanism

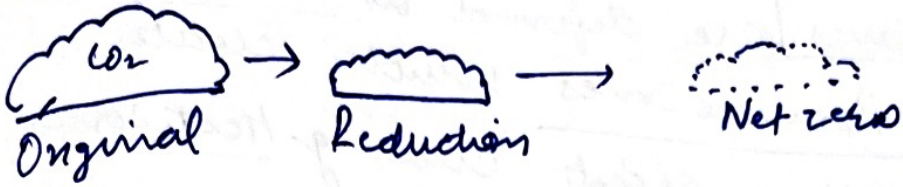
- Carbon Offsetting
- Carbon Pricing
- Carbon Trade

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Potential in mitigating Greenhouse gas emissions

① Carbon Reduction



② Easy to track CO_2 emissions through metric and helps in policy formation.

③ Incentivise companies to save credits to trade

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Issues:

① Not concerned in creating green companies

② It acts as 'license to pollute' by rich companies

③ Limits set are quite high

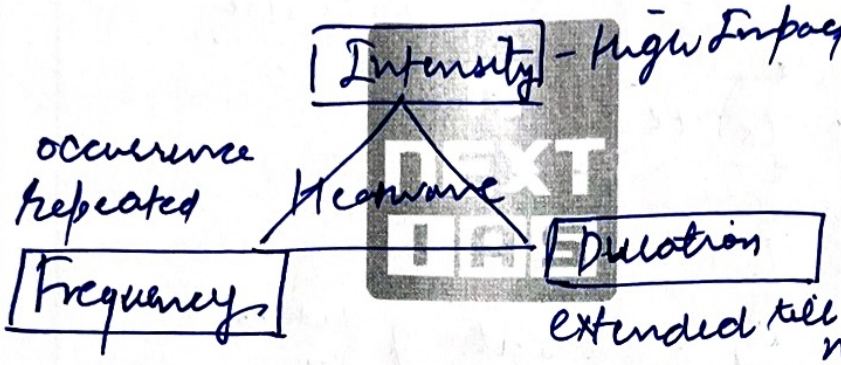
However, this scheme can help in fulfilling India's 'Panchamrit Target' of becoming Net zero by 2070.

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8. पिछले दशक में हीट वेव की बढ़ती गहनता, आवृत्ति और अवधि के मद्देनजर, क्या "हीट वेव" को अब आपदा प्रबंधन अधिनियम, 2005 के तहत एक अधिसूचित आपदा के रूप में शामिल किया जाना चाहिए? (10 अंक, 150 शब्द)
In light of the increased intensity, frequency and duration of heat waves in the last decade, do you think the time has come to include "heat waves" as a notified disaster under the Disaster Management Act, 2005? (10 marks, 150 words)

Heatwaves are defined as intense high Pressure zones which creates dessicating effect creating Heat zones

Plains > 40°C
Hills > 30°C
} categoried as Heatwave as per IMD.



Need to categorise notified disaster :-

① Rising casualties due to Heat waves
(Eg) Heatstroke - heart attacks.

② Disproportionate affect on rural population
(Eg) working in fields.

③ Economic loss due to Productivity

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(Eg) ILO mentioned 34 million job loss in India due to heatwave

④ Affecting Other disasters

(Eg) Drought affecting food Security.

However, issues in declaring notified disaster

① Not a pan India phenomenon

② Seen as natural disaster and not anthropogenic in nature

③ Lack of funds designated for heatwaves

Way ahead:

Following NDMA guidelines on Heatwaves (2019)

- Structural
  - Sheds Creation
  - White Paint on Houses
- Non Structural
  - ORS distribution
  - Capacity Building
  - Vulnerability mapping

Thus, in line with Sendai framework, need is to build back better in Recovery, Rehabilitation and Reconstruction

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9. भारतीय सशस्त्र बलों द्वारा हाल ही में तैयार किए गए 'साइबर-अंतरिक्ष अभियान (Cyberspace operations) के लिए संयुक्त सिद्धांत' से पारंपरिक ऑपरेशनों के साथ-साथ ग्रे जोन युद्ध दोनों के लिए साइबर-सुरक्षा स्थिति मजबूत होगी। परीक्षण कीजिए। (10 अंक, 150 शब्द)

Recently formulated 'joint doctrine for cyberspace operations' by Indian armed forces will lead to strengthening of the cyber-security posture for both conventional operations as well as gray zone warfare. Examine. (10 marks, 150 words)

Cybersecurity means securing personal and private networks from disruption, destruction of data and breach from hackers.

Joint Doctrine for cyberspace operations by armed forces:-

(I) Strengthen conventional operations

(1) Synergy in efforts and Preparedness to mitigate cyber risks

(2) Standard operating Procedures to reduce delay

(3) Internal auditing by teamat regular intervals.

(4) Use of cyber technology to gather intelligence

(E.g) Terrorists outfits mapping

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(4) Grayzone Warfare

(1) Helps in challenging hybrid warfare?



↓

Proper surveillance, tracking of movement.

(2) Fast response in case of attack planning by preparing defense mechanism.

(3) Practicing cyber-hygiene by technologically sound and Proof equipments and computing.

Thus India ranked 10th in ITU global cyber security Index shows the resolve of India to challenge threat of any kind.

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10. पाकिस्तान और बांग्लादेश से सटे राज्यों में सीमा सुरक्षा बल (BSF) के प्रादेशिक क्षेत्राधिकार के विस्तार की आवश्यकता एवं संभावित मुद्दों पर चर्चा कीजिए। (10 अंक, 150 शब्द)

Discuss the necessity and potential issues surrounding the extension of the Border Security Force's (BSF) territorial jurisdiction in states adjacent to Pakistan and Bangladesh. (10 marks, 150 words)

Border Security Force is part of CAPF forces necessitated with the task of security and safety of Pakistan and Bangladesh border in war as well as peace time.

Necessity for extending territorial jurisdiction

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1. Rising Security concerns
   - Eg: Recent Bangladesh crises and refugee influx.
2. Non Traditional Threats Emerging
   - Counterfeit Currency
   - Drug Trafficking
   - organised Crime nexus
   - Insurgency
3. Rise in Terrorist incidents in otherwise peaceful zones
   - Eg: Rajouri-Poonch areas attacks

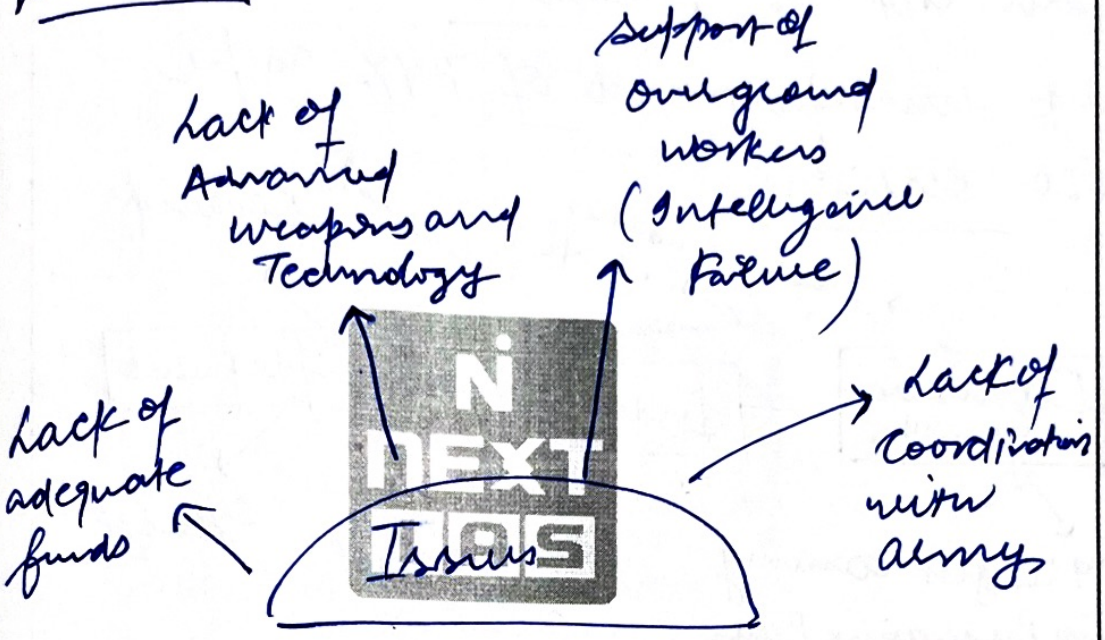
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④ Attack on civilians through small outfits

(Eg) Recent attack on Vaishnodevi Pilgrims.

Issues



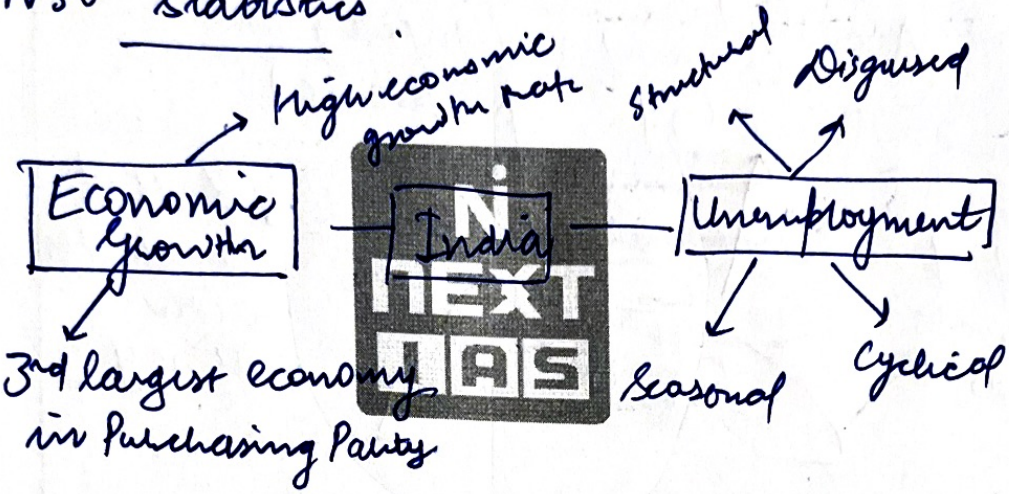
Thus, need of the hour is proper intelligence and vulnerability mapping and discussions with multiple stakeholder to take decision of expansion.

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11. भारत की आर्थिक विकास की कहानी प्राय: बेरोजगारी की निरंतर चुनौतियों से प्रभावित होती है। संरचनात्मक बेरोजगारी की अवधारणा का विश्लेषण कीजिए और भारत की वर्तमान आर्थिक स्थिति के संदर्भ में इसकी प्रासंगिकता पर चर्चा कीजिए साथ ही समावेशी रोजगार को बढ़ावा देने के लिए नीतिगत उपाय सुझाइए। (15 अंक, 250 शब्द)

India's economic growth story is often overshadowed by the persistent challenges of unemployment. Analyze the concept of structural unemployment and discuss its relevance in the context of India's current economic situation. Suggest policy measures to promote inclusive job growth. (15 marks, 250 words)

India is the 5th largest economy with GDP of 4 trillion$ but facing huge unemployment of 7.4% as per NSO statistics



Concept of structural unemployment.

> Lack of job availability due to issues in structure of economy

- Transition from Agriculture to services
- Lack of technological Advancement
- Premature deindustrialisation
  - Arvind Subramanium mentioned

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> Lack of investment in manufacturing sector which has high 'employee elasticity'

(Eg) Apparel sector - 80 times more employment potential than automobiles.

> Skill deficit leading to job losses (jobless growth)

(Eg) PM Kaushal Vikas yojana: Only 4.7% skilled in India

> Relevance in current economic situation.

(1) Transition to Industrial Revolution 4.0 including Artificial Intelligence, Cyber Physical System.

(2) Effects of climate change on Indian economy not catered

(Eg) ILO data: 34 million people out of job due to extreme heat waves in India

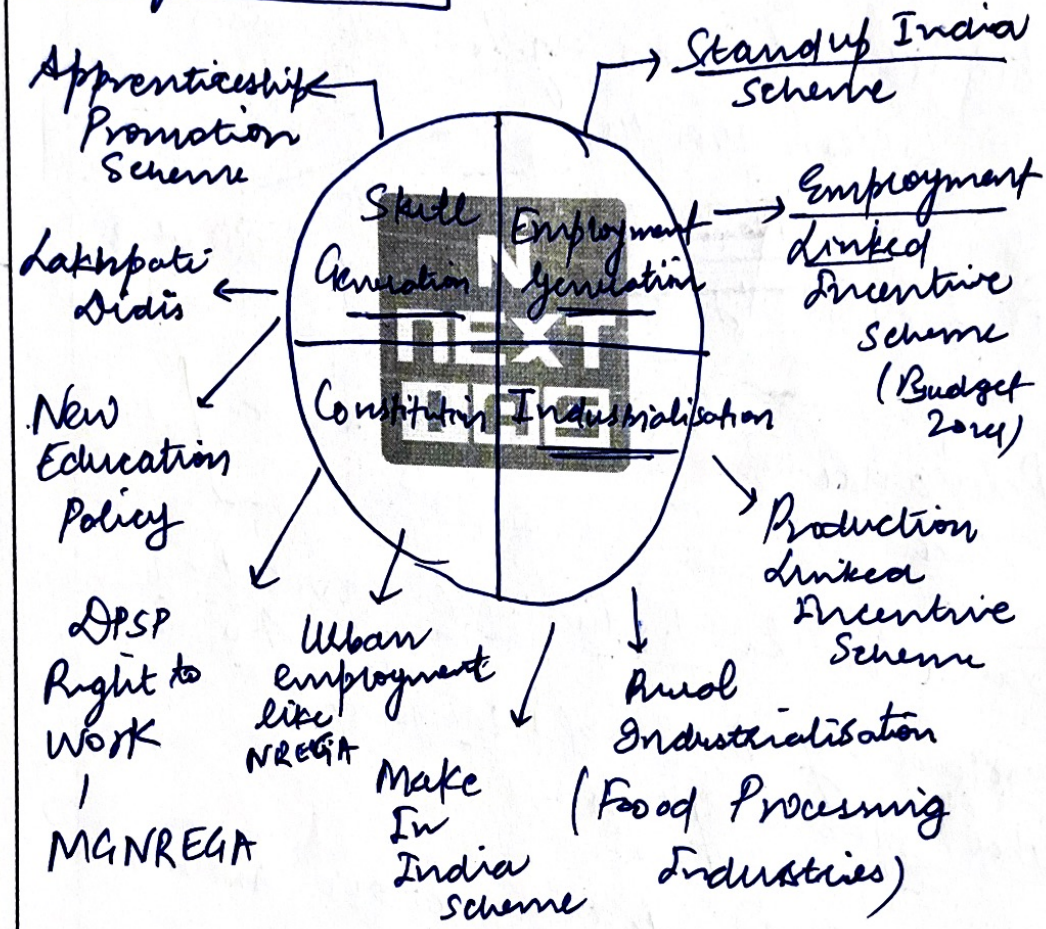
(3) Demographic window owing to

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68% population in age bracket (15-59 years) with median age 28 years

④ Issue of Brain Drain - drain of resourceful persons from India.

Policy Measures



Thus India should aim at 'Job seekers' to convert to 'Job creators' and fuel the growth of 'Amrut Peetw' to convert into demographic dividend

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12. भारत में क्षेत्रीय विकास को बढ़ावा देने में सूक्ष्म, लघु और मध्यम उद्यमों (MSMEs) की भूमिका पर चर्चा कीजिए। औद्योगिक विविधीकरण और उन्नत प्रौद्योगिकी प्राप्त करने में उन्हें किस प्रकार योगदान दे सकते हैं?

(15 अंक, 250 शब्द)

Discuss the role of Micro, Small, and Medium Enterprises (MSMEs) in fostering regional growth in India. How can MSMEs contribute to achieving industrial diversification and technological advancement?

(15 marks, 250 words)

Micro, Small and Medium Enterprises (MSME) are 'engines of economic growth' by providing avenues of mobility and development.

Role in fostering regional growth

① Employment generation to young demography in region
   - (Eg) 11 crore people employed

② Contribution to export generation
   - (Eg) 45% of GDP manufacturing

③ Growth of anticipatory industries along with MSME (development multiplier)

④ Easy entry for workers: low skilled and semi skilled

⑤ Poverty alleviation and social justice to labourers.

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However, issues

- Unorganised sector (89%)
- Lack of Social Security measures
- Issue of dwarfism to evade regulations
- Poor Quality work

Nonetheless, contribute in achieving Industrial diversification

1. Prevalent in multiple sectors
   - Textile
   - Leather
   - Food Processing
   - Iron & Steel
2. Maintains supply chain through proper forward and backward linkages
3. Locally relevant and demand based industries
   - Eg) Paper industries – Yamuna nagar
4. Based on raw material
   - Eg) Gujarat (Ahmedabad) – Cotton industries.

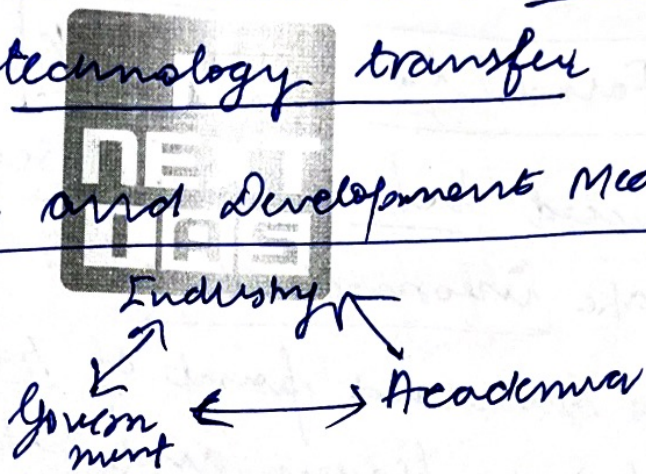
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Technological Advancement – Role of MSME

1. Fuels Industrial Revolution 4.0 by adopting new technologies.
2. Investment in machinery and capital based on boosting productivity.
3. Foreign Direct Investment (FDI) also brings technology transfer
4. Research and Development Measures

Linkage



Way Forward

- UK Sinha committee suggested factoring business in MSME
- NITI Ayog: Sunset clause be introduced and incentivise only infant industries

Thus, MSME enables India to take Quantum jump rather than Incremental steps and become 10 trn$ by 2030.

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13. "MSP का एकमात्र उद्देश्य किसानों को आकस्मिक मूल्य परिवर्तन के आघात से बचाना है"। क्या आपको लगता है कि MSP को वैधानिक बनाने से किसानों को आकस्मिक आघातों से बचाया जा सकेगा? MSP आधारित खरीद को प्रभावी बनाने के लिए अन्य कौन से उपाय किए जा सकते हैं? (15 अंक, 250 शब्द)

"The sole point of MSP is to protect farmers from sudden price shock". Do you think legalization of MSP can insure farmers from sudden price shocks? What are the other measures which can be taken to make MSP-led procurement effective? (15 marks, 250 words)

Minimum support Price is a social safety net or emergency measure to ensure price realization to farmers, ensure food security and public welfare.

Protect Farmer from Price Shock

① Announced before sowing season to make informed choices

② Act as Standard point of reference for private players and protect from inflation.

③ Protect from cobweb Phenomenon (Producing crops based on last season prices)

④ Fixed Price even in case of bumper crops

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(5) Helps in maintaining buffer stock

(Eg) Open Procurement Policy which acts as collateral for loans.

Legalisation of MSP

Effective

> Assured Price to farmers - Can't be denied

> Helps in boosting farmers' income (Doubling farmers income)

Ashok Dalwai Panel

> Protect from exploitation in APMC mandis

Charging exhorbitant fees, weighing Charges etc.

Not effective

> Ms Swaminathan said that MSP is an insurance not remuneration

(Temporary measure)

> NITI report: only 6% use MSP.

> Burden on exchequer (Limited capacity of State)

> Not effective Storage system

(330 MT Production 145 MT storage)

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Other Measures - Make MSP led Procurement effective.

1. Shanta Kumar Committee: Repeal Open Procurement System and fix a cap
2. NITI Ayog: Recommended to outsource FCI functions to CWC, SWC and private agencies
3. Private Procurement and Decentralised Procurement: Model of BHAVANTAR for pulses
4. State led Models
   - Eg Bhavantar Bhugtaan Yojana of MP. — Paying Price differential upto 10%
5. Private Mandis - Rythu Bazaar, Apni Mandi (Punjab)

Thus, MSP is an effective solution but needs to be evaluated on the basis of fiscal consolidation.

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14. भारत में खाद्य सुरक्षा सुनिश्चित करने के लिए सार्वजनिक वितरण प्रणाली (PDS) में भारतीय खाद्य निगम (FCI) की भूमिका पर चर्चा कीजिए। भारतीय खाद्य निगम की दक्षता और प्रभावशीलता को बढ़ाने के लिए इसकी कार्यप्रणाली में आवश्यक सुधारों को सुझाइए।

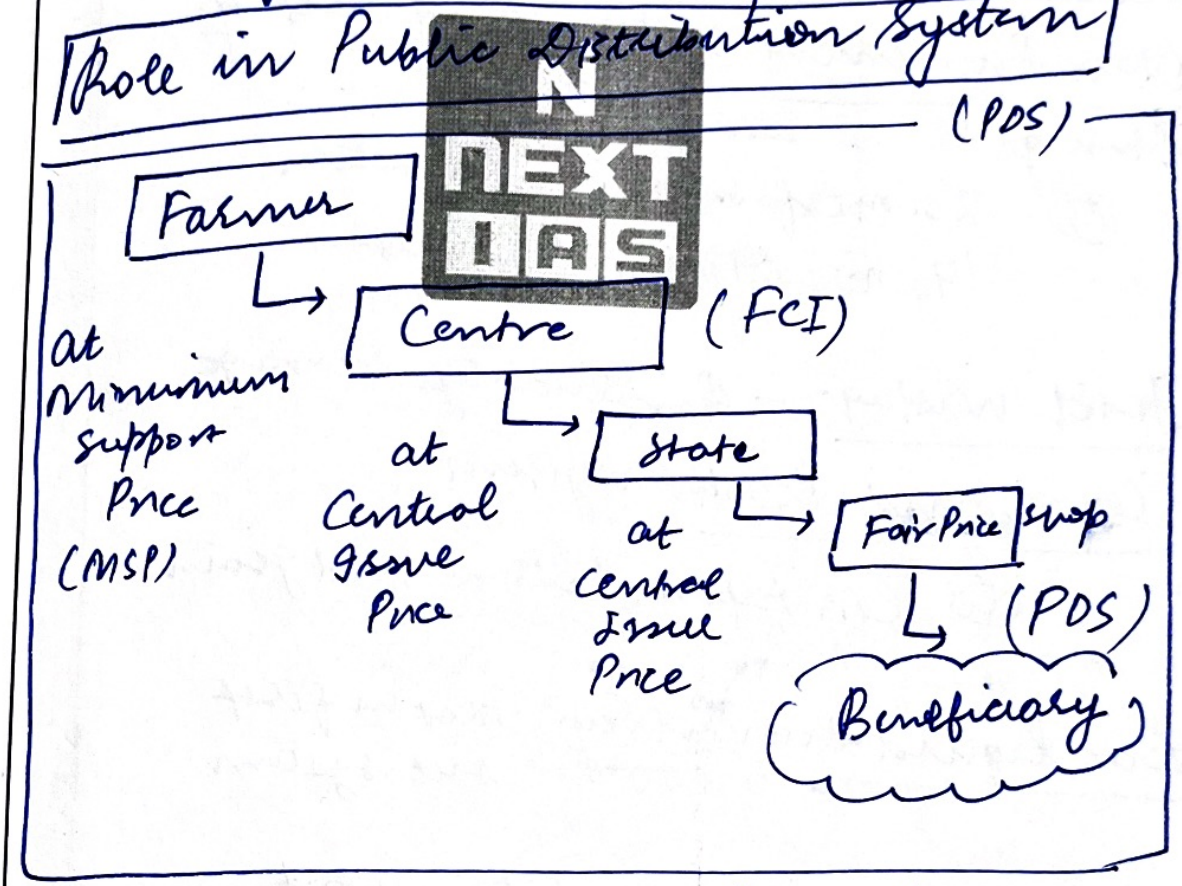
(15 अंक, 250 शब्द)

Discuss the role of the Food Corporation of India (FCI) in the Public Distribution System (PDS) to ensure food security in India. Suggest necessary reforms in the functioning of FCI to enhance its efficiency and effectiveness.

(15 marks, 250 words)

Food corporation of India was established in 1962 to ensure food distribution, storage and buffer stock maintenance and became statutory body through FCI Act 1965

Role in Public Distribution System (PDS)



① Procurement: at MSP from farmer

② Storage: of foodgrains to maintain buffer stock.

③ Distribution: including transport

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costs, procurement incidentals, godown cost.

④ Subsidised cost to Beneficiary

Eg NFSA 2013 mandates ₹1/₹2/₹3 for pulses, wheat and rice respectively in Ration Shops

However, issues in role

① Open Procurement system and lack of Storage

Eg 330MT food grain Production
145 MT Storage capacity

② Food Wastage – Poor Quality Storage
Covered and Plinth system

Eg CAG Report: Rotten food grains

③ Poor liquidation Policy: First in first out system

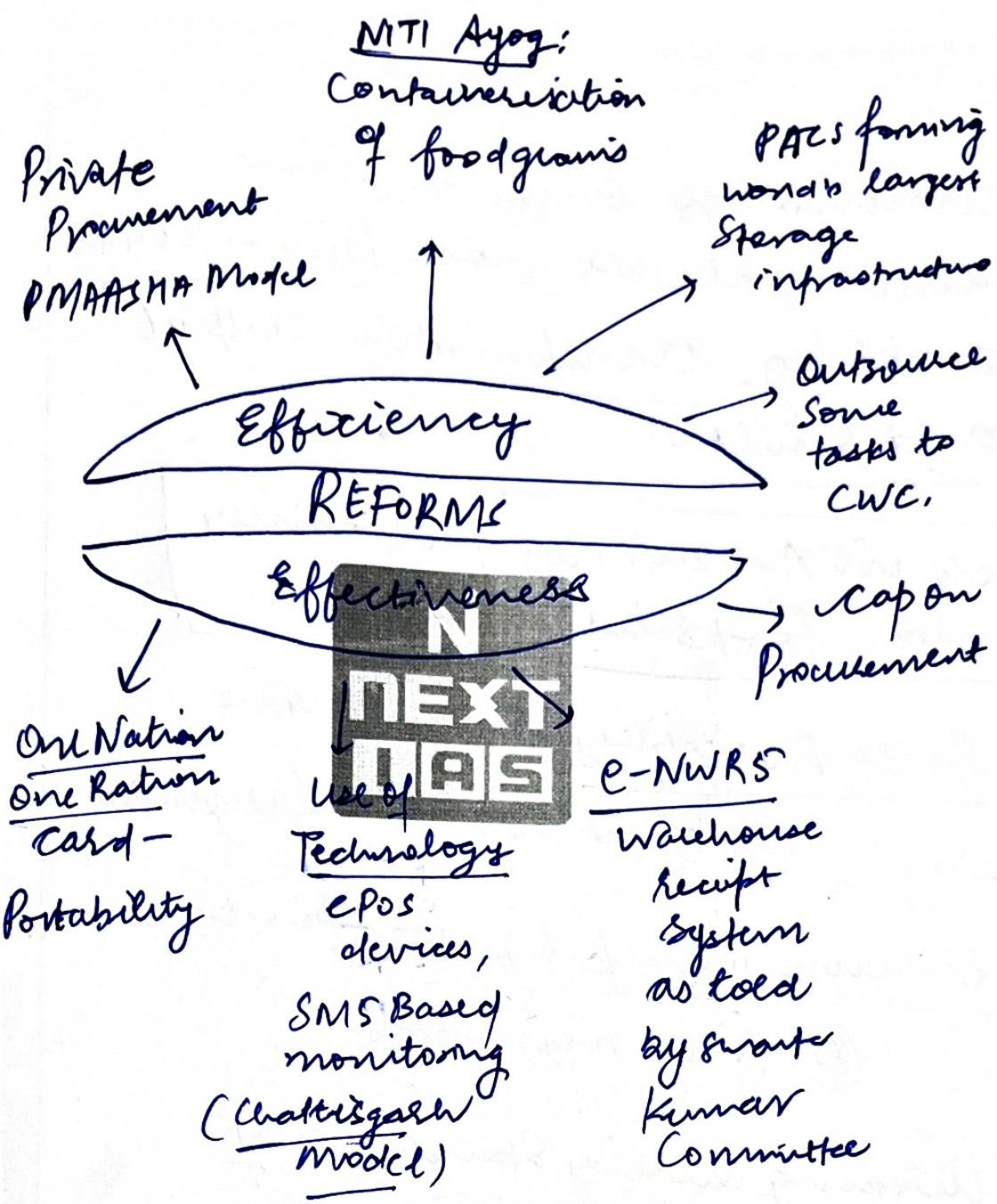
④ Lack of proper logistics: transport, wastage of perishable food.

⑤ Regional Disparities Eg 6% in North India

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Necessary Reforms



Thus, reforms in FCI will make PDS system more effective realizing the goal of SDG 2.0 (end hunger) in India.

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15. भारत में कृषि उत्पादकता और खाद्य सुरक्षा बढ़ाने में नैनो प्रौद्योगिकी की भूमिका पर चर्चा कीजिए। नैनो-उर्वरकों और नैनो-कीटनाशकों के उपयोग के हाल के विकास/प्रगति और संभावित लाभों एवं जोखिमों पर प्रकाश डालिए। (15 अंक, 250 शब्द)

Discuss the role of nanotechnology on enhancing agricultural productivity and food security in India. Highlight recent developments and potential benefits and risks of use of nano-fertilizers and nano-pesticides. (15 marks, 250 words)

Nanotechnology is use of nano-scale materials from 1nm – 100nm to bring transformative output and result.

Role in Agricultural Productivity and food security

① Boost Productivity in Agriculture

(Eg) Nano Urea - for fertigation

② Enhances shelf life in food

(Eg) Nano membranes

③ Checking Quality Standards of food

(Eg) Nanosensors

④ Using nano technology for Precision agriculture

(Eg) Drip irrigation

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Recent Developments

- Nano Urea
- Nano Phosphorous
- NanoBots (Robots)
- Nano Pharma (Medicines)
- Nano surgery

Nano Fertilisers and Pesticides

Benefits

- Alter nutrient Ratio to 4:2:1 N:P:K
- Boost Productivity
- Reduce import dependence
- Soil Health & Fertility

Risks

- Health issues in Humans
- Lack of Testing Standards
- ~~Short~~ Potential Risk of Biomagnification and Bioaccumulation
- Long term Genetic consequences

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16. 2023 का भौतिकी का नोबेल पुरस्कार क्वांटम डॉट्स के संश्लेषण की खोज के लिए एकिमोव, रुस और बावेंडी को संयुक्त रूप से दिया गया। इस संदर्भ में क्वांटम डॉट्स के अनुप्रयोगों पर चर्चा कीजिए। (15 अंक, 250 शब्द)

The Nobel Prize in Physics of 2023 was jointly awarded to Ekimov, Brus and Bawendi for the discovery of synthesis of quantum dots. In this context, discuss the applications of quantum dots.
(15 marks, 250 words)

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17. भारत में जैव विविधता संरक्षण में आरक्षित क्षेत्रों (Protected areas) की भूमिका का मूल्यांकन कीजिए। भारत की जैव विविधता को संरक्षित करने में राष्ट्रीय उद्यान, वन्यजीव अभयारण्य और बायोस्फीयर रिजर्व (जैवमंडल निचय) कितने प्रभावी रहे हैं? (15 अंक, 250 शब्द)

Evaluate the role of protected areas in biodiversity conservation in India. How effective have national parks, wildlife sanctuaries, and biosphere reserves been in preserving India's biodiversity? (15 marks, 250 words)

Biodiversity means flora and fauna preservation and Protected area are insitu conservation method of Biodiversity.

Protected Areas Role

① National Parks
- Specific area demarcated for fauna and flora
  - (Eg) Manas National Park - Red Panda
- Protection of Flagship species
  - (Eg) Kuno Palpur National Park - Cheetahs
- Prevent species from extinction
  - (Eg) One Horned Rhino - Kaziranga National Park

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② Wildlife Sanctuaries

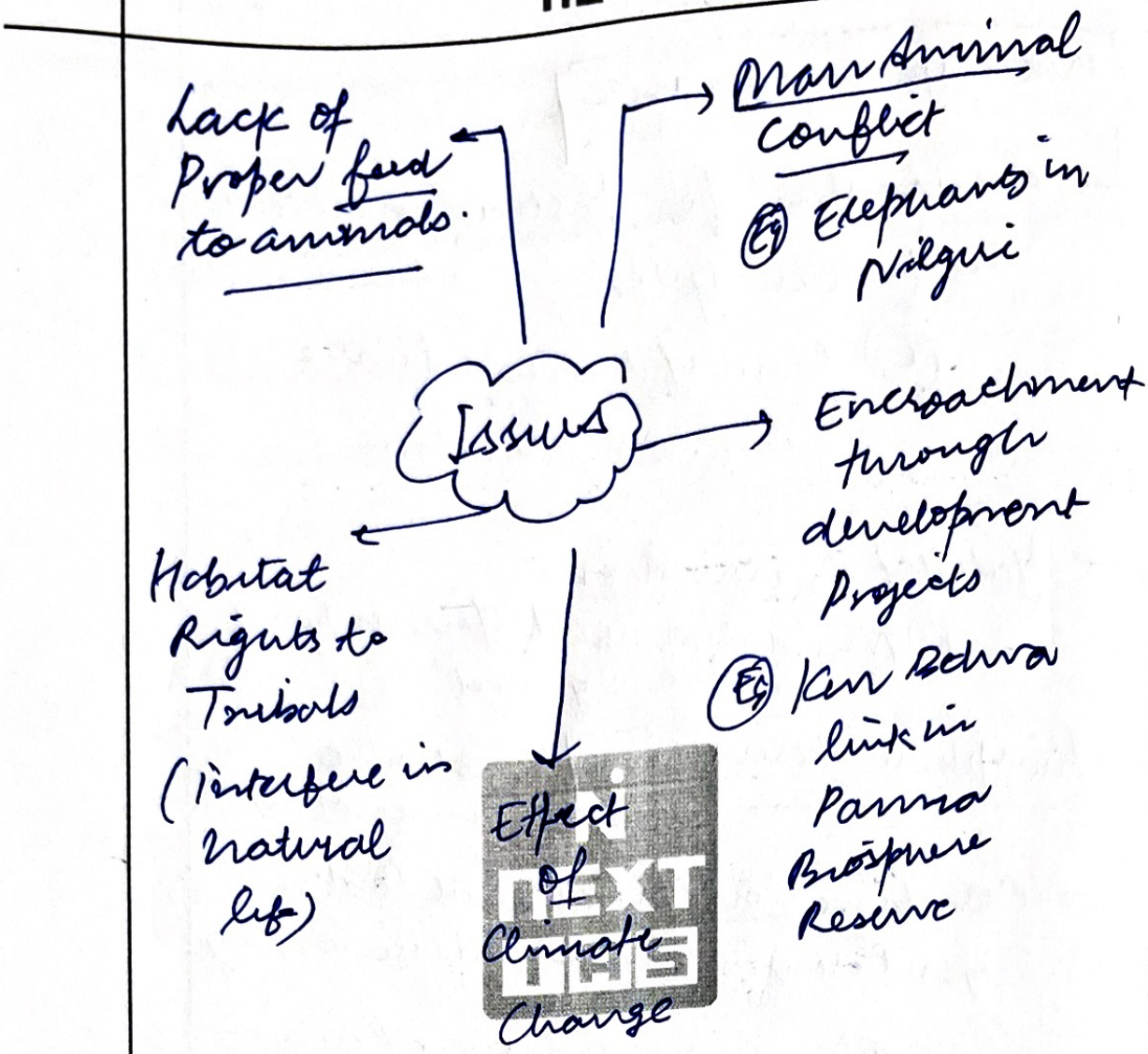
- Dedicated for particular species - niche ecosystem
  - Eg: Rann of Kutch - Asiatic Lion conservation
- Habitat Preservation:
  - Eg: Namdapha wildlife sanctuary for squirrel

③ Biosphere Reserves - holistic conservation

- Combination of National Parks, Tiger Reserves and Wildlife Sanctuary
  - Eg: Nilgiri Biosphere Reserve - Preserve alpha and Beta diversity.
- Provide expansive corridor for development of wildlife
  - Eg: Achanakmar BR, Amarkantak wildlife

However issues exist :-

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Mountains, Wildlife Protection Act 1972 provides for its maintenance and preservation along with regulating Standards

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18. भारत में पार्टिकुलेट मैटर (PM2.5 and PM10) और ओजोन प्रदूषण के उच्च स्तर होने के क्या कारण हैं? पार्टिकुलेट मैटर और ओजोन प्रदूषण को कम करने के लिए सरकार द्वारा किए गए विभिन्न प्रयास कितने प्रभावी रहे हैं?

What the causes of high levels of particulate matter (PM2.5 and PM10) and ozone pollution in India. How effective are the various steps taken by the government to mitigate particulate matter and ozone pollution?

(15 अंक, 250 शब्द)

(15 marks, 250 marks)

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WHO reveals that 18% of casualties in India are attributed to air Pollution in India denoting high level of Particulate matter and ozone concentrations.

Causes —

C A U S E S

⇒ ① Vehicular Pollution and exhaust (ES) 15% Greenhouse gas emissions from transport

⇒ ② Smog formation through Volatile organic compounds (Ozone formation)

⇒ ③ Thermal Industries, generate Waste which releases harmful pollutants.

⇒ ④ Congestion in cities due to

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poor planning in urban areas.

⑤ Effects of Climate change:

positive climate forcings keep these pollutants trapped by green house gases (CO_2, water vapour)

Various Steps taken by government

① Dedicated schemes

Eg National Clean Air Programme to mitigate PM 2.5 and PM10 by 40% by 2026

② Ozone Depleting Substances Rules 2000

③ Monitoring of Air Quality Standards

- Air Quality Indicators.
- National Ambient Air Quality Standards.

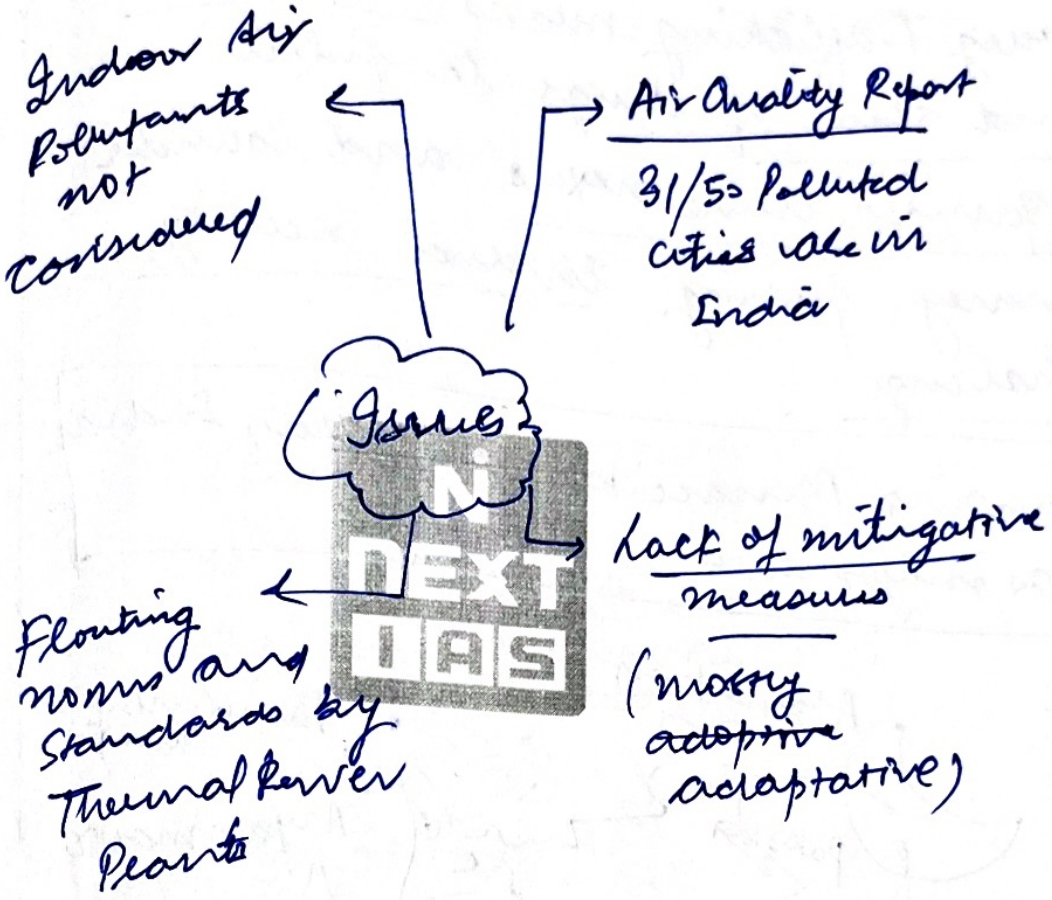
④ Graded Response Action Plan by Supreme Court as a response to air pollution.

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(5) Promotion of Electric vehicles

(E) FAME mission — 30% electric vehicles by 2030.



Thus, Air (Prevention and Control) of Pollution Act 1981 act as a guiding light which needs to be complemented with technology interventions to ensure & healthy environment for all

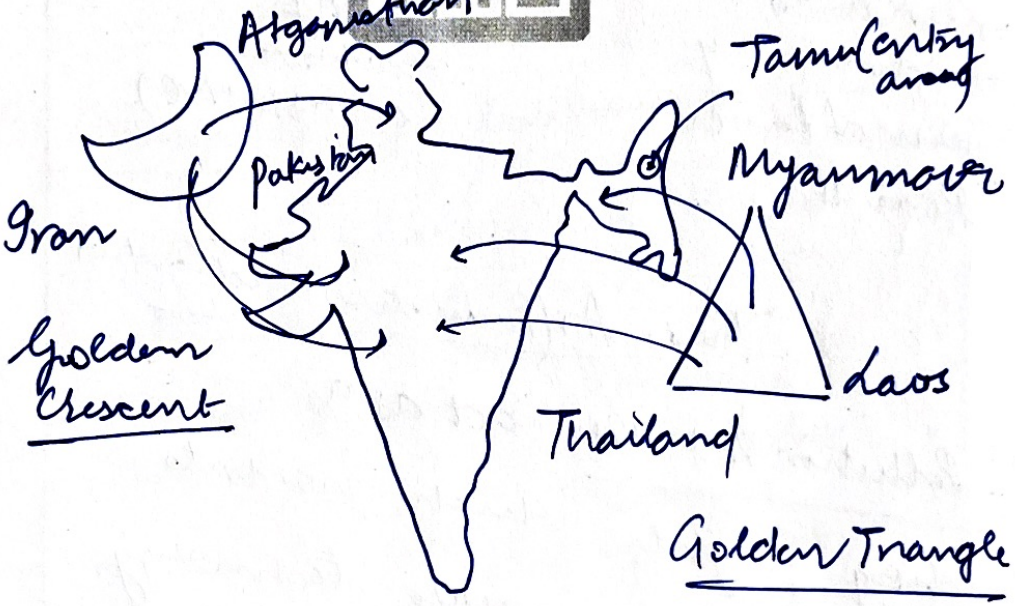
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19. अंतर्राष्ट्रीय नारकोटिक्स नियंत्रण बोर्ड (INCB) रिपोर्ट 2023 दक्षिण एशिया में मादक पदार्थों की तस्करी के बढ़ते खतरे को प्रदर्शित करती है, जिसका कि भारत एक प्रमुख केंद्र है। भारत के संदर्भ में इस चुनौती के विभिन्न आयामों का विश्लेषण कीजिए। साथ ही, इससे निपटने के लिए बहु-आयामी दृष्टिकोण भी सुझाइए। (15 अंक, 250 शब्द)

The International Narcotics Control Board (INCB) Report 2023 highlights a growing menace of drug trafficking in South Asia, with India being a major hub. Analyze the various dimensions of this challenge with respect to India. Also suggest a multi-pronged approach to address it. (15 marks, 250 words)

Drug Trafficking means use, misuse and abuse of drugs to fulfil organised crime nexus and launder money posing external security challenge.

Growing Menace in South Asia, India as major hub



Proximity to drug cartels adds to growing menace in South Asia, with India as major hub.

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Dimensions of this challenge

① Security Risks
- Terrorism is interlinked
  - Eg: Afganistan-Ingirst poppy cultivation
- Fuels Insurgency in North East Areas. (non traditional threat)

② Social sphere
- Radicalise disillusioned youth in drug cartels
- Exploit Porous Borders of India and Enter

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③ Economic Dimension
- Source of funding for secessionist movements
  - Eg: Khalistan Movement in Punjab

④ Political Dimension
- Threat to exchequer — Tax loss
- Administrative challenge to break the nexus
  - Eg: Goa - operating drug mafia.

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Multi Pronged Approach :-

1. Source detection rather than supply side.
   (Tracking supply chain)
2. Use of technology
   - (Eg) SIMS - Secure Information Management System
3. Deradicalisation campaigns for disillusioned youth
4. Narcotics Control Bureau - String Operations.
5. Hard fencing at Borders to Reduce Supply
6. International Collaboration to break NEXUS (Eg) BIMSTEC agenda

Thus drug trafficking is posing security challenge as well as social challenge which needs to be eradicated.

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20. वामपंथी उग्रवाद के प्रति भारत की प्रतिक्रिया (कारवाई) में नक्सलवाद के मूल कारणों को दूर करने के लिए कठोर सुरक्षा उपायों के साथ-साथ सामाजिक-आर्थिक नीतियों और संवाद जैसे नरम दृष्टिकोणों/उपागमों (Soft approaches) को एकीकृत करने की आवश्यकता है। चर्चा कीजिए।

(15 अंक, 250 शब्द)

India's response to left wing extremism needs to integrate soft approaches like socio-economic policies and dialogue along with hard security measures to address the root causes of Naxalism. Discuss.

(15 marks, 250 words)

Naxalism or Left Wing Extremism is internal Security Challenge which is Protracted People's war against the State using mass insurgency, armed Resistance

Govt's Response to extremism

① **Soft Approaches**:

I. **Socio-economic Policies**:

① Integrated Development Plan –

Health Education Infrastructure

Eg PM – Sadak yojana for LWE hit areas.

② PM – Rural Development Fellowship

(young students - work for Perception management in Naxal areas)

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(3) Skill development schemes
(Eg) ROSHNI scheme

(4) Malginalised to mainstream
(Eg) 30% reservation in CAPF exams.

(5) Winning Heart and Mind through civic Action Plan to change attitudes of Naxals.

II Dialogue

(6) Surrender Policy as conciliating measure (Eg) Odisha

(7) Engaging with leaders – communication
(Eg) MHA revealed 63% reduction in deaths in Naxal hit area

(8) Role of administrators:
(Eg) OP Chaudhary IAS - 'Chalo Lo Aasman' helped in educating Tribals in Dantewada

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Hard Security Measures

① Specialised forces:

- COBRA — Commando Battalion for Resolute Action
- Grey hound Police of Andhra Pradesh
- Bastaria Batallion.

② Training of CRPF forces with advanced weaponry and equipments

③ Fortified Police Stations in Naxal hit Areas

④ Dedicated operations to strike all-out offensive (Chattisgarh 5 point action Plan)

Thus Naxalism, more than being law and order issue is a development deficit issue and SAMADHAN Strategy should be followed to root out the weed of Left wing Extremism