Writing mains, please check on priority

# VISION IAS

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## GENERAL STUDIES (TEST CODE : 1511)

| | | | |
|---|---|---|---|
| Name of Candidate | SONAL DEV | | |
| Medium Eng./Hindi | English | Registration Number | 331271 |
| Center | Karol Bagh | Date | 13/11/2021 |

### INDEX TABLE

| Q. No. | Maximum Marks | Marks Obtained |
|---|---|---|
| 1 | 10 | |
| 2 | 10 | |
| 3 | 10 | |
| 4 | 10 | |
| 5 | 10 | |
| 6 | 10 | |
| 7 | 10 | |
| 8 | 10 | |
| 9 | 10 | |
| 10 | 10 | |
| 11 | 15 | |
| 12 | 15 | |
| 13 | 15 | |
| 14 | 15 | |
| 15 | 15 | |
| 16 | 15 | |
| 17 | 15 | |
| 18 | 15 | |
| 19 | 15 | |
| 20 | 15 | |

**Total Marks Obtained:**

**Remarks:**

### INSTRUCTIONS

1. Do furnish the appropriate details in the answer sheet (viz. Name, Registration Number and Test Code).
   उत्तर पुस्तिका में सूचनाएं भरना आवश्यक है (नाम, प्रश्न–पत्र कोड, विद्यार्थी क्रमांक आदि)।
2. There are **TWENTY** questions printed in **ENGLISH & HINDI**
   इसमें बीस प्रश्न हैं अंग्रेजी और हिन्दी में छपे हैं।
3. **All questions are compulsory.**
   सभी प्रश्न अनिवार्य हैं।
4. The number of marks carried by a question/part is indicated against it.
   प्रत्येक प्रश्न/भाग के अंक उसके सामने दिए गए हैं।
5. Answers must be written in the medium authorized in the Admission Certificate, which must be stated clearly on the cover of this Question-Cum-Answer (QCA) Booklet in the space provided. No marks will be given for answers written in medium other that the authorized one.
   प्रश्नों के उत्तर उसी माध्यम में लिखे जाने चाहिए जिसका उल्लेख आपके प्रवेश पत्र में किया गया है और उस माध्यम का स्पष्ट उल्लेख प्रश्न–सह–उत्तर (क्यूसीए) पुस्तिका के मुख्य पृष्ठ पर अंकित निर्दिष्ट स्थान पर किया जाना चाहिए। उल्लिखित माध्यम के अतिरिक्त अन्य किसी माध्यम में लिए गए उत्तर पर कोई अंक नहीं मिलेंगे।
6. Word limit in questions, if specified, should be adhered to.
   प्रश्नों में शब्द सीमा, जहाँ विनिर्दिष्ट है, का अनुसरण किया जाना चाहिए।
7. Any page or portion of the page left blank in the Question-Cum-Answer Booklet must be clearly struck off.
   उत्तर पुस्तिका में खाली छोड़ा हुआ पृष्ठ या उसके अंश को स्पष्ट रूप से काटा जाना चाहिए।

16-B, 2nd Floor, Above National Trust Building, Bada Bazar Marg, Old Rajinder Nagar, Delhi-110060

Plot No. 857, 1st Floor, Banda Bahadur Marg (Opp Punjab & Sindh Bank), Dr. Mukherjee Nagar
Delhi- 110009

# EVALUATION INDICATORS

1. Contextual Competence
2. Content Competence
3. Language Competence
4. Introduction Competence
5. Structure - Presentation Competence
6. Conclusion Competence

Overall Macro Comments / feedback / suggestions on Answer Booklet:

1.

2.

3.

4.

5.

6.

**All the Best**

Don't write anything this margin (इस भाग में कुछ ना लिखें)

1. Despite a vast coast line and a number of waterways, why has India not been able to achieve its potential in bringing a significant modal shift from rail and road to waterways? **(150 words) 10**

विस्तृत तट रेखा और अनेक जलमार्गों के बावजूद, भारत रेल और सड़क परिवहन प्रणाली से जलमार्गों की दिशा में महत्वपूर्ण प्रणालीगत परिवर्तन (मोडल शिफ्ट) करने हेतु अपनी क्षमता को सार्थक करने में क्यों असमर्थ रहा है?

India enjoy a coastline of 7500 kms and internal waterways of 1400 kms, however the modal mix of transportation remains skewed towards road and rail.

Challenges in bringing a potential shift

1) Political
   - (a) water is a state subject
   - (b) Inter state water disputes due to paucity of drinking, energy.

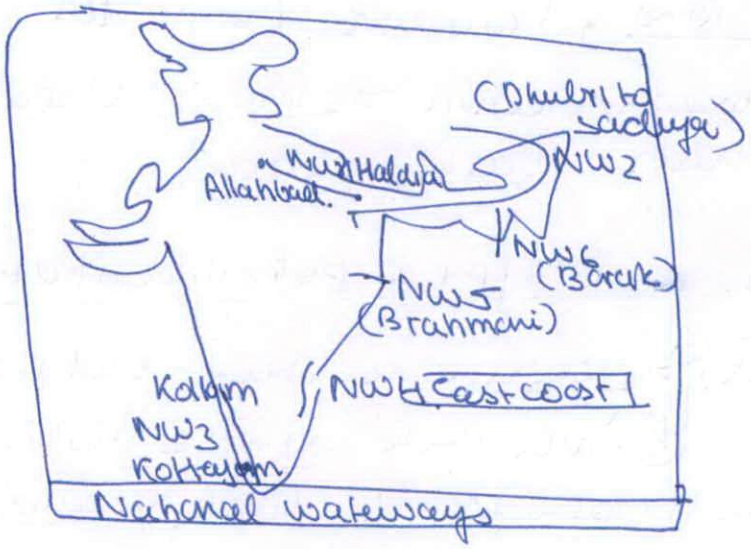
2) Economic
   - (a) lack of infrastructure development eg. Container ports, docking facility.
   - (b) Lack of feeder connectivity to road, rail junctions.
   - (c) cross subsidisation of railways causing cheaper transport

3) Environmental
   - (a) disrupting ecological flow of rivers
   - (b) HEP projects further curtails minimum depth due to storage

④ Technological ⓐ unavailable information on depth, terminals, freight

ⓑ desilting process is costly, time taking

ⓒ Dredging causes coastal erosion




Steps taken

1). Multimodal ports constructed eg Varanasi

2). Sagarmala development
- ↳ Coastal development
- ↳ Shipping infrastructure
- ↳ feeder routes. under Bharatmala

3) Ro-Ro services of NW1

4) Port management Authority amendment allowing foreign investment.

Inland water trasport has the potential to reduce logistics cost

**2.** The move to establish a National Bank for Financing Infrastructure and Development, to reverse the drag on India's growth potential will have its own set of challenges. Discuss. **(150 words) 10**

भारत की संवृद्धि क्षमता संबंधी अवरोधों को व्युत्क्रमित करने के लिए एक राष्ट्रीय अवसंरचना वित्तपोषण और विकास बैंक की स्थापना के कदम की अपनी स्वाभाविक चुनौतियां होंगी। चर्चा कीजिए।

India has proposed revitalisation of Development financial institutes to address structural challenges of Economy:

1) Asset-liability mismatch of commercial banks causing NPA and liquidity crisis eg IL&FS
2) reduce crowding out effect of private credit due to overborrowing of government
3) Push for infrastructural growth and National infrastructural pipeline
4) Handholding and technical expertise for infrastructure financing

Own set of challenges

1) Failed earlier: DFIs were abolished due to inefficiences, NPA problems, better managment of private banks.
2) Fiscal Expense: major shareholding still remains with government PSB

3) Private investment in infrastructure may not be able to mobilised due to time-cost overruns, regulatory overbearance, profitability

4) Requires independent regulators for fiscal prudence in lending.

5) Viability: for social infrastructure can be addressed by:

1) Encouraging deepening of capital markets and investments through INVITS & REITS

2) Social impact assessment and green infrastructure bonds

3) PPP policy realigned towards Hybrid-Annuity model for faster clearance and profitability

Infrastructural development is vital to ensure jobs, industry and economic growth.

3. Highlighting the issues related to the current fertilizer subsidy regime in India, discuss the need for reforms in this context. **(150 words) 10**

भारत में वर्तमान उर्वरक सब्सिडी व्यवस्था से संबंधित मुद्दों को रेखांकित करते हुए, इस संदर्भ में सुधारों की आवश्यकता पर चर्चा कीजिए।

Fertilizer subsidy accounts for 3rd highest subsidy burden of government Expenditure.

Issues of current subsidy regime

1) Economic
   a) high fiscal burden.
   b) State administered prices of Urea causing one of the highest prices internationally.
   c) regulated distributors, sellers causing inefficiency in price discovery

2) administrative
   a) Pilferages and leakages cause huge losses
   b) diverted for industrial use defeating the purpose to support agriculture

3) Environmental
   a) faulty use eg. Punjab 39:26:10 of N:P:K ratio instead of 4:2:1

causing — eutrophication
— soil alkanity
— carcinogenic food chain

- groundwater pollution

(4) Social → accessibility remains biased and only to green revolution Zone of N Plain, Krsna Godavari delta remains out of reach of poorer farmers

reforms to be taken up

1). Domestic production at agglomeration with chemical, Petrochemicals eg Pankhi - Kanpur

2). Relaxing state administered price for better conversion reducing costs

3) Neem coated urea to reduce divergence

4) Forward and spot market for phosphatic fertilisers.

5) Shift towards organic manure and vermicomposting.

6) DBT for inclusion of small and marginal farmers

Fertilizer sector reforms are critical in ushering 2nd green revolution.

4. Identifying the need for a climate resilient agriculture in India, discuss how it can be achieved. **(150 words) 10**

भारत में जलवायु प्रत्यास्थ कृषि की आवश्यकता की पहचान करते हुए, चर्चा कीजिए कि इसे कैसे प्राप्त किया जा सकता है।

National mission on climate change, entails a national mission on smart agriculture highlighting clear link between climate change and agricultural resilience

**Need for climate resilient Agriculture**

1) **Rainfed**: more than 50% area under rainfed agriculture
   - IPCC (changing rainfall patterns, intensity, seasons)

2) **Poverty**: employs more than 48% workforce in India, critical to poverty alleviation

3) **Subsistence**: lack of mechanisation, credit, insurance, inputs, irrigation.

4) **food security**: India already at 'Severe' category of **hunger** in global hunger index

5) **Rural economy** and overall: 30% GDP.

**How to be achieved?**

1). Watershed area development
   - mapping of ground water,

surface water resources.
- rain water harvesting, revival of traditional structures eg Johad
- increasing efficiency of irrigation (drip & sprinkler irrigation)

(2) Crop diversification
- millets, pulses hardy and climate resilient, can grow in scanty rainfall, increased temperature

(3) Allied Agriculture
- livelihood diversification (animal husbandary, poultry, apiculture

(4) Mixed farming and conservation agriculture
- food, fodder, feed systems (Germany)
- vermicomposting, ZBNF

(5) Integrated land, nutrient, water management
- Agroforestry, manuring, trenches, mulching

(6) Extension activities
- mechanisation through common service centers
- insurance and assessment PMFBY

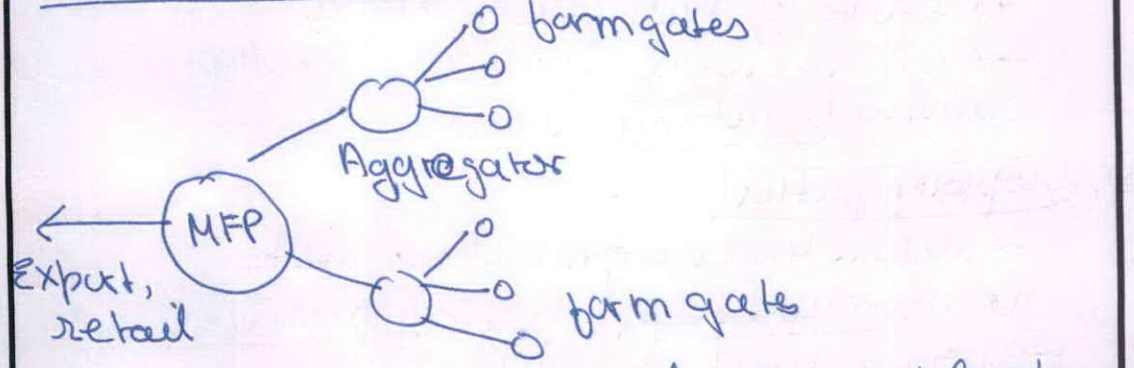
Climate resilient agriculture is needed now in the wake of climate change induced disasters.

5. Mega Food Parks (MFPs) were considered to be a gamechanger for the food processing sector in India, but their progress remains stunted. Discuss.

**(150 words) 10**

मेगा फूड पार्कों (MFPs) को भारत में खाद्य प्रसंस्करण क्षेत्रक के लिए एक महत्वपूर्ण चरण (गेमचेंजर) समझा गया था, लेकिन उनकी प्रगति अभी भी अवरुद्ध है। चर्चा कीजिए।

Mega food parks were to be based on hub and spoke model integrating farms with food processing structures to provide vital linkages




eg. set up at Mahabaleshwar

considered gamechanger

1) better price at farmgates
2) investment in cold storage, transportation, warehousing.
3) better marketing options due to brandy, retail, Export
4) Value addition at food processing
5) One line of basic drug parks, SEZ would generate infrastructure, employment for regional development

Remains stunted

1) Legal hurdles
   (a) . Essential commodities act discouraging investment in cold storage
   (b) APMC hegemony disallowing direct contacts

2) Infrastructural bottlenecks and high logistics costs
   → lack of metalled roads
   → commercial lorries, melas causing sanitary issues.

3). Cropping pattern
   - subsistence agriculture not no standardised quality products.
   - dominance of cereal foodcrops

(4). Economic
   - unviable holdings due to lack of linkage with industry for marketing.
   - Credit abysmall eg NE only 1% agricultural credit.

A renewed push is required with investments in technology, allowing participation of FPO, SHG's, product linked incentive and marketing through Indian trading eg Kasturi cotton

**6.** Give an account of the challenges associated with rapidly increasing biomedical waste in India. Also, state the key features of the Bio-medical Waste Management (Amendment) Rules, 2018. **(150 words) 10**

भारत में तीव्रता से बढ़ रहे जैव-चिकित्सा अपशिष्ट से जुड़ी चुनौतियों का विवरण दीजिए। साथ ही, जैव-चिकित्सा अपशिष्ट प्रबंधन (संशोधन) नियम, 2018 की प्रमुख विशेषताओं का भी उल्लेख कीजिए।

Covid 19 pandemic has increased the quantum of biomedical waste and highlighted lacunaes when waste was found floating downstream Ganga

Challenge with increased biomedical waste

1) Collection - based on local authorities
   - enforcement laxed
   - rules of segregation at source not followed
2) Transportation → containers lacking investment,
   - high logistic cost
3) discarding → no designated grounds
   → no incineration facilities
   → 90% waste to energy plants defunct (NGT)
   → ~~toxic~~ mixed with water causing pollution, contamination, health hazards
4) monitoring - no assessment of levels of contamination
   - audit of facilities poor

⑤ International treaties
- dumping in high seas unchecked

Key features of biomedical waste management rules, 2016

1) Segregation at source into 4 categories based on hazard
2) Protocols for discharge and collection with state authorities
3) Central review by CPCB
4) Includes all biomedical establishments – clinics, camps, makeshift center.

Way forward

- investment in house incineration
- regreening, reclamation of old dumping sites
- waste to energy integration for circular economy
- phasing out hazardous materials like mercury

Strict enforcement of these rules will be vital to manage increasing waste

7. What do you understand by impact based forecasting in disaster management? How can such forecasting strengthen the disaster management preparedness? **(150 words) 10**

आपदा प्रबंधन में प्रभाव आधारित पूर्वानुमान से आप क्या समझते हैं? ऐसा पूर्वानुमान आपदा प्रबंधन की तैयारियों को कैसे मजबूत कर सकता है?

Impact based forecasting refers to disaster management prediction based on not only occurance of disaster but vulnerabelety

Vulnerability (Impact) = Incidence X risk / capability

Impact based forecasting has two verticals

Direct
- loss of life, livelihood, property
- damage to critical infrastructure

Indirect
- collateral loss
- disruption of emergency service
- restoration cost
- rehabilitation and building back
- environmental cost

Use in strengthening disaster management preparedness

1) Shift from engineering based

aphoach to capalality aphoach

eg Japan! → high earthquake incidence
→ resistent buildings (structural)
→ non structural
→ rehabilation, rescue, relief, controlling disaster,

2) Delinate high vulnerable zones better planning eg Kaiga nuclear plant placed in zone IV of earthquake

3) forecast budgetary expenditure in mitigation and relief

4) Monitor long term impacts on health, environment.

5) Data analytics for prediction eg Seismic prediction network in Japan warns 30 seconds before earthquake giving time to take rescue operations.

6) build back better
- reducing collateral damage

Impact forecasting is essential in differentiating hazard and disaster and hence develop mitigation efforts

**8.** Low Earth Orbit is becoming increasingly crowded as countries race to launch satellites into space. Highlighting the associated issues, discuss international efforts taken in this regard. **(150 words) 10**

देशों द्वारा अंतरिक्ष में उपग्रहों को प्रक्षेपित करने की बढ़ती होड़ से निम्न भू-कक्षा में इनका संकेद्रण बढ़ता ही जा रहा है। इससे संबंधित मुद्दों को रेखांकित करते हुए, इस संबंध में किए गए अंतर्राष्ट्रीय प्रयासों पर चर्चा कीजिए।

Increasing occupation of space for communication, research, monitoring and mapping has given rise to 'race to space' for the global common.

Associated issues:

1) Kessler syndrome and space debris can impact existing satellites, disrupt emergency services of communication, entail huge fiscal loss.

2) Threat of militarisation and weaponisation use of sophisticated technology, remote access, high manoeuvre range

3) Cyberattacks and hacking by non state actors threating territorial sovereignity.

4) Exclusion of least developed and developing countries from using the resource

5) Space expenditure diverting from

necessary human development eg health, education.

**Global efforts**

1). Removedebris mission to safely remove, DART for redirecting

2) International treaty
- outer space treaty for peaceful purposes.

3) Early warning systems and information sharing eg RIMES

4) Self dismantling and reusable satellite launchers to decrease eg GSLV MK III

5) Abort test and rescue cooperation under ARTEMIS accord

Space crowding could stall efforts of space exploration and requires urgent international effort.

**9.** Enumerating the existing measures to counter bio-terrorism in India, highlight the need for a bio-terrorism law. **(150 words) 10**

भारत में जैव-आतंकवाद का मुकाबला करने के लिए मौजूदा उपायों को सूचीबद्ध करते हुए, एक जैव-आतंकवाद कानून की आवश्यकता को रेखांकित कीजिए।

Bio terrorism is the use of biological agents to inflict violence, reduce authority or undermine legitimacy of a state.

eg Anthrax was used in letters to inflict (terrorism) in USA.

Existing measures

1). Epidemics diseases act to control spread, enforce lockdowns

2) Disaster management act to reduce risk prevalence, mitigate, rescue, relief.

3) Signatory (biological weapons act)

4) Ratified Convention on Biological diversity and Rotterdam, Basel convention for prior informed consent of LMO's.

(5) NEAC for approval of genetically modified organisms.

6) NIA has jurisdiction to act.

Need for bioterrorism law

1. Coordination and defining roles and responsabelites of center and state in the face of exigency
2) prosecution of offenders
3) Preventive steps eg → audits, safety regulations, informed consent
4) Pecuinary relief to victims
5) International effort to control cross border bioterrorism threat
6) develop prediction technology for effective contact tracing and containment

Bioterrorism is an emerging reality and can be controlled learning from past experiences of global pandemics.

**10.** Discuss the potential of "Integrated Law Enforcement Centres" and "Smart Walls" on India's border areas to address the prevailing security challenges.

**(150 words) 10**

मौजूदा सुरक्षा चुनौतियों से निपटने के लिए भारत के सीमावर्ती क्षेत्रों में "एकीकृत कानून प्रवर्तन केंद्रों" और "स्मार्ट वॉल" की क्षमता पर चर्चा कीजिए।

Integrated law enforcement centers and smart walls can effectively block, take down, enemy target from trespassing border areas.

Potential

1) Unmanned and not clearly delineated borders due to rugged topography
   — himalayas, marshes, deltas.

2) take down ICT enabled drones, UAVs

3) law enforcement centers to holistically curb
   - organised crime
   - drug trafficking
   - smuggling
   - custom evasion
   - illegal migration

and take preemptive action

4) reduce nexus between organised-crime and border security issues

5) Smart walls with RFID, GIS tracking can reduce infrastructural costs of physical centers, checkposts

6) Can work as remote mechanism

Command → Enforcement
(HQ) (Remote)

reducing dependence of personnel.

7) preemptive strikes and reactionary capability

Such technological interventions would overcome the challenge of inclinations, infrastructure and geography and can augment border security forces.

**11.** Farm loan waivers are neither adequate nor recommended for promoting sustained agricultural growth. Analyse. **(250 words) 15**

सतत कृषि विकास को बढ़ावा देने के लिए कृषि ऋण माफी न तो पर्याप्त है और न ही अनुशंसित। विश्लेषण कीजिए।

Farm loan subsidies have averaged 3% of agricultural GDP and form the bulk of government subsidies.

Farm loan waivers required

1) Curbing farmer distress and suicides
2) promoting next cycle of harvest
3) reducing pressure on working capital
4) Keep in check food inflation

However they are not adequate

1) Increasing subsidy bills year on year suggesting only a temporary effect
2) Usually ascertained to big farmers having access to institutional credit (~ 6% by Sankaran committee)
3) Gross capital formation in agriculture remains abysmal

④. Only cover previous debt

Not recommended for sustained agricultural growth.

1) Economic

a) Increased non performing assets of banks further restricts them to give reasonable credit

b) Double fiscal burden of government giving both demand and supply side subsidy (input and food)

2) Structural issues in Agriculture

a) Doesn't change faulty cropping pattern eg most suicides in Latur were due to growth of Bt cotton (water intensive) in dryland areas of Vidarbha

b) doesn't promote investment in mechanisation, insurance, storage and transportation

c) Subsistence Agriculture is continued

and economic viability is not considered. eg. GVA of agriculture at 23% constantly since last decade

d) disguised unemployment: agriculture continues to act as buffer

3) International and Export

a) violates Do numbers criteria of WTO and can hamper exports.

Ways to address:

1). Universal basic income for providing working capital in agriculture

2) Public Private investment in Agriculture infrastructure eg warehouse, cold storage, marketing

3) Changing cropping pattern according to agro ecological zones by district level planning eg dry seed farming, ZBNF

4) promotion of conservation agriculture, organic farming to boost both productivity and price

loan waivers are just window dressing the problems and a systematic approach is required for transformation

**12.** A number of initiatives in recent years have focussed on the MSME sector. Why is there a need to focus on this sector? Also, identify the measures taken by the government and further scope of action. **(250 words) 15**

हाल के वर्षों में अनेक पहलों ने MSME क्षेत्रक पर ध्यान केंद्रित किया है। इस क्षेत्रक पर ध्यान केंद्रित करने की आवश्यकता क्यों है? साथ ही, सरकार द्वारा उठाए गए कदमों और आगे की कार्रवाई के दायरे की पहचान कीजिए।

The MSME sector contributes to 45%. manufacturing GDP and is vital for employment generation.

Need to focus on MSME Sector

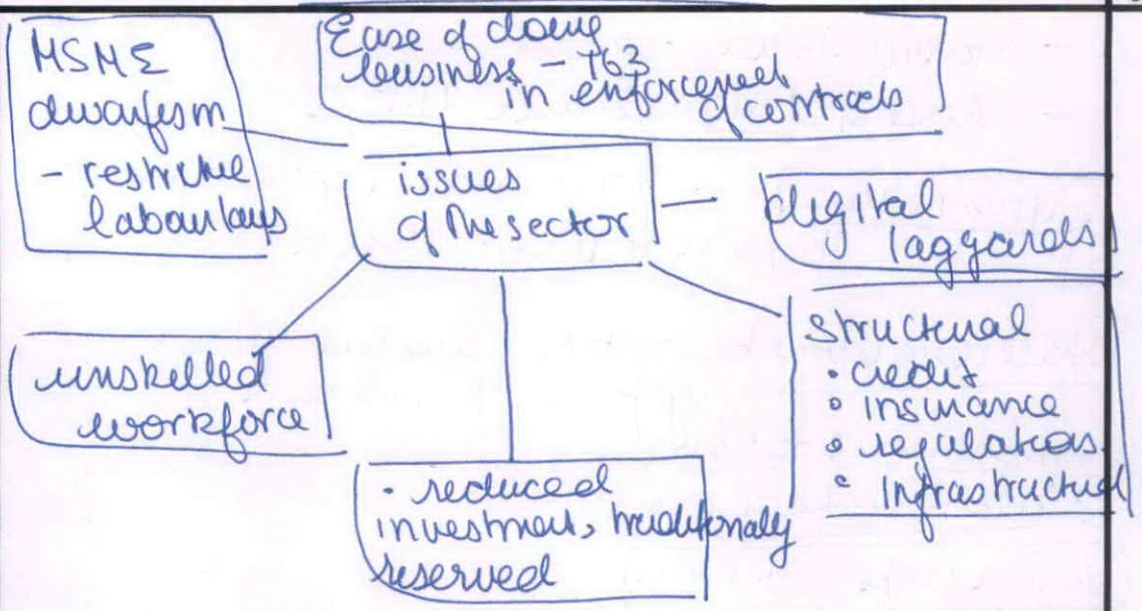
1) >50% manufacturing GVA from MSME sector

2) Can help in boosting Exports to 25% by 2022 according to Manufacturing policy

3) potential of creating 100 million new jobs reducing disguised unemployment in agriculture

4) lifting people out of poverty : urban poverty at 25%. (Rangarajan committee) can be absorbed as contract, fixed term, gig employees.

5) ~~Bet~~ Forward and Backward linkages with agriculture and services offering sustainable and scalable economic growth




## Measures taken by the government

1) **Labour laws**
   - rationalised to ensure ease of doing business
   - social security net to unorganised workers
   - standardisation of minimum wages, occupational safety standards

2) **Credit**
   - under PSL norms
   - quick credit through PSBloansin59

3) **Regulations**
   - Clearances through ENVISAT, MCA-21.

4) **Liberalised** - unreserved, FDI allowed for boosting private investment

- Startup India - funds
- fund of funds under AIF-I

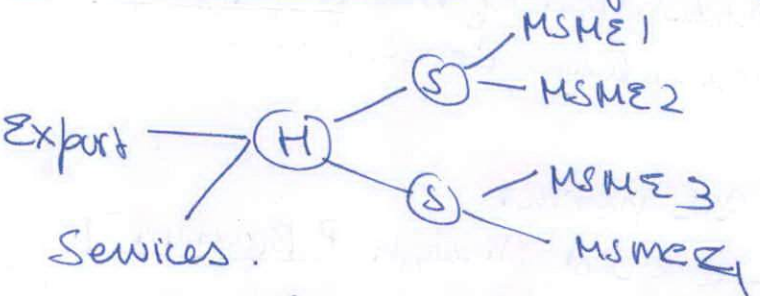
(5) Infrastructural - National infrastructural pipeline to invest 102 Cr

(6) Skill development - PM Kaushal Vikas yojana, National apprenticeship scheme

(7) Product linked incentives

**Further Scope of Action**

1) Handholding to close the phenomenon of missing middle through ~~gov~~ Public private partnership
2) Expansion to capital markets for easier capital
3) Technology transfers and treaties for utilising industrial Revolution 4.0
4) Hub and Spoke manufacturing model




for forward and backward linkages

MSME potential is critical in realising and sustained economic growth

**13.** Skilling the Indian population faces a 3E challenge - Education, Employment and Employability. Discuss. Also suggest interventions required to effectively manage this challenge. **(250 words) 15**

भारतीय जनसंख्या को कौशल युक्त बनाने में 3E चुनौतियों, यथा- शिक्षा (एजुकेशन), रोजगार (एम्प्लॉयमेंट) और नियोजनीयता (एम्प्लॉयबिलिटी) का सामना करना पड़ता है। चर्चा कीजिए। साथ ही, इन चुनौतियों का प्रभावी ढंग से प्रबंधन करने के लिए आवश्यक हस्तक्षेपों का भी सुझाव दीजिए।

Nasscom recently revealed that only 2% Engineers were employable critically highlighting the industry – academia gap.

## Skilling challenges

### I Education

1) lack of formal training : only 2% working age population have received formal training (Economic survey - 2020)

2) Vocational education separated from school curriculum.

3) Strict division of streams reduces career options based on aptitude

4) Faulty education based on Rote learning and assessment.

5) Missing cross disciple functionality

6) Investment in education ↓ 2.5% GDP (recommended – 6%)

## II Employment

1) Disguised unemployment in agriculture acts as a buffer for unemployed youth (Labour survey -2020)
2) Service sector dominated jobs pushing away jobs for semi skilled employees.
3) Employment guarantee: only rural areas; unskilled manual work
4) Lack of apprenticeship culture
5) Huge prevalance of informal sector (>90%) unorganised facing social security, fluctuations in income.

## III Employability

1) huge industry-academia gap.
2) Outdated skills no longer relevant
3) Fast technology changes causing further disruption

Interventions required to manage

1). Curriculum to be aligned.
- industry requirements
- vocational training till class VIII
- functional subjects in school.

2) Skilling, Reskilling, upskilling
- Adult skilling and prior learning recognition
- self learning: eg MOOCs.
- apprenticeship, internships. standards
- on job training of government officials
- Civil society and common resource centres to impart training

3) Employment generation
- sunrise sectors: manufacturing, pharmaceutical, tourism
- mobilisation of local artisans for manufacturing at small scale
- self employment → Startups funds.
  → incubation centers.
  → patent filing

4) Necessary infrastructure, institutions
- Skill university.
- All India Skill service

Skill development is a key lynchpin to transform India to economic powerhouse and achieve the target of 15% skilled employees by 2030

**14.** Despite its importance, agricultural marketing faces various institutional and infrastructural related issues in India. Elaborate. Also, enlist the measures that have been taken in this context. **(250 words) 15**

अपने महत्व के बावजूद, कृषि विपणन को भारत में विभिन्न संस्थागत और अवसंरचना संबंधी मुद्दों का सामना करना पड़ता है। सविस्तार वर्णन कीजिए। साथ ही, इस संदर्भ में किए गए उपायों को भी सूचीबद्ध कीजिए।

Agricultural marketing remains the most overlooked sector in agricultural value chain. India has set a target to double its export to 60bn by 2030.

Importance of agricultural marketing

1) Price discovery of agricultural produce
2) Boost exports and income of farmers
3) Increased gross value added of agriculture GDP.
4) Vital backward linkage to industry
5) Widen consumer base – wholesale, retailer, aggregator.

Institutional Challenges

1) Hegemony of APMC mandies
   - politicisation and cartelisation leading to exploitation of farmer
2) Lack of farm gate marketing avenues

3) Unconnected rural markets forcing farmers to sell commodities to middlemen, traders at very low prices.

4) Inaccessible direct retail due to distance

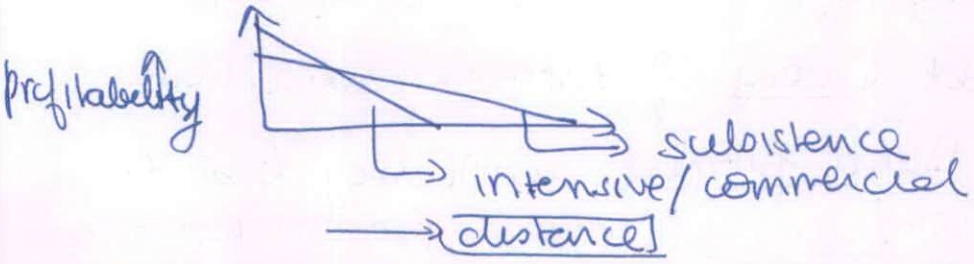
5) Exploitative contract farming eg Pepsico suite against potato farmers

6) Essential commodities act restricting storage

Infrastructural challenges

1) Lack of cold storage facilities approx 90 mT for 30 mT horticulture produce.

2) Distance from market reduces intensity of agriculture eg




Assam: average distance 36 Km (Sharda Kumar recommends <5 km)

3) Lack of transportation, metalled roads making transportation costlier than price

4) Lack of warehouse, processing facilities

Measures taken

1). FPO and cluster based approach for easy accessibility to warehouses, Credit (PSL norms), marketing (FPO/AGMARK)

2) Model contract farming act, ammendment to essential commodities act, allowing farmers to sell outside designated Mandis.

3) SHG - Sanchiriya, GI Tags, Paramparagat Krishi vikas yojana.

4) E-NAM for one nation one market, better price discovery

5) Allowing forward and spot trading of agricultural commodities

6). Direct linking of farmers and allied eg Dairy farmers with dairy basket.

7) Krishi udaan scheme for transportation

Others Needed

1) Develop market intelligence system

2) Allowing agri startup aggregators for direct farm collection

3) adoption of model tenancy, contract farming Act.

Agricultural marketing is vital to 2X farmers income by 2022.

**15.** Marine litter is not just an environmental issue but poses a socio-economic challenge as well. Discuss. Also, enumerate the initiatives taken by the global community to reduce marine litter. **(250 words) 15**

समुद्री कचरा न सिर्फ एक पर्यावरणीय मुद्दा है, अपितु यह एक सामाजिक-आर्थिक चुनौती भी खड़ी करता है। चर्चा कीजिए। साथ ही, समुद्री कचरे को कम करने के लिए वैश्विक समुदाय द्वारा की गई पहलों को भी सूचीबद्ध कीजिए।

Recently India signed and ratified Singapore convention to combat marine letter.

[Environmental issue]

I. marine biodiversity
   1) Can cause choking of fishes, coral bleaching,
   2) destroy ecosystem eg Pacific garbage patch has turned into [biological] desert.
   3) [Plasticrust] secreted by shellfishes on Atlantic coast.

II. Hydrology
   1) Increased ocean acidification, eutrophication causes algal bloom and rain

III. Atmosphere
   1) contribute to [global warming] eg Plastic waste
   2) Reduce blue carbon sink due to higher pH.

IV Lithosphere

1) coastal erosion due to non biodegradable nature
2) wash up to shores and pollute coastal areas

## Socio Economic Hazard

1). Social

1) Health: can link into food chains and accumulate eg DTT
2) Carciogenic: eg Minmata disease spread by polluting river with mercury
3) Abandonment of the area by rich, further degrading social fabric
4) filthy environment reduce Quality of life

2) Economic

1) Impact on livelihood
   - reduce fish catch.
   - reduced potential of aquaculture, mariculture
2) Impact on tourism
   - reduced potential due to garbage patches
3) reduced investment in coastal communities

eg. Exports (sanitary, phyto sanitary sanctions)

4) trigger a vicious cycle of poverty due to higher incidence of health risk and loss of livelihood

5) adversely affect food security eg. salt intrusion into paddy fields

Initiatives

1). Ocean clean up project; Hyo ditter campaign to mobilise civic action

2) Laws and convention
   - MARPOL
   - New york convention.

3) Environmental legislations single use
   - eg India phasing out plastic by 2022
   - plastic pledges. at COP26.

4) Technological
   - bio rock restoration
   - mangrove afforestation

5) Certifications
   - Blue flag mechanism by FEE. to encourage sustainable coastal tourism.

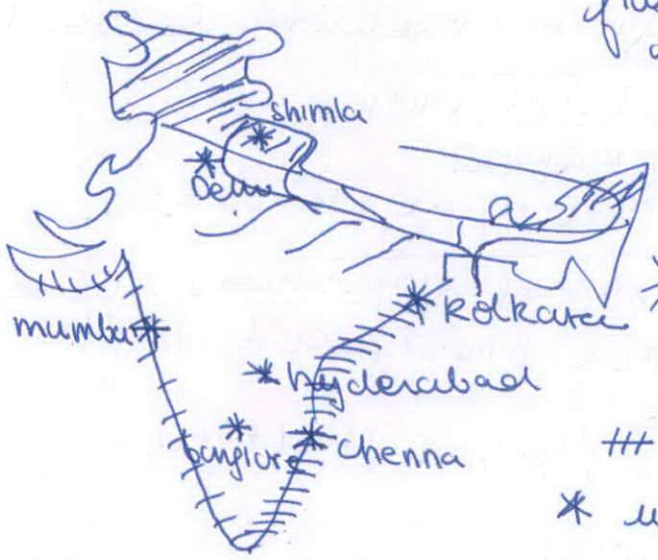
Marine letter endanger SDG 13, 14, 15 life below water and life on land.

**16.** Assess India's vulnerability to flash floods and suggest measures for better resilience to flash floods. In this context, also briefly highlight the significance of recently launched Flash Flood Guidance System (FFGS) operated by the Indian Meteorological Department (IMD).

**(250 words) 15**

आकस्मिक बाढ़ के प्रति भारत की सुभेद्यता का आकलन कीजिए और इसके प्रति बेहतर लचीलेपन के उपायों का सुझाव दीजिए। इस संदर्भ में, हाल ही में आरंभ की गयी तथा भारत मौसम विज्ञान विभाग (IMD) द्वारा संचालित आकस्मिक बाढ़ मार्गदर्शन प्रणाली (FFGS) के महत्व पर भी प्रकाश डालिए।

12% of India's total land is vulnerable to floods. (IMD).




flash flood vulnerability map

Cloudburst & HEP.

vulnerable to flash floods due to heavy rainfall

## coastal flooding

* urban floods

Vulnerability

1. Tropical country : increasing adverse impacts of climate change – IPCC can trigger flash floods due to
   a) increased rainfall intensity
   b) dispersed downpours. (70% rainfall in 4 months)
   c) more cloudbursts events

in himalayas due to increased temperatures

2) Vast coastline : 7500 km

- affect of increased tropical cyclones, changing monsoon pattern, coastal erosion

3). River flooding

- increased sedimentation due to higher glacial melt can cause avulsion and flash floods

4) urban flash floods

- Increased urbanisation, defective drainage
- HEP breaks, dam security
- urban heat island effect

Measures for resilience to flash floods

1). Preventive (structural)

a) coastal breakers
b) binding of loose regolith in hills
c) water gates at HEP sites
d) drainage system in urban areas desilted and enlarged.

2) Non structural

1) Zoning and land use classification
2) Rehabilitation and resettlement

of annually affected inhabitants
3) Rescue and Relief funds, personnels, training
4) IEC for evacuation, alarming, management protocols.
5) Build back better: resilient infrastructure.
- use of local structures eg stone houses in Uttarkashi didn't collapse

II. Precautionary and Prediction
- flash flood guidance and Prediction system
- community guidance way h radio, SMS

Significance of (flash flood guidance)

1) Criticality in saving lives, livelihood by timely rehabilitation
2) take structural measures in frequently affected areas
3) knowledge and warning data for future research and prediction using big Data

Flash floods are likely to worsen due to impending climate change and requires both Technological + Ecocentric interventions.

**17.** Hydrogen based energy production can play a key role in a clean, secure and affordable energy future. In this context, identify the potential and opportunities for utilising hydrogen based technologies. What are the challenges that need to be addressed to fullfill the potential?

**(250 words) 15**

हाइड्रोजन आधारित ऊर्जा उत्पादन एक स्वच्छ, सुरक्षित और वहनीय ऊर्जा के भविष्य में महत्वपूर्ण भूमिका निभा सकता है। इस संदर्भ में, हाइड्रोजन आधारित प्रौद्योगिकियों के उपयोग करने की संभावनाओं और अवसरों की पहचान कीजिए। इस क्षमता को साकार करने के लिए किन चुनौतियों का समाधान करने की आवश्यकता है?

Hydrogen Energy can act as a renewable energy source cutical in achieving India's recent commitment at Glasgow of 50% renewable based fuel by 2030

Potential of Hydrogen based energy

1) Clean
   - ↳ reduced GHG emissions. Cutical in limiting global warming to 1.5° of pre industrial level
   - ↳ only by products: water and energy
   - ↳ no effluents and hazardous waste generated.

2) Secure
   - ↳ renewable and unlimited fuel
     - ↳ Hydrogen fusion.
     - ↳ Splitting of water

→ utilisable with current machinery

→ can act as a source of Hybrid fuel

(3) affordable

- Ubiquitous resource universally available
- bulk production possible
- Energy efficient and low discharge potential

Opportunities for Hydrogen based energy

1) Automobile fuel
   ↳ high energy capacity and low charging requirements
2) Space fuel → used with open air propulsion systems
3) Electricity and power generation
   - used as hybrid
4) use of by products
   1) Oxygen (Splitting of water) → industrial, medical
   2) Water → industrial, drinking
5) Nuclear fusion → breeder and immutable source

Challenges to be addressed

1) Technology
   - remains expensive and commercial viability still questioned

2) High energy density
   - may make it unsuitable for transportation and needs to be used as a bridge fuel

3) Avoid misuse
   - due to explosive nature

4) Smaller battery sizes
   to make it utilisable in host of activities

5) Battery disposal and waste generation rules need to be strengthened

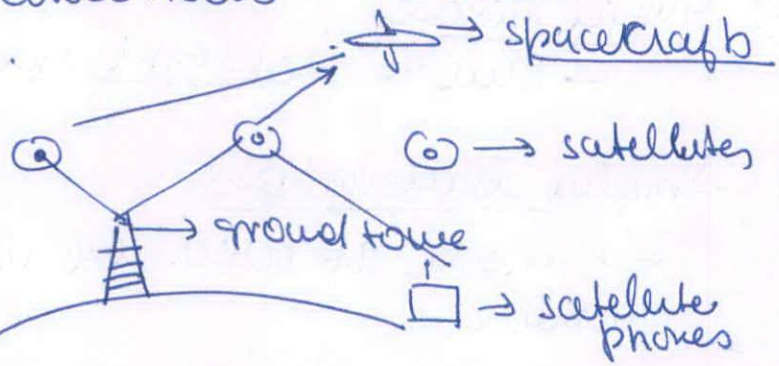
6) May cause thermal water pollution.

Hydrogen based energy is a promising resource critical to Energy security of the country

**18.** Despite the huge promise of satellite-based internet connectivity, it hasn't gained traction on a significant commercial scale, especially in India. Discuss. **(250 words) 15**

उपग्रह आधारित इंटरनेट कनेक्टिविटी में निहित विशाल संभावना के बावजूद, इसने विशेष रूप से भारत में, वाणिज्यिक पैमाने पर महत्वपूर्ण पकड़ स्थापित नहीं किया है। चर्चा कीजिए।

Recently, SpaceX has planned to launch mellon of sattelites into lower earth orbit to provide global satellite based internet under ambitious 'Starlink' project.




Satellite internet can provide internet down at ground, higher orbits

Huge promise

1) High speed, lower latency
   - of internet connectivity,
   - vital for IOT, 5G revolution
2) Disbanding need for ground antennas due to direct internet connectivity to satellite devices

3) uninterrupted connectivity
- eg aircraft even while travelling over waters

4) satellite relay communication with higher orbit satellites to ground station furthering space explorations.

5) higher bandwidth and frequency of use allowing higher number of commercial players.
- avert already near to full utilisation of bandwidths.

6) significant for extending life of communication, remote sensing satellite eg. GISAT, INSAT.

7) remote manoeuvring possible - unmanned vehicles and explorations.

Not gained traction

1). Economic
- huge capital infrastructure required
- trial runs
- trained personnel

(6) Nascent private space industry in India
- lack of technical knowhow
- commercial vehicles.

(2) Legal → no legal law, treaty to navigate satellite internet space
- spectrum auctions
- avoidance of cybersecurity issues
eg banking fraud in space done recently

(3) Technological
- risking Kessler syndrome
- threat to national security used as space warfare

(4) Centralisation control can make it more susceptible to attacks

Steps taken

1) 5G trials
2) Inspace and New Space India for private player
3) Direct to satellite communication with INSAT

A holistic ecosystem should be developed to ensure the technology is affordable, accessible and equitable

**19.** India's attempts at strengthening its intelligence infrastructure and capabilities have historically been reactive and incremental, rather than holistic and sustainable. Discuss. Also, provide a concrete framework in transforming the country's intelligence capabilities.

**(250 words) 15**

अपनी आसूचना अवसंरचना और क्षमताओं को मजबूत करने के भारत के प्रयास समग्र और स्थायी होने के बजाय ऐतिहासिक रूप से प्रतिक्रियाशील और वृद्धिशील रहे हैं। चर्चा कीजिए। साथ ही, देश की आसूचना क्षमताओं के रूपांतरण हेतु एक ठोस ढांचा भी प्रदान कीजिए।

India's intelligence framework remains fragmented and has evolved according to India's security needs.

Reactive and incremental intelligence and infrastructure

1. NATGRID - formed after Mumbai attacks - 2007
2) NIA scope expanded after Pulwama attack
3) UAPA scope to individuals after cross border skirmishes with Pakistan.
4) CCTNS not yet integrated.
5) fragmented
   - RAW NIA
   - CBI for interpol
   - SFIO - for fraud investigation
6) No overarching law of internal security / intelligence

4) Border security and infrastructure still split between 7 paramilitary forces.

Move towards holistic and sustainable

(A) Infrastructure

↳ technology: CERTIN, NIIA, CCTNS, NATGRID

↳ autonomy to interceptors :⇒ NIA doesn't require consent from Joint secretary

→ jurisdiction outside India

↳ new threats recognised : Scope of NIA Expanded to nuclear threats

(B) Capabilities

1) Chief of defence staff : Synergy between forces

2) Theatre commands

3) Defence security agency, cyber space security agency formulated based on Shekatkar committee report

framework in transforming intelligence capabilities

1) **Policy**: National intelligence policy should be created (2nd ARC)

2) **Law** ⇒ rationalisation of laws and relaxation to focus on synergy eg NIA and official secrets act to be clubbed

3) **Technology**: use of big data, data lake systems, IOT for threat prediction and analysis.

4) **Ground assessment** and civil society engagement
   - ↳ to alert lone wolf attacks
   - ↳ suspicious moments of drug round workers
   - ↳ combat left wing extremism

5) **Institutional changes**
   - ↳ eg Prakash Singh judgement to reform police forces
   - ↳ SMART policing, UAV use, drone use, off terrain vehicles, GPS/GIS tracking.

6) Intelligence personnel training and development

Intelligence capabilities need to see strengthened for preemptive strikes rather than reactionary

**20.** In light of the prominent instances of drone attacks by both state and non state actors, assess the challenges and capabilities of India in dealing with such security threats. **(250 words) 15**

राज्य और गैर-राज्य दोनों अभिकर्ताओं द्वारा ड्रोन हमलों के प्रमुख दृष्टांतों के परिप्रेक्ष्य में, ऐसे सुरक्षा खतरों से निपटने में भारत की चुनौतियों और क्षमताओं का आकलन कीजिए।

Terrorist outfits based on internal and external support have transformed level of threat by use of ICT technology such as drones

Challenges of such treats

1). Unmanned - cannot be captured and risk averted.

2) Remote handling - difficult to track location, origin of threat.

3) cross border smuggling of drugs, arms, counterfeit currency using drones strengthening nexus of (organised crime) and terrorism & extremism

4) Escape (border surveillance system) by deploying radar blocking technology

5) Huge destruction potential

@ direct: interference in critical infrastructure, warfare

b) Indirect : transmission of information, land mapping.

6) trespass as innocuous
- carry lone wolf attacks.
- overground information support.

Capabilities to deal:

1) Law : DGCI and clone authorization, licence, registration.

2) Policy :- No permission, no take off policy
- Zoning based on vulnerability assessment.

3) Surveillance : GIS / RFID tracking and reporting

4) use of technology
a) ASAT : DRDO.
b) development of project NETRA for intelligence
c) deployment of multi-level defence capability systems eg Russia S-400.

5) Use of drone for counter strikes eg. Mission Sunrakiran in myanmar

6) Hijacking under NIA jurisdiction further steps required

1) Overarching policy on internal security including technological warfare

2) Automated border security systems and deployment of anti missile take down.

3) Big data for threat predictability

4) Training of ground personnel to subvert and report attacks

Drone technology is a double edged sword and needs to be regulated only for peaceful purposes