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- ① Women Empowerment is one of the 4 pillars of GYAN initiative of the government that is reflected in the budget.

Recent initiatives towards gender budgeting : -

- ① Lakhpati Didi scheme initiative to target women in SHGs.
- ② MUDRA loans of which 70% goes to women entrepreneurs.
- ③ 8.86% of total budget is allocated for women in FY 26 budget which ~~was~~ 6.8% in FY 25 budget.
- ④ ₹4.5 lakh crore given for women's welfare an increase of around 37.25% from previous year.

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Importance of gender budgeting

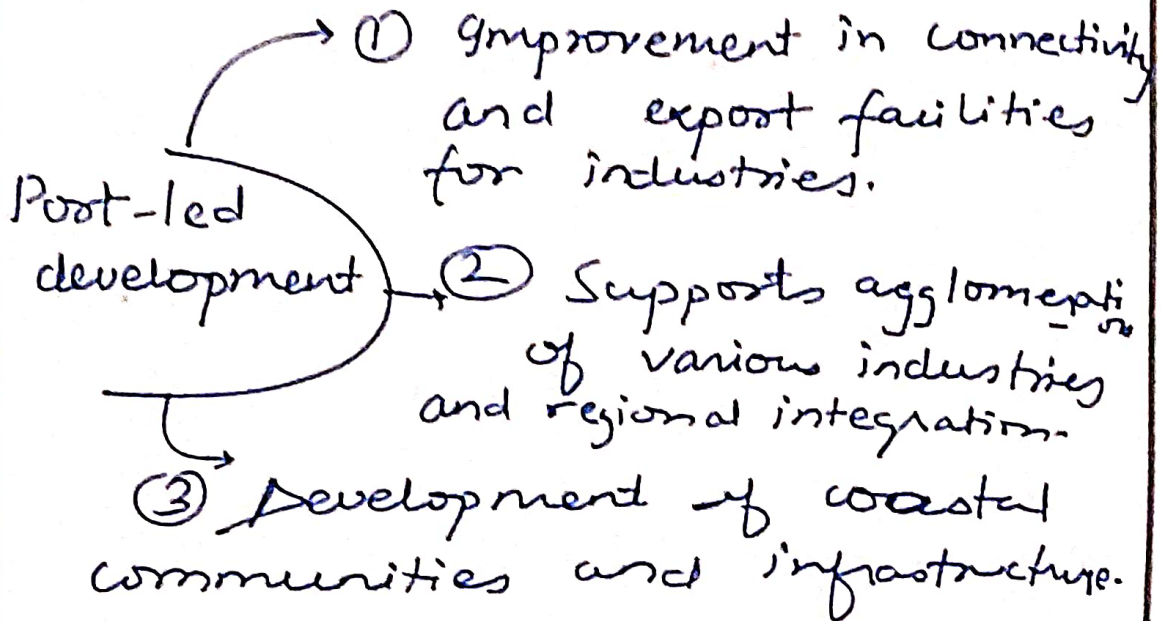
- ① Women constitute around 50% of the population, yet remain one of the most vulnerable, hence, their upliftment becomes extremely necessary for overall growth.
- ② Bridging the inequality by enhancing economic opportunities to women.
- ③ Promotion of women entrepreneurs.
- ④ Scaling of women-led development through SHGs, rural haats etc.

Gender-based budgeting is the panacea for transforming women empowerment to women led development.

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(2)

Ports can play as an important ~~at~~ hub for regional development and industrialisation in coastal regions.



Role of SAGARMALA in port led development

Announced in 2015 this has led to the following:-

① Decrease in turnaround time for ships from 96 hrs in 2015 to 30 hrs in 2025.

② Port modernisation :- 98 projects completed.

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- ③ 91 projects for port connectivity completed under SAGARMALA.
- ④ Development of coastal shipping and Inland water Transport.
- ⑤ Encouraging P-P-P based models in port infrastructure development and maintenance.
- ⑥ Improve international linkages for future projects like INSTC, IMT corridor etc.

Thus, to reduce logistical cost from 12%-13% of GDP to around 8-9% of GDP, development of port-led industrialisation becomes crucial for India.

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③

Livestock sector contributes around 32% of agricultural GDP in our country.

① Increase in productivity and then, increase in farmer's income.

(eg) Milk production earns more than rice and wheat production in India.

Importance
of livestock
farming

② Large employment, thus, reducing burden from agriculture.

(eg) Milk sector employs 3cr+ people

③ Export avenues and faster growth

(eg) \$4bn exports of ^{marine} fisheries products which was almost \$1bn a decade ago.

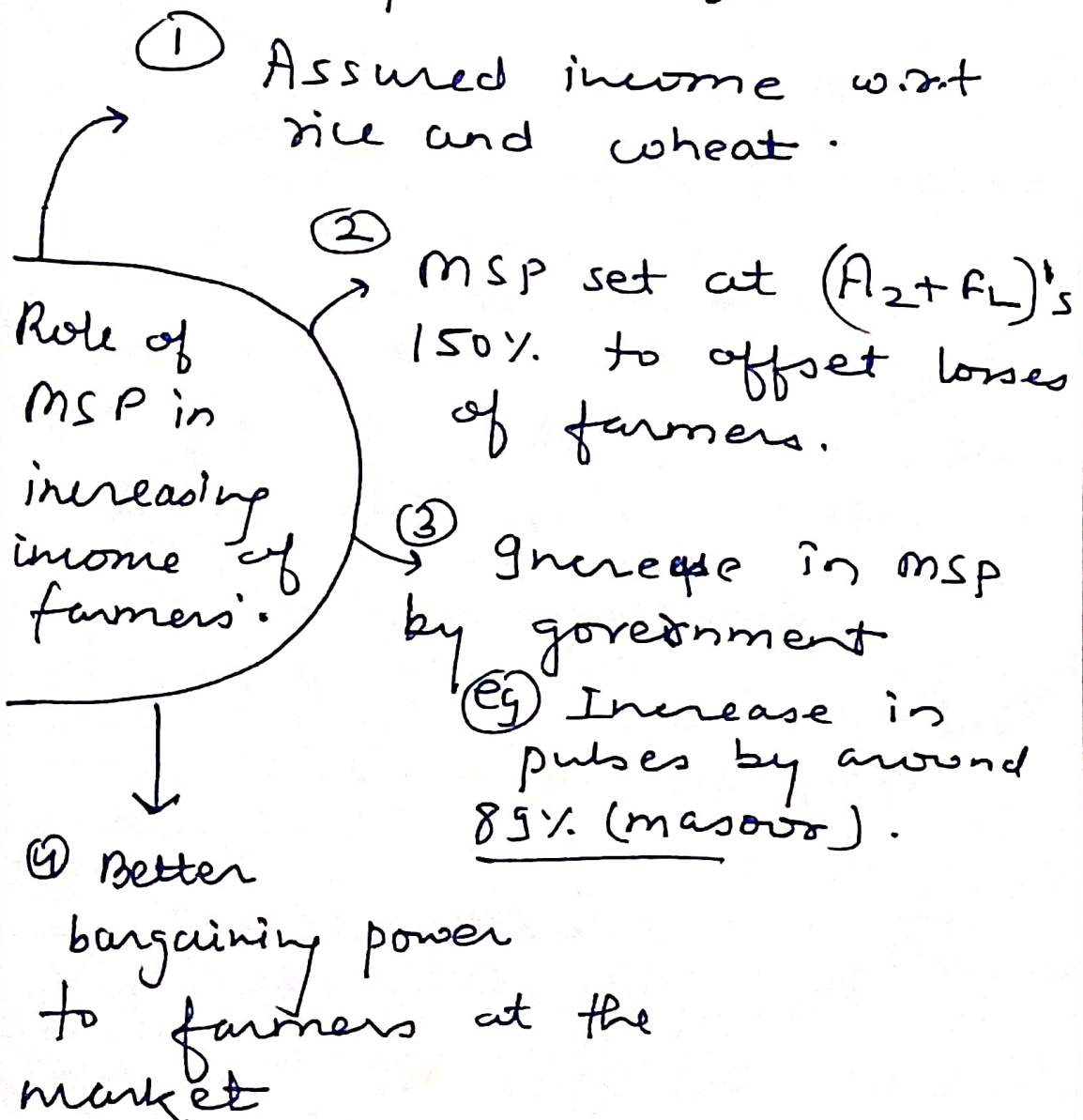
Need for livestock census

- ① Identification of better breed suitable for a particular region.
- ② Proper disease monitoring and R&D promotion at a large scale.
- ③ Awareness to farmers with respect to breeding time, health checkups etc. of ~~liv~~ animals.
- ④ Preservation of indigenous varieties of animals.

Livestock sector is the possible solution to rising disguised unemployment in agriculture which can be enhanced by constant government support by initiatives like livestock census.

④

Minimum Support Price (MSP) is given to farmers when market price do not compensate for the input cost of production.



Challenges faced by farmers

① Open procurement only for wheat and rice and not for

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other crops.

- ② Cartelisation of traders at APMCs hindering farmer's bargaining ability.
- ③ Lack of proper weighing, assaying and grading facilities at APMCs inhibit farmers better avenues to sell their produce.
- ④ Non-diversification of crops due to strong support mechanisms for wheat and rice.
- ⑤ Lack of growth in MSP in wheat and rice (around 12-13%) w.r.t that of pulses (around 70-80%).

→ ① Promotion of investment in agriculture

Way forward → ② Better post-harvest facilities

→ Institutional Support & credit facilities to farmers.

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(5)

~~Art~~ Artificial neural networks are interconnected nodes that can incorporate ^{mimic} & display human like intelligence.

Importance in machine learning & artificial intelligence :-

- ① Computation of large scale of data.
- ② Seamless transmission of through data channels.
- ③ Very rapid calculation of probable data sets.
- ④ Robust interconnectedness and prevention of data leakage.

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- ⑤ Storing and reutilisation of data.
- ⑥ Strong encryption, thus, preventing data breach.

With the rise of AI and ML in today's world, artificial neural networks becomes crucial just as neurons are crucial to humans.

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⑥

UAVs are flying objects that have redefined modern warfare.

Importance in defense sector & warfare :—

- ① Better and improved surveillance across border.
- ② Precision strikes and intelligence gathering.
- ③ Prevention of loss of human lives.
- ④ Negate human error is judgement while carrying out operations.

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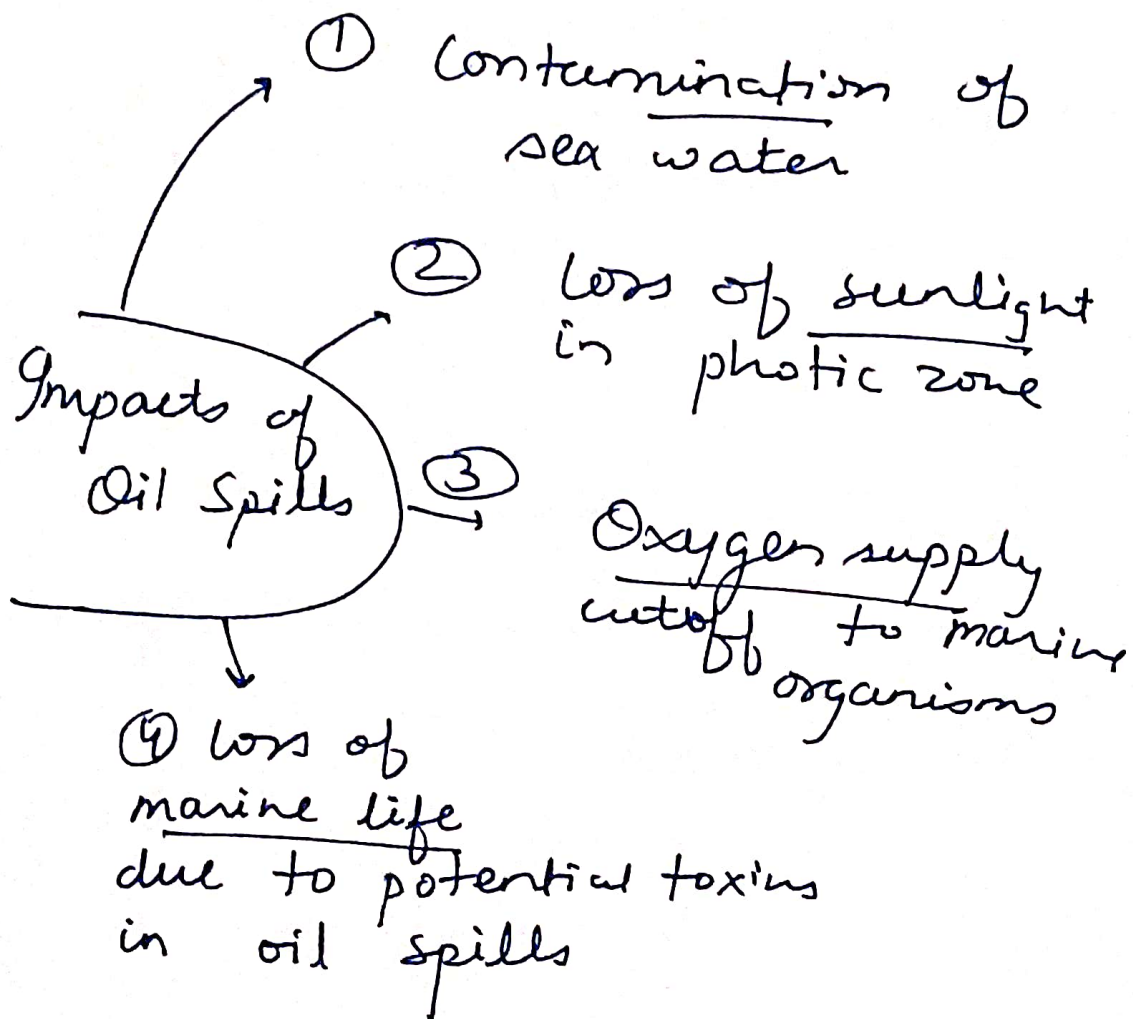
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- ⑤ Reduce cost of military operations.
- ⑥ Capability to strike deep inside enemy territory.
- eg) Ukrainian drone strikes in Russian heartland.

Thus, UAVs are redefining, redesigning and reinventing modern warfare in today's world.

7

Oil Spills are one of the major environmental threats to oceans.



Methods to clean up oil spills include:—

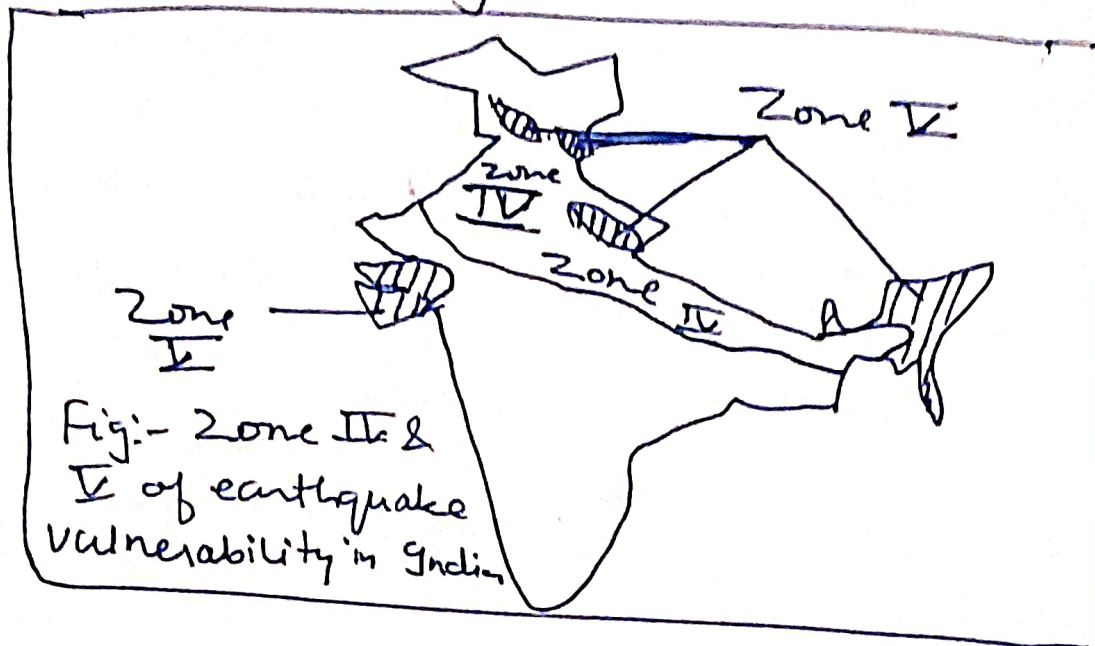
- ① Floating barriers known as booms to prevent spread of spills.

- ② Use of skimmers to remove oil from surface.
- ③ Manual removal techniques.
- ④ Use of vacuum trucks.
- ⑤ Use of absorbents like pads, mats etc. designed to absorb oil spills.
- ⑥ In-situ burning of oil to remove it.
- ⑦ Bioremediation techniques by using oil eating mechanisms.

SDG 14 and commitments to a sustainable ocean environment mandates prevention of oil spills in seas.

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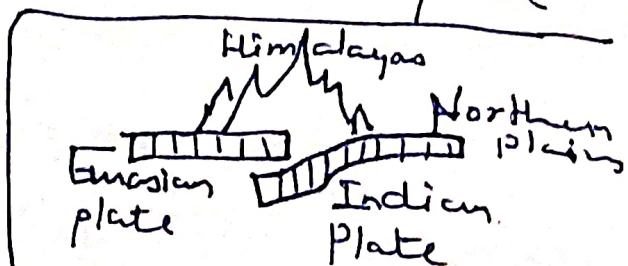
- 8) Northern India is more vulnerable to earthquake than southern India due to active plate boundary.



Reasons for northern India's vulnerability :-

- ① Active Indo-Eurasian plate boundary.

- ② Presence of high mountainous



regions like Himalayas which can trigger massive landslides, avalanches etc. in case of an

Earthquake.

- ③ Changing isostatic balance due to excessive deforestation, building, construction etc activities in Himalayan region. This could trigger earthquakes, dam burst etc.

(eg) Tehri dam construction in Uttarakhand

India's preparedness

- ① Building codes in cities like Delhi to ensure minimum susceptibility to earthquakes.
- ② Ban on ~~illegal~~ mining activities in Himalayas.
- ③ Regulation and environmental audits of ^{developmental} projects in states like Uttarakhand.
- ④ Afforestation in the vulnerable mountainous regions.

Although it is extremely hard to predict earthquakes, preparedness is the key to minimise damage.

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⑨

Cryptocurrency and other emerging technologies are reinventing modes of money transfer.

They can contribute to money laundering & terror financing by:—

- ① Hide the source of transaction.
- ② Strong encryption presence in such transactions lead to problems of tracing the intermediaries and beneficiaries.
- ③ Can bypass monitoring of regulatory authorities.
- ④ Large transactions could be carried out easily and in a discreet manner to finance activities like terrorism.

Government's steps to tackle such issues:—

- ① ~~Not~~ Not recognising ^{cy}cryptocurrency as a legal tender.
- ② 30% tax on all crypto transac^{ti}ons alongwith 1% tax deduction at source.
- ③ Institutional mechanism like computer emergency response team (CERT-In) and Indian Cyber Crime Coordination Centre (I4C) to prevent data theft and cyberattacks.
- ④ Legislation such as SPDP Act to prevent misuse of sensitive data.

With the rise of AI, digital economy and other & dynamic tools, security & management also requires to be fluidic and dynamic.

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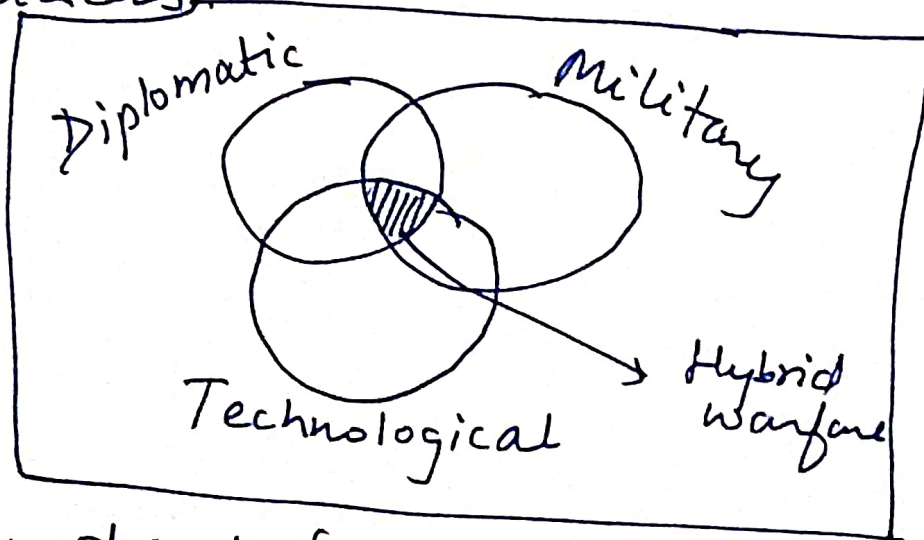
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Hybrid warfare include the use of drones, missiles, electronic warfare, technological warfare etc.

Difference with conventional warfare :-

- ① Hybrid warfare does not involve human soldiers at the battle field.
- ② Hybrid warfare is generally considered with launching attacks from within our territory to the enemy's territory without putting soldier's foot in the hostile territory which is crucial in conventional warfare.
- ③ Conventional wars include arms that are carried by

soldiers and machines like assault rifles, artillery support etc while hybrid wars on the contrary are a mix of conventional wars plus diplomatic pressures and technological attacks;

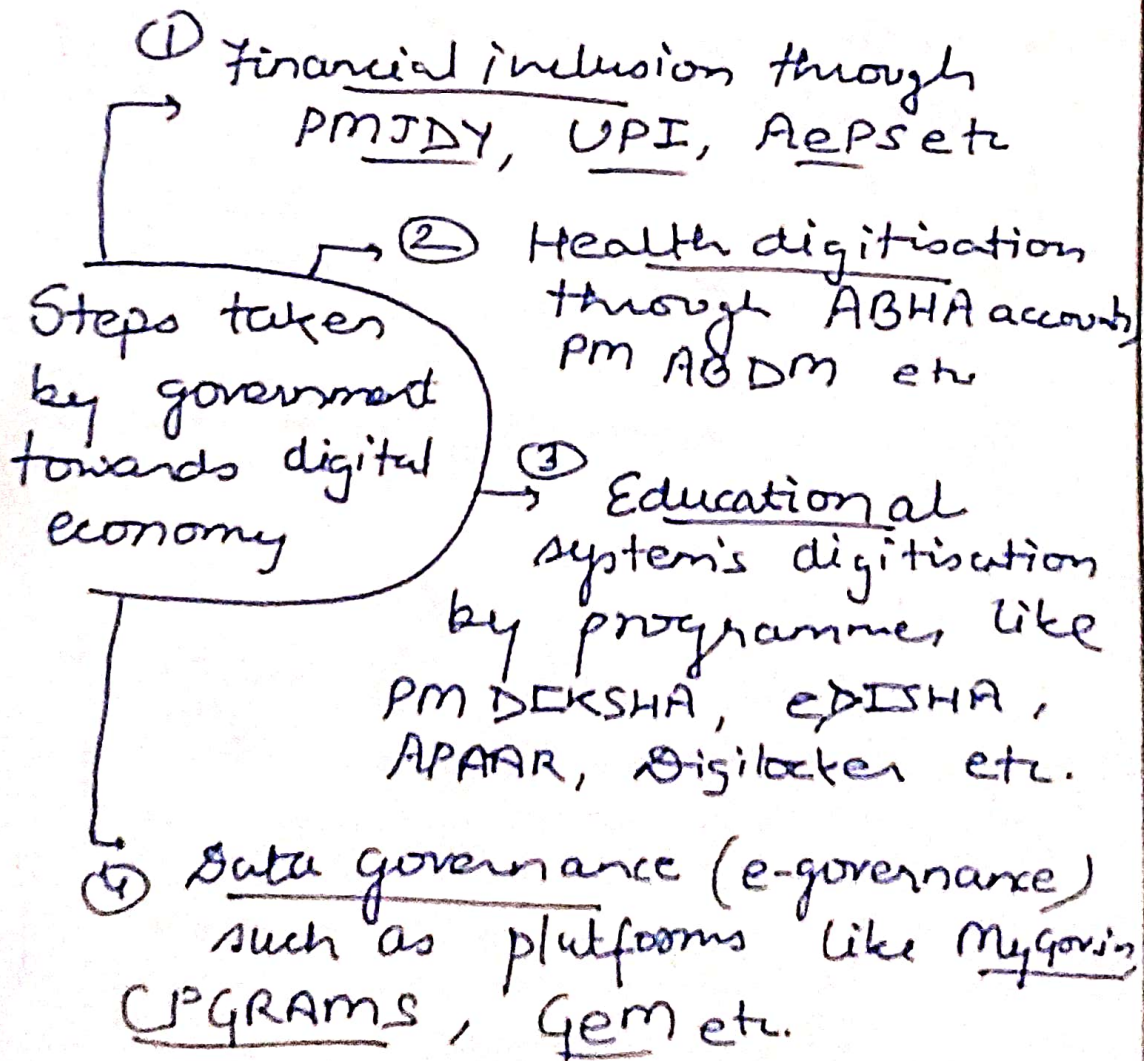


Way ahead for India :-

- ① R&D in newer technologies like 5th gen aircrafts.
- ② Strong technological boost in defense sector.
- ③ Diplomatic engagements and maintenance of supply chain of critical technology like semi-conductors.
- ④ Secure parameters like better radar system, cyber security etc.

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11) Government of India is poised to make India a centre for global digital economy through continuous thrust upon programmes and schemes like Digital India Mission, data governance etc.



Digital economic ecosystem enables the following:-

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- ① Inclusive growth by equitable opportunities to the marginalised.
- ② Efficiency in service delivery.
- ③ Seamless transmission of data, thus, preventing leakages and enhancing accountability.

However, the true realisation of digital economy is yet to be realised because of the following :-

- ① Digital divide :- There is a significant challenge of digital illiteracy especially in the rural areas.
- ② Upfront cost :- Data and Smartphone costs prevents the poorer sections from utilising their service.
- ③ Infrastructural gaps :- Lack of proper transmission mechanisms of power, network etc. challenges seamless data flow in remote areas.

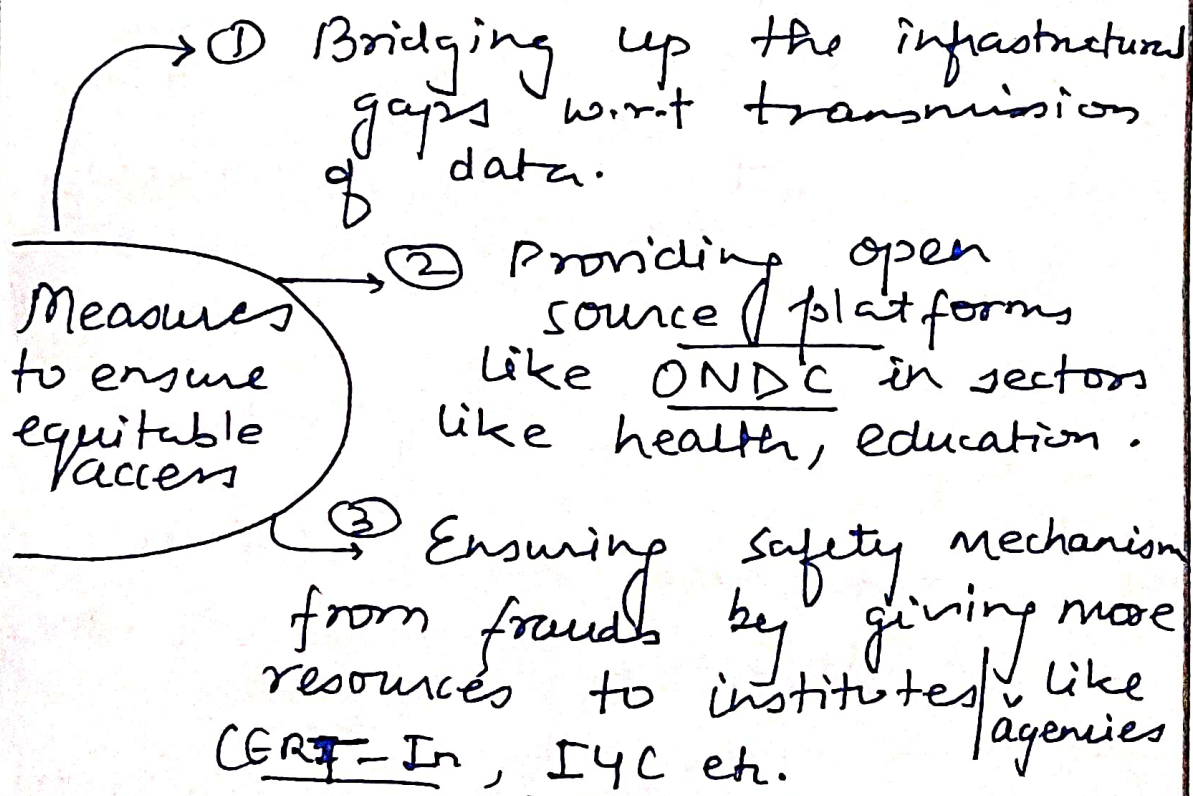
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(4) Data theft and privacy concerns:
Issues of financial fraud, leakages of critical information demotivates people to use digital technology.

(5) Cyberattacks and deepfakes:—

These have been enhanced due to coming up of AI generative models in the recent past.



Realising the true Viksit Bharat by 2047 requires enabling true and equitable access to digital resources to the citizens.

12)

According to ILO, by 2030 75 million jobs would be at complete risk due to the use of artificial intelligence (AI).

Impact of AI on employment

- ① Automation of jobs, especially entry level and low end jobs like clerical, data keeping etc.
- ② Enhancing technological jobs like visual graphics, sound-mixing, coding etc.
- ③ Amplifying R&D by faster computation of data, thus, boosting productivity.
- ④ Better and improved rate of diagnosis in health sector.

Challenges due ^{to} AI in employment

- 1) Loss of jobs especially entry level. IMF suggests 40% of global employment threatened by AI.

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- 2) Digital divide and inequality would deepen due to selective accessibility of AI to few, contributing to "winner takes all" environment.
- 3) Ethical concerns due to rising deepfakes and AI driven financial frauds.
- 4) May lead to 'Eagle's Pause', i.e., prolonged unemployment of AI displaced workers.

Measures to use AI to promote job growth :-

- 1) Training and skilling w.r.t data, machine learning and AI computational skills of workers.
- 2) Building social infrastructure with global consensus to prevent misuse of data by AI.
- 3) Policy on responsible and ethical use of AI in industries, governance etc.

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- 4) Focus on labour augmentation rather than labour displacement.
- 5) Balance labour and capital while promoting AI into various sectors of economy.

The impact of AI on employment is yet to be fully understood as AI is in its nascent stage.

Thus, proactive measures w.r.t to labour skilling, education and training becomes the key to ensure minimum repercussion and maximum utilisation of AI in every sphere of the economy.

- 13) Indian agricultural sector's productivity faces twin challenges of pre-harvest and post-harvest losses leading to constraints in its contribution to GDP of the country.

Reasons for post harvest losses

- 1) Inadequate storage facilities.
- 2) Lack of grading, assaying and weighing mechanisms at the APMCs.
- 3) Poor road connectivity which leads to higher transportation cost from field to market.
- 4) Non-diversification of marketing opportunities for farmers.

Of the above, the more critical losses is observed due to improper connectivity

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and marketing facilities as follows:-

- 1) Rise in transportation, thus, rise in input cost of production. Hence, farmers lose competition in the market.
- 2) Connectivity issues discourages farmers to sell at the market, thus, they are forced to sell their produce to middlemen at the farm for reasonably low price.
- 3) Cartelisation of traders at APMCs prevents bargaining powers of farmers to negotiate better prices.
- 4) Delays and corruption also contribute to farmers' lack of ~~the~~ reliability on APMCs.

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Government has taken several steps to bridge such gaps like:—

- 1) Construction of rural roads through PM Gram Sadak Yojana.
- 2) Diversifying market facilities through ENAM, ONDC etc for agricultural produce.
- 3) Promotion of FPOs to improve bargaining power of the producers.
- 4) Transparency at APMCs by use of digital technology like eSeva.

To prevent farming losses and achieve the aim of doubling farmer's income, a robust post-harvest system becomes an utmost priority in agricultural sector of our country.

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14)

Government of India allocates numerous direct and indirect subsidies in agriculture which influences agricultural economy in our country.

Direct Subsidies :-

- 1) Direct Benefit Transfer (DBT) through schemes like PM KISAN.
- 2) Irrigation subsidy such as monetary support given to install micro-irrigation facilities through PM KSY.

Indirect subsidies :-

- 1) Fertiliser subsidy
- 2) Electricity subsidy given to farms.
- 3) Food subsidy and MSP for procurement.

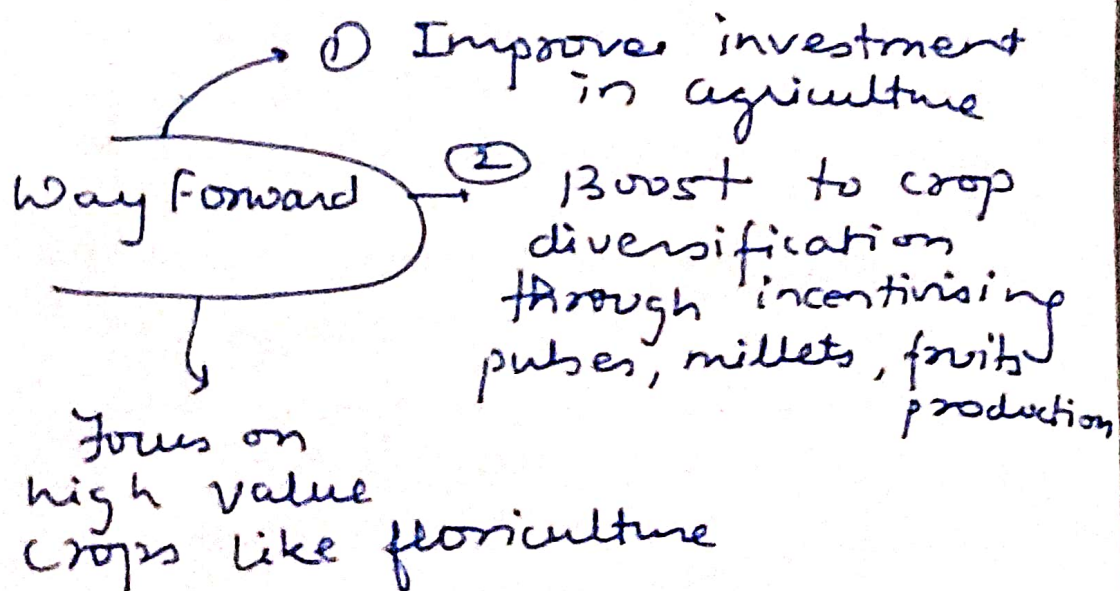
Impact of subsidies on cropping diversity : —

- 1) Inhibit crop diversification by promoting growth of wheat and rice as a result of open procurement at MSP.
- 2) Promotion of unsustainable agri-practices w.r.t agro-ecological zones due to cheap fertiliser and irrigation facilities.
(eg) Rice grown in Punjab
- 3) Excessive use of fertilisers leading to soil salinisation.
(eg) Soil turning white in Punjab due to vast fertiliser use.

Impact on farm economy

- ① Increase in inequality in farming ecosystem as rich farmers have better access to fertilisers, irrigation facilities.

- ② Rise of wheat-rice economy with little incentive and infrastructural support to crop diversification.
- ③ Improved productivity due to better availability of irrigation, power and fertiliser inputs.
- ④ Assured income to farmers in the form of DBT and MSP procurement, thus, minimising their losses.

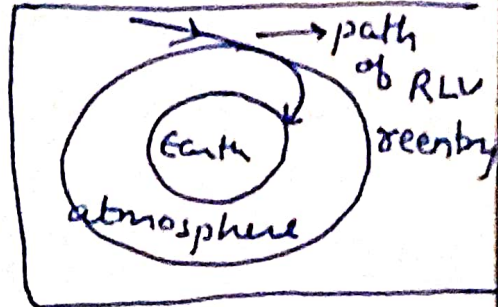


Farming ecosystem needs twin support of monetary and marketing facilities to equip themselves for crop diversification and enhance their income.

15) Reusable Launch Vehicles (RLVs) are special launch vehicles that are capable of returning back to the Earth after deploying space capsule in the outer atmosphere.

RLVs make a parabolic path to reenter the Earth's atmosphere.

RLVs can play crucial role in future space missions by :-



- ① Reducing cost of space mission by reducing number of launch vehicles.
- ② Improve sustainability by minimising space-debris.
- ③ Provide impetus to manned missions to space by ensuring safe returns.

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④ Can conduct experiments in space without requirements of astronauts and help in fields like pharmaceuticals, cancer research etc.

However, constraints like fewer nations ^{& companies} to have this technology like SPACE-X is an issue regarding RLVs.

India's initiatives towards RLVs

① ISRO is leading RLV development and it has conducted several technology demonstration like RLV-HEX (2016), RLV LEX-1, RLV LEX-2 etc.

② ISRO is also planning to develop orbital re-entry vehicle (ORV) on the platform of RLV-TD.

③ Government is also targeting to launch Next Generation Launch Vehicle (NGLV) to use re-entry technology in upcoming future space missions.

India's vision to developing itself as a critical space power and the aim to ^{send} a manned mission to moon by 2040 rests on the development of RLV.

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- 16) Government launched Bio E3 policy to enhance green growth with a commitment to our vision of LIFE and net zero by 2070.

Aims and Objectives of BioE3 policy

- 1) Enhance biomanufacturing to substitute products such as vaccines, food etc that would have been otherwise synthetic.
- 2) Promotion of biofoundries and syn biology.
- 3) Manufacturing of designer protein based enzymes and chemicals that could degenerate plastics.
- 4) Focus on precision biotherapeutics.
- 5) promote climate resilient agriculture by producing climate resilient seeds.

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6) Space and marine resources to be developed and utilised in a sustainable and ecological manner.

'Green Growth' can be achieved by the policy ~~be~~ due to:—

① 3 E's of policy i.e., environment, employment and economy, thus focusing on circular economy.

(eg) using agricultural waste into manufacturing of biogas and as manure in the field.

This leads to minimisation of waste and resources.

② Bioeconomy contributes 4.51% of GDP which would be around \$300 bn by 2030

③ Use of Bio AI hubs to

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enhance R&D in fields like
agriculture, sustainable waste
disposal etc.

4) Promotion of 'Pharming'
i.e., production of GM crops
and medicinal crops.

5) CCUS is to be scaled by
this policy.

BioE3 policy cements
India's commitments to
balance growth with sustainability
thus, promoting India as a
global leader in fight
against climate change.

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17)

Kyoto Protocol signed in 1997 aimed to reduce greenhouse emissions and thus, mitigate issues of global warming.

It introduced
3 market mechanisms :-

① Emission Trading :-

To sell and purchase carbon credits.

② Joint Implementation :-

To develop synergy for climate action.

③ Clean Development Mechanism:-

To promote cleaner & greener technologies.

Similarly Article 6
of Paris Agreement focuses

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on international cooperation
to achieve climate goals.

It aims to
achieve this through carbon
markets.

Significance of global carbon
markets in achieving net zero:-

- ① Equitable access and opportunity
to develop clean environment.
- ② Economic incentives to
low income countries by selling
their carbon credits to
rich high income countries.
- ③ Fostering cooperation and
mutual technology transfer
to mitigate climate change.

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(4) Mobilising private capital by encouraging private channels to support for reaching net zero goals.

(5) Promoting innovation and technology by pushing R&D in carbon sequestration, capture, storage and ~~reuse~~ reuse technologies.

With global temperatures already breaching Paris agreement targets, it is the strongest need of the hour to push for international cooperation for offsetting carbon emission.

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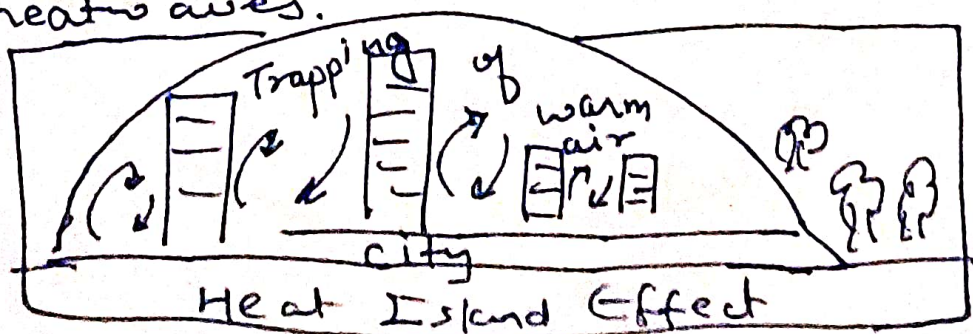
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Heatwaves are defined as the continuous rise of temperature above normal average, thus, giving extreme weather conditions over multiple days.

Rise in frequency of heat waves has been due to:-

① Climatic changes like El-Nino, rise in global temperatures, shifting of trade winds pattern due to change in Polar Vortex etc.

② Rapid urbanisation has caused loss of greenery and inland water bodies. Thus, leading ^{heat} island effect which have intensified heatwaves.



Increase in impact of heatwaves:-

- ① Extreme temperature can trigger warm winds like loo, that ^{can} lead to several diseases.
(eg) Ballia faced 75 deaths in 2023 due to loo and heatwaves.
- ② Heatwaves combined with pollution in cities act as a barrier to better air quality leading to respiratory issues.
- ③ Climate change also intensifies heatwaves due to delay in monsoonal rainfall in parts of northern India.
- ④ Loss of water bodies in the cities have intensified groundwater loss in cities.

Role of Heat Action Plan in mitigating heatwaves impact:—

- ① Proper infrastructure facilities like coolers in hospitals and other public places like railway stations.
- ② Guidelines to residents regarding impending rise in temperature, thus, increasing awareness.
- ③ Promotion of green growth and rejuvenation of inland water bodies through schemes like ^{ABY} pm ~~ABY~~ yojana (Atal Bhujal Yojana).

Proper coordination among authorities and citizens is the cornerstone to prevent losses from heatwaves across India.

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- 19) Geographical location of India has pushed it to multiple security threats from state and non-state actors.

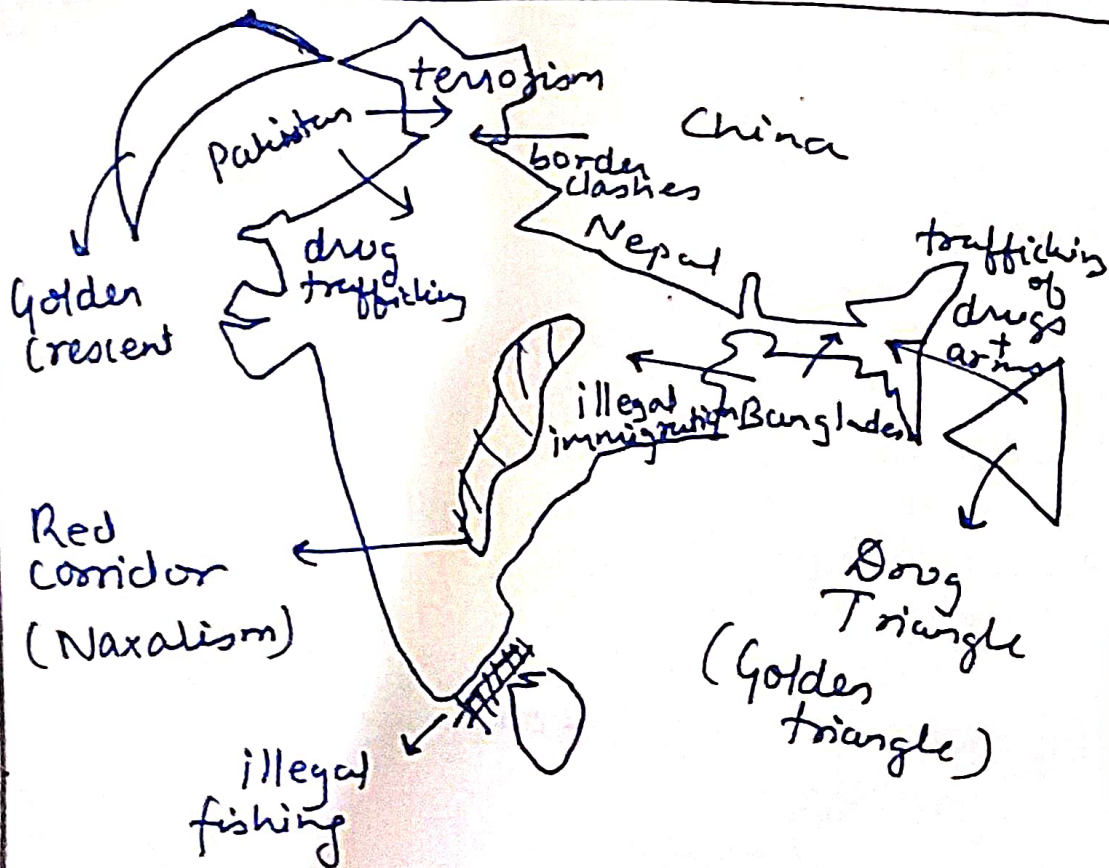


Fig:- India's security challenges

External State Challenges

- ① Terrorism :- Sponsored by non-state actors in Pakistan like Juish-e-Mohammad, LeT etc.
- ② 2008 Mumbai Attacks

② Drug Trafficking :- From

Golden crescent, i.e., Myanmar, Laos, Cambodia to north-eastern states. Also from Pakistan to Punjab.

(eg) Manipur is facing issues of drug trafficking from Myanmar.

③ Arms Trafficking :- From

Myanmar, Pakistan, Nepal to Northeastern and Northern states.

④ Counterfeit currency from Nepal and Pakistan.

⑤ Border issues such as at LAC with China

⑥ Non-State Actors poses challenges such as :-

① Hamper developmental projects.

(eg) Naxals in Chattisgarh.

② Attack on armed personnel.

(eg) Naxal attacks on CRPF personnel

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- ③ Rise of Maoist insurgency in north-eastern states like Assam.
- ④ Illegal trafficking of woods and other forest resources like poaching of elephants.
- (eg) Poaching for elephant tusks in Seshachalam forests in Andhra Pradesh.

Strategies to tackle such challenges :-

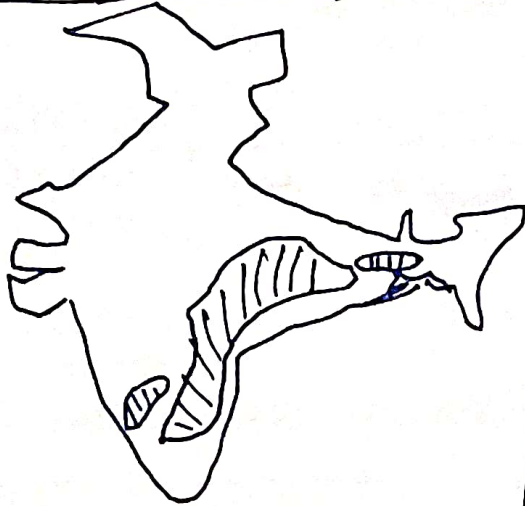
- ① External state actors :-
 - (a) Enhance border security.
 - (b) Fencing of border areas.
 - (c) Monitoring by use of AI and drone surveillance.
- ② Non-state actors :-
 - (a) Deterrence by development approach.
 - (b) WHAM approach to tackle naxalism.
 - (c) Use of minimal force.

India needs dynamic and effective strategic planning and implementation to curb security threats.

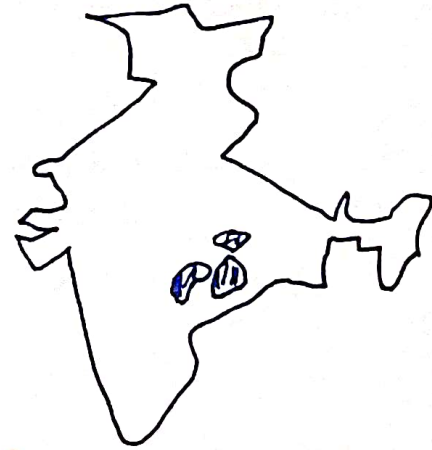
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20)

Left Wing Extremism (LWE)
peaked in 2009, affecting
more than 200 districts in
our country.



LWE affected area
in 2009



LWE affected
area in
2024

Challenges due to LWE

- ① Security challenges in tribal areas due to attacks on armed personnel.
- ② Hotbed for arms trafficking
- ③ Hamper local development.
- ④ Exploitation of tribal resources.

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Through consistent government efforts, LWE has remarkably reduced in our India with only a few districts affected by extreme LWE by 2024.

Government's approach

① Development as Deterrence:-

Building roads, schools, hospitals to address grievances of people in LWE affected regions. It has also contribute to enhanced mobility of troops.

② Winning Hearts and Minds (WHAM) approach to motivate Naxals to put down arms and surrender.

③ Incentives such as monetary and institutional support like skilling & training given to those who surrender.

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④ Use of force in a targetted ~~manag~~ manner to ensure minimal collateral damage.

Government's commitment to end LWE by 2026 is very well on track and India might be free of the menace of LWE by combination of force and freedom to tackle this security challenge.