

NEXT IAS

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FLT

FLT+

MAIN TEST SERIES 2023 (FULL LENGTH TEST-3)

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Question paper will be provided separately and can be taken by the candidates after conclusion of the exam.

SUBJECT/PAPER
GENERAL STUDIES

Invigilator's Sign. :

(For filling by Examiners only)

Evaluator Code :

Q.No	Pg No.	Maximum Marks	Marks	Total
1	1			
2	3			
3	5			
4	7			
5	9			
6	11			
7	13			
8	15			
9	17			
10	19			
11	21			
12	24			
13	27			
14	30			
15	33			
16	36			
17	39			
18	42			
19	45			
20	48			
Grand Total				

Signature

MACRO COMMENTS

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2. Write your registration number and other particulars, in the space provided on the cover of QCA Booklet.
3. Write legibly and neatly. Do not write in bad/illegible handwritings.
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6. Handover your QCA Booklet personally to the invigilator before leaving the examination hall.

Q.1 अप्रत्याशित कर (विंडफॉल टैक्स) से आप क्या समझते हैं? क्या आपको लगता है कि अप्रत्याशित करों से संपदा का प्रभावी ढंग से पुनर्वितरण हो सकता है और अधिक आर्थिक समानता को बढ़ावा मिल सकता है?

(150 शब्दों में उत्तर दीजिए) 10 अंक

What do you understand by Windfall tax? Do you think that windfall taxes can effectively redistribute wealth and promote greater economic equality?

(Answer in 150 words) 10 Marks

Windfall taxes are imposed on large profits made by PSUs/private companies/individuals due to economic shocks like sudden fall in global petroleum prices.

Windfall taxes ⇒ equality :-

- ① Reduce economic gap between rich and poor.
- ② Use of taxes for socio-economic development of schools, hospitals, skilling etc.
- ③ Just because profits were not due to company's production but by luck.
- ④ Shield poor from future shocks
of Petroleum windfall collection can be used to provide fuel subsidy when prices increase.

However, windfall taxes is not a panacea for economic equality

Limitation of Windfall taxes :-

- ① limits profitability of enterprises → less investment and job creation ⇒ poverty.
- ② Windfall taxes are on-off i.e. can be imposed only in special circumstances → not sustainable source of taxes.
- ③ limited pool of companies/individuals on whom it can be imposed.
- ④ Tax terrorism ⇒ poor FDI and capacity expansion.

Though windfall taxes can provide tempo-
-rary resources to state, structural
steps like formalisation of economy will
help in expanding tax base.

Q.2 नई नैतिक नीति समिति (एमपीसी) व्यवस्था के अंतर्गत मुद्रास्फीति लक्ष्यकरण को क्रियान्वित करने की कथित सफलताओं और चुनौतियों पर चर्चा कीजिए। (150 शब्दों में उत्तर दीजिए) 10 अंक

Discuss the perceived successes and challenges of implementing inflation targeting under the new Monetary Policy Committee (MPC) regime. (Answer in 150 words) 10 Marks

Monetary Policy Committee was formed on the recommendation of Ujjit Patel committee to pro-actively check rising inflation through monetary measures.

Limit inflation in band of 2-6%.

6 member committee decision by voting

Inflation targeting framework

Report to government if inflation target breached for 2 quarters.

Success of MPC :-

- ① Less inflation from 10% plus in 2012-13 to average 4% since 2016.
- ② Raising interest rates by RBI eg by 200 basis points since 2020.
- ③ Innovative methods like operation Twist, open market operations, external bench-marking for effective interest rate management.

- ④ Better coordination between government and RBI (government representative in MPC) which ensuring autonomy to RBI.

Limitations/Challenges :

- ① Ineffective tool :- Inflation has arisen due to structural factors like supply chain disruptions (fuel and fertilizer), poor crop output due to erratic weather etc. & interest rate tweaks can't tackle.
- ② Poor implementation + time lag between rate changes and its adoption by banks.
- ③ Impact growth by raising credit costs → higher interest rate feeds into inflation since input costs (credit) of individual / companies increases.

Monetary and Fiscal policy need to work in tandem along with structural reforms for effective inflation management.

Q.3 भारत में सतत कृषि को बढ़ावा देने और खाद्य सुरक्षा में सुधार के लिए मोटे अनाज उत्पादन की क्षमता का आकलन कीजिए। (150 शब्दों में उत्तर दीजिए) 10 अंक

Assess the potential of millet production in promoting sustainable agriculture and improving food security in India. (Answer in 150 words) 10 Marks

Millets are coarse cereals being promoted by India at global level through UN International Year of Millets 2023, due to its multiple benefits.

Millets ⇒ sustainable agriculture :-

- ① Tackle water crisis :- Millets consume 60% less water than traditional crops like wheat and rice → check water table decline
- ② Soil health :- Millets restores soil fertility. It also requires less application of fertilizer and pesticides → reduce soil toxicity.
- ③ Boost farmer income :- high remuneration with low input cost.
- ④ Tackle climate change :- by making agriculture more resilient.
e.g. Millets are heat resistant and can be grown in deficit rain also.

Millets \Rightarrow food security :-

- ① Tackle hunger :- India rank in Hunger Index is dismal 107/135; millets will ensure every stomach is filled.
- ② Nutrition security :- Millets are rich in Iron, Vitamins \Rightarrow help tackle under-nourishment, Anemia.
eg 50% women are Anemic (NFHS-5).
37% children " stunted
- ③ Secure production in face of extreme weathers.
↳ Punjab's wheat production declined by 10% due to heat stress \rightarrow prevent such crisis.

Government is promoting millets through declaring it as neutra-cereals, National Millets Mission and including it under Food security Act. Further steps like awareness generation, processing infrastructure, private investment and MSP will help in boosting millets production.

- Q.4 जल जीवन मिशन में पेयजल की उपलब्धता और पेयजल तक पहुँच में क्षेत्रीय विषमता को समाप्त करने का सामर्थ्य है। मिशन के महत्त्व पर प्रकाश डालते हुए, वांछित उद्देश्यों की प्राप्ति में अंतर्निहित बाधाओं पर चर्चा कीजिए।
(150 शब्दों में उत्तर दीजिए) 10 अंक

Jal Jeevan Mission has the potential to end the regional disparity in the availability and accessibility of drinking water. Highlighting the significance of the mission, discuss the underlying impediments in achieving the desired objectives.
(Answer in 150 words) 10 Marks

In 2019, only 4 crore households (25%) had secured supply of piped drinking water. Jal Jeevan Mission aims for universal coverage ensuring 'har ghar jal' by 2024.

Significance of Jal Jeevan Mission :-

- ① Ensure healthy individuals by checking diseases due to drinking unclean water -
eg. Typhoid, Diarrhea etc
- ② Save time spent on fetching water in rural areas from distant wells → women empowerment → spare time will be used in economic activity.
- ③ Check 'water deaths' due to droughts especially in areas like Vidharba.
- ④ Conserve groundwater → individuals won't dig tubewells for drinking water.

Impediments :-

- ① Last mile connectivity is difficult[^] to distant hamlets.
- ② Infrastructure laying costs are high of pipes and pumps.
- ③ Quality of water needs to be monitored regularly to check contamination.
eg. Bengal → Arsenic Contamination.
- ④ Coordination issue among:- Centre-state-PRI, different ministries etc.

Under the Mission, 7 crore households have already been provided water in last 3 years. Through multi-stakeholder approach, 'water for all' goal by 2024 can be realised.

Q.5

बैटरी ऊर्जा भंडारण प्रणाली (बीईएसएस) से आप क्या समझते हैं? इसके अनुप्रयोगों पर चर्चा कीजिए और यह भारत के ऊर्जा कार्यक्रम में किस प्रकार क्रांतिकारी बदलाव ला सकता है। (150 शब्दों में उत्तर दीजिए) 10 अंक

What do you understand by Battery Energy Storage Systems (BESS)? Discuss its applications and how it can revolutionize the energy program of India. (Answer in 150 words) 10 Marks

Battery Energy Storage System are storage device where energy produced from sources like :- hydrogen cell, Chemical cell etc can be stored for usage later.

Applications of BESS :-

- ① Store excess energy → create energy pool for future use.
- ② Supply to multiple consumers from a single source → create grid for supply.
- ③ Decentralised production :- energy from multiple batteries can be supplied to unified storage system.

BEES ⇒ revolutionize energy program :-

- ① Shift towards Renewable Energy → helps realise 70% net zero by 2070 and 50% from RE by 2030 targets.

② Solves power intermittency issue

eg. Solar energy stored when sun is
shining can be used ~~to~~ at night.

③ Integrates energy from multiple production points :- solar, wind, hydro \Rightarrow diversification of energy base.

④ Boost income of farmers \rightarrow solar as 'third crop' \rightarrow eg PM-KUSUM.

Through hand-holding private sector, R&D, awareness generation and securing supply of key inputs like lithium, India can become a hub of BESS.

Q.6 इसरो के गगनयान मिशन में हुए विकास और उपस्थित चुनौतियों पर संक्षिप्त चर्चा कीजिए। समाज के लिए मिशन के संभावित लाभ क्या हैं? (150 शब्दों में उत्तर दीजिए) 10 अंक

Discuss in brief developments and challenges in the Gaganyaan mission of ISRO. What are the possible benefits of the mission for the society? (Answer in 150 words) 10 Marks

Gaganyaan is a human spaceflight mission aimed at sending Indians to space using indigenous platforms and technologies.

Developments in Gaganyaan :-

↳ Launch vehicle GSLV-Mk III tested
eg. in Chandrayaan 3 Mission -

↳ Development of recovery vehicles to check accident risks

↳ Training of Indian astronauts in zero gravity environment in Russian labs.

↳ ^{Vyommitra} ~~Sophis~~ → humanoid developed - to be sent as a pre-cursor experiment

Challenges in Gaganyaan :-

① Complex technology :- eg. modules to resist extreme pressure and temperature need to be build.

- ② Re-entry challenge - stabilise the module while entering earth at high speed.
of Kalpana Chawla case.
- ③ Collaboration among different agencies like ISRO, DRDO, Aeronautics Authority of India, Russian Space Agency and NASA involved.

Benefits to society :-

- ① Boost in students interest in space activity \Rightarrow creating future pool of scientists.
- ② Platforms used here can be used for civic purposes like :- deploying communication satellites.
- ③ Job generation in auxiliary industries + sourcing components of mission from MSMEs.

Gaganyaan will also boost India's stature in world making it only the fourth country (after USA, Russia, China) to have conducted human space flight.

- Q.7 "जलवायु परिवर्तन और प्रदूषण से निपटने की हमारी खोज में हरित हाइड्रोजन एक सरल और जादुई समाधान हो सकता है"। भारत के राष्ट्रीय हरित हाइड्रोजन मिशन के आलोक में कथन का आलोचनात्मक विश्लेषण कीजिए।
(150 शब्दों में उत्तर दीजिए) 10 अंक

"Green hydrogen can be the silver bullet in our quest to tackle climate change and pollution". Critically analyze the statement in light of India's National Green Hydrogen mission.

(Answer in 150 words) 10 Marks

Green hydrogen refers to production of hydrogen energy through electrolysis process using green sources of energy as input e.g. solar, wind etc.

Green hydrogen as silver bullet :-

Green hydrogen mission aims to produce 5 MMT of green hydrogen by 2030. This will lead to :-

- ① Mitigate GHG emissions → hydrogen produce only water vapour and oxygen on burning.
↳ Mission aims to mitigate 1 billion tonnes of GHG emissions.
- ② Alternative to coal, biomass which releases gases like CO_2 , SO_2 , NO_2 having high global warming potential.

- ③ Meet Climate change NDCs as agreed in Paris Agreement
of India's goal of 50% R.E by 2030.

However, it suffers from limitations:

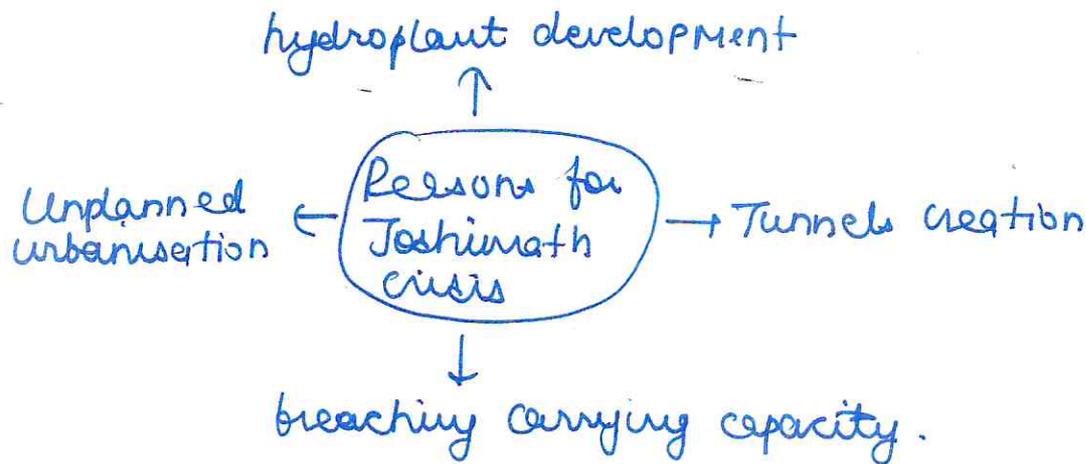
- ① Energy needed for electrolysis process is huge.
↳ reliance on brown hydrogen → polluting.
- ② High cost to create production infrastructure.
↳ conflict with India's developmental needs in light of limited resources.
- ③ Key inputs like Rare earth materials, need to be procured → high cost.
- ④ Lack of scalability ÷ only small scale hydrogen cells of few cws is built now.

Though incentives to industry and consumers and security supply chains for key inputs
India can tap the potential of hydrogen based economy.

Q.8 हाल ही में जोशीमठ, उत्तराखण्ड में आई आपदा के आलोक में, हिमालय क्षेत्र में आपदा प्रबंधन और पर्यावरण संरक्षण के लिए मुख्य सबक क्या हैं? (150 शब्दों में उत्तर दीजिए) 10 अंक

What are the key lessons for disaster management and environmental conservation in the Himalayan region, in light of the recent disaster in Joshimath, Uttarakhand? (Answer in 150 words) 10 Marks

Land subsidence was observed in Joshimath with cracks developing in many houses and roads leading to displacement of thousands of people.



Lessons for disaster management :-

- ① disaster prevention :- through safety audits and Environment Impact Assessment of projects.
- ② disaster mitigation :- minimise damage through Early warning systems and taking preventive measures + retrofitting of structures.
- ③ Disaster response :- timely evacuation through

Coordination among NDRF, SDRF, local administration.

Lessons for environment conservation :-

- ① Vulnerability mapping of areas before developing big projects.
- ② Ecosystem based approach :- studying long term implications of disturbing fragile ecosystems.
- ③ Community engagement + using traditional know-how for sustainable infrastructure.

Jeshimath crisis should be a reminder for sustainable development by respecting natural ecosystems.

Q.9

"पंजाब में हालिया कट्टरपंथी रुझानों से पता चलता है कि खालिस्तान का मुद्दा अभी भी उबल रहा है।" हालिया घटनाक्रम के संबंध में कथन पर चर्चा कीजिए और इससे निपटने के उपाय सुझाएँ।

(150 शब्दों में उत्तर दीजिए) 10 अंक

"The recent radical trends in Punjab show that the Khalistan issue is still simmering." Discuss the statement with respect to recent developments and suggest measures to handle it.

(Answer in 150 words) 10 Marks

Khalistan issue is a secessionist movement demanding a Sikh separate state.

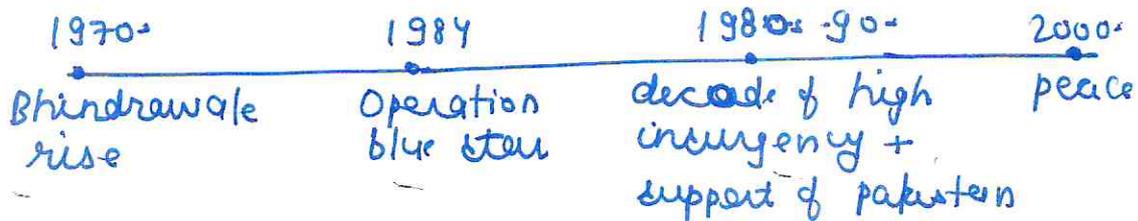


Fig. Evolution of Khalistan issue

Recent developments and Trends :-

- ① Rise of Anritpal Singh (Waris Punjab De) and mobilisation of thousands of youth behind him.
- ② Religious radicalism :- murder of people on sacrilege issues.
- ③ International organisations → like Sikh for Justice pushing for Punjab Referendum.
- ④ Attack on Indian embassy in Canada and UK by Sikh radicals

Measures to handle it :-

- ① Tough security measures
Use of UAPA, NSA against radical preachers.
- ② Smart border management
Track flow of arms, drugs, fake currency from Pakistan → used to support Khalistanis.
- ③ Involving religious leaders in preventing radicalisation.
- ④ International coordination :- extradition of terror accused from Canada to India; sharing intelligence among state police and NIA.
- ⑤ Economic development - job generation and raising per capita income -

Despite recent irritants, Punjab has seen an era of peace and growth. Large majority is nationalist. Through effective coordination, Khalistan demand can be effectively tackled.

- Q.10 ड्रोन संचालन में आसानी और साथ ही इसके संचालक की अनामिता, भारत की सीमा सुरक्षा की चुनौतियों में वृद्धि करती है। विस्तारपूर्वक वर्णन कीजिए और सीमावर्ती क्षेत्रों में ड्रोन समस्या से निपटने के लिए सुझाव दीजिए।
(150 शब्दों में उत्तर दीजिए) 10 अंक

The anonymity and ease of drone operation contribute to the challenges of India's border security. Elaborate and give suggestions to tackle the drone problem in border areas.

(Answer in 150 words) 10 Marks

Drones are Unmanned Aerial Vehicles used for supply of drugs, arms, fake currency across border.

[Drone ⇒ challenge to security] :-

- ① Low cost → used by non-state actors for asymmetric warfare.
- ② Support insurgency in J&K, Punjab, North East by supplying weapons.
 * 500+ drones caught along India-Pak border in 2020-22.
- ③ Difficult to catch → high height - can go ~~to~~ unnoticed.
- ④ Small size → can't be watched by Radar unlike aircrafts.
- ⑤ Plausible deniability :- difficult to fix accountability of operator.

Suggestions to tackle problem :-

- ① Active vigilance of airspace using high tech radar capable of catching drones.
- ② Auto-firing mechanisms to bring down drones.
- ③ Using Jammers to take control of rogue drones.
- ④ Recovery of arms, drugs.
- ⑤ Destroying terror camps through surgical pre-emptive strikes of Balakot.
- ⑥ Guidelines of Drone Rules 2021 classify airspace into Red, yellow, Green + Regulation of Red zones
- ⑦ International agreement on use of drones and checking its misuse by Non state actors.

Indian security agency need to upgrade its defense capabilities to tackle new-age challenges like drone attacks.

- Q.11 विद्युत संशोधन विधेयक, 2022 उपभोक्ताओं, डिस्कॉम के साथ-साथ पर्यावरण के लिए कई लाभ प्रस्तुत करता है। सविस्तार वर्णन कीजिए। साथ ही इसकी कमियों को भी सूचीबद्ध कीजिए और उन्हें दूर करने के लिए कुछ उपायों का भी सुझाव दीजिए।
(250 शब्दों में उत्तर दीजिए) 15 अंक

Electricity Amendment Bill, 2022 brings several advantages for consumers, DISCOMs as well as the environment. Elaborate. Also, list out its shortcomings and suggest some measures to overcome them.

(Answer in 250 words) 15 Marks

Electricity Amendment Bill, 2022 amends Electricity (Conservation) Act, 2001. It aims to improve energy efficiency thereby helping India realise net-zero goal by 2070.

Advantage for consumers, DISCOMs, environment

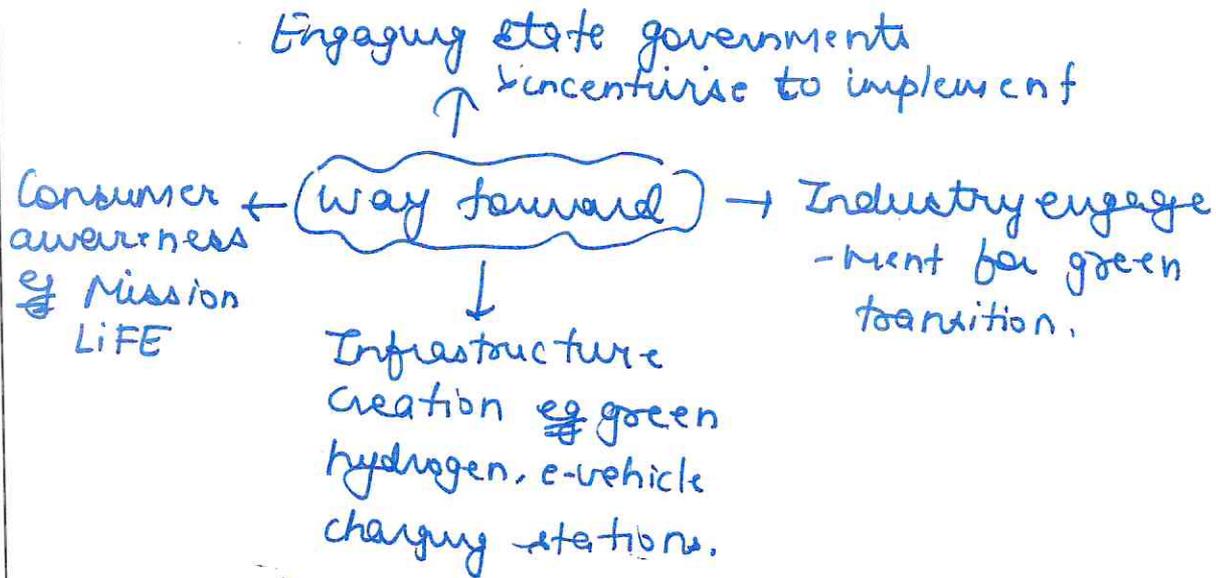
- ① Carbon trading scheme operationalised → drive behavioural change towards saving energy.
- ② Designate consumers of electricity like Railways / Industry can be mandated by government to realise specified energy from green sources.
- ③ Ambit of law expanded to Vehicles → violators need to pay ₹ 50,000 per vehicle for breaching pollution safety norms.
- ④ Increases penalty for violators → create deterrence.

- ⑤ Mandate 'integration of energy efficiency code for buildings above 500 sqm.
- ⑥ Above measures will help in cutting GHG emissions and incentives shift towards energy efficient systems.
- ⑦ Bureau of Energy efficiency: - members increased from 20-27 to 31-37 having consumer and industry representatives.

Shortcomings :

- Violation benchmarks not specified.
- Top down instead of bottom up approach.
- Electricity in state list → implementation lies with state; challenges of cooperative federalism.
- Lack of infrastructure/capacity to step green energy & electricity vehicle charging infrastructure.

Above shortcomings can be removed by :-



With above reforms, India can transition on the path of green economy helping us realise our Panchamrit.

- Q.12 भारतीय प्रतिभूति एवं विनिमय बोर्ड (सेबी) शेयर बाजार के नियमन और निवेशकों के हितों की सुरक्षा में महत्वपूर्ण भूमिका निभाता है। दिये गए कथन के आलोक में, सेबी के समक्ष आने वाली चुनौतियों पर प्रकाश डालिए और इस संबंध में सुधारों का सुझाव दीजिये।
(250 शब्दों में उत्तर दीजिए) 15 अंक

Securities and Exchange Board of India (SEBI) plays an important role in the regulation of the share market and safeguarding the interests of investors. In the light of given statement, highlight the challenges faced by the SEBI and suggest reforms in this regard.
(Answer in 250 words) 15 Marks

SEBI is the securities market regulator.
Its role has come under importance since Hunderburg controversy.

Role of SEBI :-

- ① Ensure smooth trading on markets.
- ② Check market volatility - imposes limits on trade if volatility is too high.
- ③ Protect investor interests - ensuring Transp-arency in market operations.
eg. disclosure requirements for companies.
- ④ Deepening of bond market :- help companies raise capital.
- ⑤ Boosting startup ecosystem :- Companies like Zomato, Paytm listed recently
- ⑥ Monitor global flow of hot money in India's financial markets.

Challenges faced by SEBI :-

- ① Manpower is lacking → poor response to crisis like Hindenburg.
- ② Outdated technology tools being used → unable to catch market manipulation.
- ③ Lack of coordination with other agencies eg to identify round tripping through overseas shell companies.
- ④ Autonomy - allegation of political influence, lack of financial autonomy.

These measures can be overcome by :-

- ① Recruitment of specialists like financial market experts, data analytics etc.
- ② Technological upgradation :- using advanced tech like AI, Machine learning for faster/efficient market analysis.
- ③ Mandatory enforcement of disclosure norms by companies → hefty fines on violators.

(4) Coordination with agencies like:- Income Tax, E.D, Financial Intelligence Unit etc.

(5) Sharing of data with security market regulators of other countries like Tax havens.

(6) Amendment to SEBI Act - more financial and decision making authority.

With increasing investor participation (to more Demat account) and emerging white collar financial crimes, it is incumbent to reform SEBI to ensure effective financial governance.

Q.13 भारतीय अर्थव्यवस्था में एक प्रमुख योगदानकर्ता होने के बावजूद, कृषि क्षेत्र कई बाधाओं से ग्रस्त है जो इसकी वृद्धि और विकास में बाधा डालते हैं। इन बाधाओं पर काबू पाने में प्रौद्योगिकी की भूमिका पर चर्चा कीजिए।

(250 शब्दों में उत्तर दीजिए) 15 अंक

Despite being a major contributor to the Indian economy, the agriculture sector is plagued by several constraints that impede its growth and development. Discuss the role of technology in overcoming these constraints.

(Answer in 250 words) 15 Marks

Agriculture sector contribute 18% to GDP while employing 43% of India's population (Economic survey).

Constraints and Role of Technology :-

Constraint	Technology role
① <u>Poor quality of seeds</u> & low yield.	Genetically modified seeds boosting yield of Bt Cotton, GM Mustard.
② <u>Lack of mechanisation</u> affects productivity	Drip irrigation, happy seeders machines \Rightarrow targeted delivery of inputs
③ <u>High wastage</u> \hookrightarrow Fertilizer/Pesticides	Use <u>Nano-tech</u> like Nano-Urea \rightarrow 70% lower consumption
④ <u>Environment degradation</u> of depleting ground-water level	Use of sprinklers/drip irrigation tech \rightarrow save water.

Constraint	Tech role
⑥ <u>Poor market intelligence</u>	E-NAM platform → real time demand information.
⑦ <u>Damage → unseasonal rain/ weather</u>	Early warning systems → weather updates. Use of <u>drones</u> → assess damage → provide compensation.
⑧ <u>Low econo - Mies of scale</u>	Vertical farming → high output in low area.
⑨ <u>Poor processing infrastructure & high wastage</u> (₹ 92,500 cr)	Cold chain, Warehouses → provide safe storage.

Technology can be effectively tapped by :-

- ① Boosting Research and Development :-
agri R&D dismal low @ 2% of Agri GDP ⇒ increase to 10%.
- ② Dissemination of technology through awareness generation of e-NAM, Nano-Uree ⇒ tap. Krishi Vigyan Kendras.

- ③ Engaging with Private sector for development of new seeds, fertilizers, apps etc .
- ④ Industry 4.0 / Artificial Intelligence :-
integration of cyber-physical systems for
max efficiency and productivity

Technology enabled agriculture can be game changer in boosting farmers income, ensuring agricultural sustainability and mitigating/adapting to climate change.

- Q.14 पर्यावरण एवं प्राकृतिक संसाधनों पर सिंचाई के प्रभाव का मूल्यांकन कीजिए, और कृषि में सिंचाई पद्धतियों की संधारणीयता और समता सुनिश्चित करने के लिए उपाय सुझाएँ। (250 शब्दों में उत्तर दीजिए) 15 अंक

Evaluate the impact of irrigation on the environment and natural resources, and suggest measures to ensure the sustainability and equity of irrigation practices in agriculture.

(Answer in 250 words) 15 Marks

Water is a key input in cultivation →
more than 50% of area in India is irrigated.
However unsustainable irrigation has led to:-

Impact on environment and Natural resource

- ① Declining ground water levels in Punjab-Haryana due to standalone pumps.
eg. water table ↓ by > 50% in Sangrur (Punjab).
- ② High pollution → fertilizers and pesticides seeps to rivers due to irrigation.
eg. high sulphur content in Ganga.
- ③ High GHG emissions :- Methane is released due to residue degradation in flooded irrigation → global warming.
eg. Paddy contribute to 30% of Agri GHGs.
- ④ Depleting rivers due to overexploitation → water stress for population.

- ⑤ High electricity usage to pump water → high GHG emission in energy generation process.

Measures to ensure sustainability & equity

- ① Judicious use of water
eg drip and sprinkler irrigation → precision Agri.
- ② Shifting to water efficient crops like Millets from Paddy-wheat centric.
- ③ Replace water/power subsidy with Direct Benefit transfer → create incentive to save water.
- ④ Catch rain → create ponds, deepening of river bed, rainwater harvesting to recharge groundwater.
eg Amrit Sarovar Mission.
- ⑤ Create irrigation infrastructure → access of water to small and marginal farmers.
↳ PM Krishi Sichai Yojana.

⑥ Water governance :- monitoring of ground-water levels, water usage charges on big farmers, smart meters to monitor usage etc

Sustainable Irrigation is key to ensure food security and climate resilience.

Q.15 परमाणु ऊर्जा और अंतरिक्ष प्रौद्योगिकी के क्षेत्र में क्रमशः डॉ. होमी जहाँगीर भाभा और डॉ. विक्रम अंबालाल सारभाई के योगदान से भारत को रणनीतिक रूप से किस प्रकार लाभ हुआ? (250 शब्दों में उत्तर दीजिए) 15 अंक

How India benefitted strategically from the contributions of Dr. Homi Jehangir Bhabha and Dr. Vikram Ambalal Sarabhai in the fields of atomic energy and space technology respectively?

(Answer in 250 words) 15 Marks

Dr. Homi Jehangir Bhabha and Dr. Vikram Sarabhai provided the vision of these technologies at a time when India was economically poor.

India's benefit strategically from Dr. Bhabha :-

- ① Established ~~to~~ of DRDO.
- ② Base for India's three stage nuclear programme \Rightarrow energy security.
- ③ Nuclear research \rightarrow development of nuclear weapons \rightarrow Op Smiling Buddha and Op Shakti \rightarrow provided Nuclear deterrence against two front war (Pakistan, China).
- ④ Nuclear Weapons \Rightarrow strategic autonomy in foreign policy since India could confidently engage with great powers.

- ⑤ Integration of India in Nuclear's Club despite being non-signatory to NPT \Rightarrow '123 agreement with USA'
- ⑥ Nuclear tech as a pillar of India's bilateral engagement
 \Rightarrow cooperation with France, Russia
 Jaitpur \rightarrow Tarapur.
- ⑦ Security \rightarrow operationalisation of Nuclear triad with INS Arihant.
- ⑧ Created technical community \Rightarrow global cooperation
 \Rightarrow ITER \rightarrow Fusion experiments \rightarrow India providing components.

India benefit strategically from Dr Sarabhai:

- ① led to establishment of ISRO.
- ② Communication infrastructure created \rightarrow satellites for radio, TV communication.
- ③ IRNSS \rightarrow constellation created \rightarrow India's own GPS \rightarrow reduced reliance on Western platform.
 \Rightarrow USA defined GPS info during Kargil war.

- ④ Prepared India for space wars
eg Op Shakti → anti-satellite test
- ⑤ Integration of India in global treaties
eg Australia group, MTCR etc
- ⑥ Missile development programme
eg Agni missiles.
- ⑦ Boosted India's technical capabilities →
India part of Artemis accord.
- ⑧ Space Missions
eg Chandrayaan I & II, Mars Orbiter Mission

Thus, India's strategic profile was substantially raised in comity of nations.

- Q.16 जेनेरेटिव एआई निकट भविष्य में नवाचार की सीमाओं को आगे बढ़ाने का सामर्थ्य रखता है, फिर भी इसका सामाजिक प्रभाव पर्याप्त चुनौतियाँ खड़ी करता है। सविस्तार उत्तर दीजिए। (250 शब्दों में उत्तर दीजिए) 15 अंक

Generative AI holds the potential to push the boundaries of innovation in the near future, yet its societal impact raises substantial challenges. Elaborate. (Answer in 250 words) 15 Marks

Generative AI is the use of Artificial Intelligence to generate creative content like text, audio, images etc. e.g. ChatGPT, Google's DALLE.

Generative AI ⇒ pushing innovation boundaries

- ① Automating processes like creating draft reports, creating codes, designing marketing ads.
- ② High efficiency :- scans through thousands of documents + provides summary ⇒ boosting productivity.
- ③ Efficient service delivery by government e.g. Gov's Bhasini app + provide information to farmers in local language.
- ④ Boost Research by helping doctors (find cure of diseases through recent innovation information), Journalists, Academics.

Societal impact of Generative AI :-

① Data biases can lead to perpetuation of discrimination against marginalised communities.

eg. Blacks in USA overrepresented in criminal records.

② Disinformation campaigns by non-state actors / political parties ⇒ generation of hate speech ⇒ social divisions
eg. Muslims vs Hindus in India.

③

③ Job losses due to automation
eg. automated customer care services → job losses in call centres.

④ Impact on livelihood of artists like content creators, lyricists, poets, painters etc.

⑤ Social engagement :- addictive nature of AI → isolation & anti-social behaviour → breakdown of social capital.

Measures to mitigate these challenges :-

- ① Removing data biases by monitoring information being feeded.
- ② Government regulation
 eg EU's AI Act → bans use for cognitive manipulation.
 ↓
 disclose content created using Gen AI.
- ③ Consumers awareness generation → responsible use
 eg students → check cheating in exams
- ④ Skilling to generate new jobs
 eg. AI, data analytics etc.
 Future Skill PRIME programme.
- ⑤ Using for public good :- effective campaigns, designing slogans, behavioural change.
 eg Beti Bachao, Beti Padhao.

Coordination at global level is also required to check threat to humanity by checking emergence of AI singularity.

- Q.17 नवंबर 2022 में मिस्र में COP27 संयुक्त राष्ट्र जलवायु परिवर्तन सम्मेलन में लॉन्च किये गए "जलवायु के लिए मैंग्रोव गठबंधन" के उद्देश्य को स्पष्ट कीजिए। उष्णकटिबंधीय देशों की तटीय पारिस्थितिकी को बनाए रखने में मैंग्रोव के महत्व पर विस्तार से प्रकाश डालिए। (250 शब्दों में उत्तर दीजिए) 15 अंक

Explain the purpose of the "Mangrove Alliance for Climate" launched at the COP27 UN Climate Change Conference in Egypt in November 2022. Elaborate on the importance of mangroves in maintaining the coastal ecology of tropical nations. (Answer in 250 words) 15 Marks

Mangrove Alliance for climate was launched by UAE and Indonesia. It comprises :-
India, Australia, Sri Lanka, Japan etc.

Importance of mangroves :-

Mangroves are trees/shrubs that grow in inter-tidal regions of tropical/semi tropical areas. Their role :-

- ① Act as shield against flood/cyclones i.e shock absorber.
- ② Home to biodiversity :- animals like mussels, sharks live in its roots system whereas monkeys, birds live overland.
- ③ Act as Carbon sink :- absorb 10 times more carbon than terrestrial forests.
- ④ livelihood to Coastal communities :- dependence

of fish farmers for sustenance.

- ⑤ attracts rains ⇒ helps agriculture ecosystems
→ → food security.

Purpose of Mangrove Alliance ÷

- ① Safeguard Mangroves from land-use change.
- ② Increase area under Mangrove through afforestation.
- ③ Involving local communities in conservation efforts.
- ④ Carbon sequestration ⇒ tackling climate change.
- ⑤ awareness generation about the importance.
- ⑥ Inter-country collaboration for protecting global mangroves ⇒ sharing best practices.
- ⑦ Help achieve UN CBD 30x30 target.

However, being non-binding, individual countries will decide their own targets of Mangrove protection.

India has increased Mangrove cover from 4018 sq km in 1985 to 4992 sq km in 2022.

Through MISHTI initiative, Mangrove restoration efforts with community engagement are being taken up.

Q.18 आपदा प्रतिरोधी बुनियादी ढाँचे के लिए गठबंधन का गठन भारत में आपदा प्रबंधन दृष्टिकोण को और अधिक मजबूती प्रदान करता है। टिप्पणी कीजिए। भारत में आपदाओं से निपटने के लिए एक नई रणनीति की आवश्यकता के औचित्य सिद्ध कीजिए।

(250 शब्दों में उत्तर दीजिए) 15 अंक

The Formation of the Coalition for Disaster Resilient Infrastructure brings more robustness to the Disaster Management approach in India. Comment and justify the need for a new strategy to tackle Disasters in India.

(Answer in 250 words) 15 Marks

Coalition of Disaster Resilient Infrastructure is launched by India to coordinate global response to climate change by increasing climate adaptation - thereby reducing vulnerability to extreme weather events.

CDRI ⇒ robustness to Disaster Mgmt approach

- ① Focus on prevention :- pro-active approach instead of post disaster reactive approach.
- ② Creating disaster resilient new infrastructure e.g. sponge pavements, flood resistant houses, earthquake resilient buildings.
- ③ Retrofitting of existing infrastructure to withstand climate stress.
- ④ Minimise damage to property and loss of life.
- ⑤ Community preparedness through capacity building and training, e.g. safety drills.

Need for new strategy to tackle disaster

- ① High vulnerability :- Himalayan faultlines, long coastline, poverty etc
- ② Climate change ⇒ floods, heatwaves, landslides, cyclones.
eg. heatwave killed 30 people in Ballia, UP.
- ③ Lack of economic resources to mitigate disaster
↳ more emphasis on adaptability and local solutions.
- ④ Weak community engagement
eg. refusal of people to leave Jharkhand.
- ⑤ Poor infrastructure
eg. lack of fire safety systems of Mukherjee Nagar fire.
- ⑥ Urbanisation → 70% India still to urbanise → disaster risk reduction need to be integrated in city plans.
- ⑦ Poor post disaster response :- lack of coordination

Elements of new strategy :

- Increase resilience of infrastructure and communities.
- Expand insurance cover → life and assets.
- skill development → disaster response workforce.
- Technology integration → use of AI and Quantum computing for early warning.
- Innovation through R & D in new construction materials.
- Focus on vulnerable sections → women, children, disabled.

Through Panchamrit, India is moving towards Mitigating the threat of disasters. Through new strategy, India can realise the goals of Sendai Framework.

Q.19

महत्वपूर्ण बुनियादी ढाँचे (क्रिटिकल इंफ्रास्ट्रक्चर) और प्रमुख निगमों को लक्षित करने वाले रैंसमवेयर हमलों में हुई हालिया वृद्धि ने मजबूत साइबर सुरक्षा उपायों और नीतियों की तत्काल आवश्यकता पर प्रकाश डाला है। इस प्रवृत्ति में योगदान देने वाले प्रमुख कारकों पर चर्चा करते हुए, विभिन्न क्षेत्रों पर इन हमलों के प्रभाव का विश्लेषण कीजिए।

(250 शब्दों में उत्तर दीजिए) 15 अंक

The recent rise in ransomware attacks targeting critical infrastructure and major corporations has highlighted the urgent need for stronger cybersecurity measures and policies. Discussing the key factors contributing to this trend, analyze the impact of these attacks on various sectors.

(Answer in 250 words) 15 Marks

Ransomware is a type of malware which blocks user's access to his system and demands Ransom in exchange of removing blocking. e.g. WannaCry Ransomware.

Key factors contributing to this trend

- ① Rising cyber adoption by individuals and companies.
e.g. Tele-Health and Tele Education after Covid.
- ② Low cost - high impact attacks → provides an edge to state / non-state actors.
e.g. attack on Mumbai power grid led to blackout for days!
- ③ globalisation → interconnectedness of systems cross border attacks can target any part of world.

(4) Cyber-warfare :- nuclear deterrence don't apply → states use against adversary.
eg. USA-Israel Stuxnet attack on Iran's nuclear centrifuges.

(5) High profitability :- groups providing 'ransomware as a service'
eg. Darkside group based in Russia.

Impact on various sectors :-

(1) Healthcare

↳ attack on AIIMS servers → 500+ data encrypted ⇒ ransom in bitcoin demanded.

↳ COWIN App → data of users (mobile number, address) released on Telegram.

(2) Power sector

↳ electricity grids attack in Ladakh in 2020 after Galwan clashes.

(3) Critical infrastructure

↳ Colonial gas pipeline in USA attacked by Darkside group.

④ Datasets

↳ attack on Aadhar datasets.

⑤ Companies

↳ Intellectual property theft.

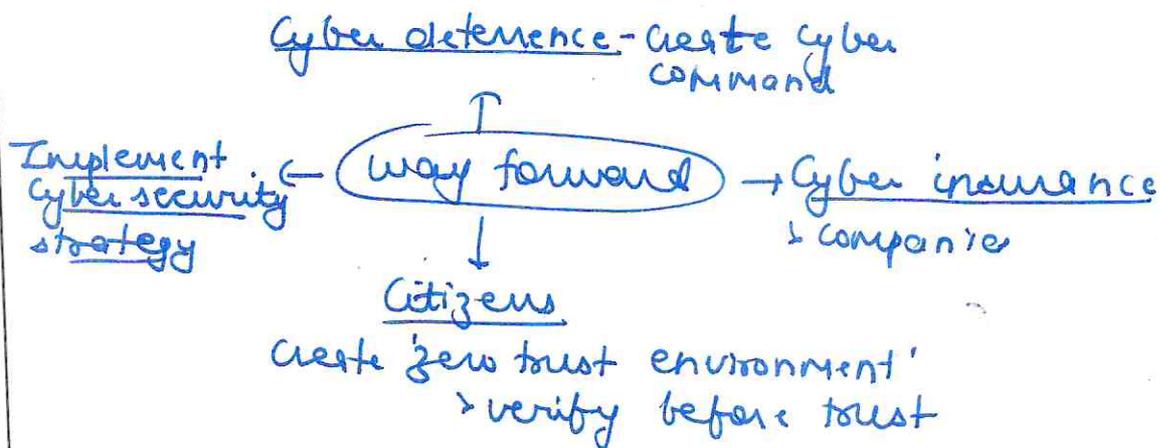
↳ attack by Chinese hackers on Bharat Biotech for vaccine IPR.

⑥ Nuclear infrastructure

↳ alleged attack on Kudankulam nuclear plant.

⑦ Individual users

↳ Tech support scam where USA's senior citizens were being duped.



Through CERT-In, Cyber security Policy 2013, National Critical Info. Infra Protection Centre etc, India is creating cyber resilience.

Q.20 सीमा सुरक्षा के संदर्भ में, तटीय और स्थलीय सीमाओं के प्रभावी और कुशल प्रबंधन को सुनिश्चित करने के लिए विभिन्न सुरक्षा एजेंसियों के बीच सहयोग और समन्वय को कैसे बेहतर बनाया जा सकता है?

(250 शब्दों में उत्तर दीजिए) 15 अंक

In the context of border security, how can cooperation and coordination between different security agencies be improved to ensure effective and efficient management of coastal and terrestrial borders?

(Answer in 250 words) 15 Marks

With land border of 7500 km with seven countries and maritime border of 15000 km, India is vulnerable to multi-dimensional challenges like:- infiltration, illegal immigration, organised crimes (drugs, fake currency supply), border disputes etc

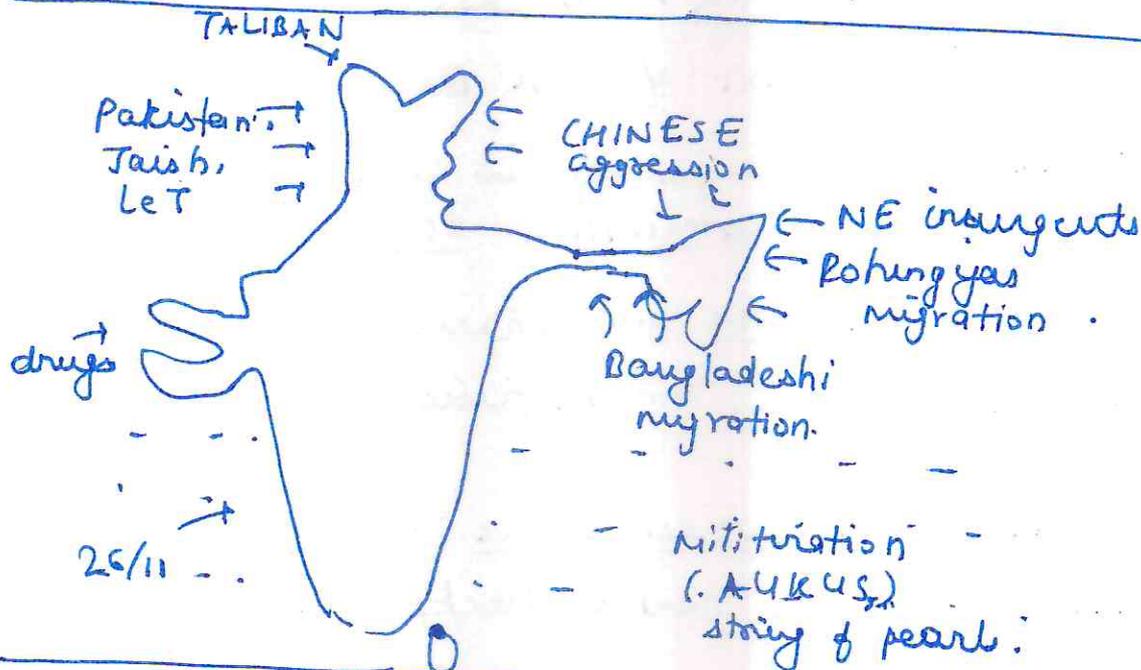


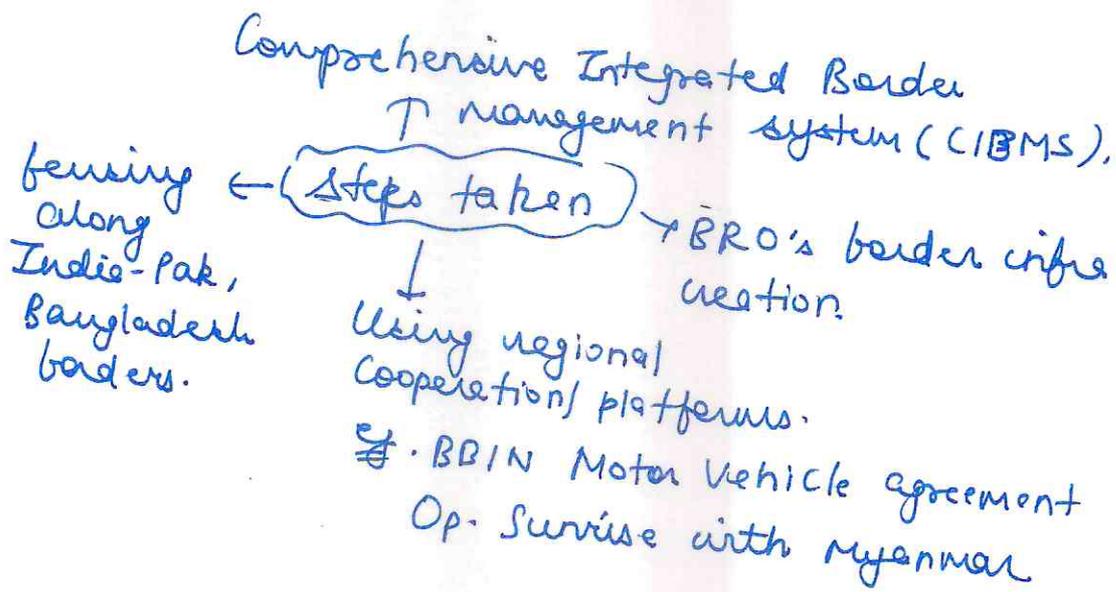
Fig: Threats on borders

Cooperation and coordination can be T by :-

- ① Sharing intelligence on movement of people, vehicles.
 ex. Bihar police can alert BSF if Nepal border being used by JJK wanted terrorists.
- ② Use of technology :- like smart fencing, GPS, etc for quick info dissemination.
- ③ Unified Command :- in case of attack to follow principle of One Border, One Police Force (Kargil Review Committee).
 ex. Command Theatreisation, CDS
- ④ Integrated platform for sharing of data
 ex. CCTNS, IMAC, Indian Fusion Centre.
- ⑤ Development of infrastructure :- faster mobilisation
 ex. more border checkpoints, road connectivity.
- ⑥ Centre-state coordination
 ex. increasing BSF jurisdiction to 100 km inside state boundary will help - (2022)

⑦ Community engagement :- make them eyes and ears of forces.

eg. Village Vigilance Committee; Civic Action plan to ↑ confidence among people.



Effective border management will not only ensure territorial security but also ensure smooth movement of people/goods boosting regional integration.

Space for Rough Work