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UPSC Mains 2024 GS III

Year-wise PYQ pack · WRAP model answers with canonical links

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<https://wrapexams.com/upsc/mains/gs-3/2024/>

Q1 · 10 marks

Examine the pattern and trend of public expenditure on Social Services in the post-reforms period in India. To what extent this has been in consonance with achieving the objective of inclusive growth?().

GS III · 2024 · Inclusive Growth

Revision summary

After 1991, social-services spending did not jump at once; it thickened from the mid-2000s with school, health, work and food missions.

States spend more on social services than the Union; education is the largest slice and health is smaller.

- **The direction matches inclusive growth:** more public money on people, not only on factories.

The match is incomplete because learning, public health and out-of-pocket medical costs still exclude many.

Inclusive growth is tested by who is reached, not by the size of a budget head alone.

Introduction

The 1991 reforms cut the State's industrial licence Raj. They did not abolish the State's duty to **educate, heal and insure** the poor. **Social services** - education, health, water, sanitation, housing and welfare - therefore became the test of whether growth after liberalisation would be **inclusive**. The rupee spent is only half that test. The other half is whether the extra rupee reached the household that needed it.

Body

Pattern and trend after 1991

In the first reform decade the Union's priority was **stabilisation and industrial deregulation**. Combined public spending on social services did not jump at once. From the **mid-2000s the pattern changes. Rights and missions enter the budget: school missions, the health mission, rural work, food law, and later sanitation and tap-water missions. States remain the larger spenders** on social services; the Union designs and co-finances. **Education takes the thickest slice**. Health stays thinner, though it thickened

after the National Health Mission and after the pandemic. The trend is therefore **upward in outlay and in scheme coverage**, with a federal tilt toward State budgets and a composition still biased toward education rather than public health.

- **Peg:** SSA / Samagra Shiksha, NHM, **MGNREGA and the National Food Security Act** are the large post-reform social vehicles.
- **Peg:** Combined Centre-State social-services spending as a share of GDP has been reported as rising over the last decade in successive Economic Surveys, without turning India into a high-tax welfare State.

Consonance with inclusive growth

Inclusive growth, as the Eleventh Plan framed it, means the extra GDP is **felt in more lives**: school, clinic, wage floor, food. Higher social outlay is **in the right direction**. Literacy, school enrolment, vaccination and official multidimensional poverty have moved the right way. The mismatch is **quality and incidence**. Learning outcomes remain weak. Public hospital beds and specialists are still thin in poor districts. A large share of health spend is still **out of pocket**. Urban casual workers and many women fall between scheme cracks. If social expenditure rises while **IHDI-type gaps** and malnutrition persist, the budget is only partly in consonance with the objective.

- **Peg:** Inclusion needs outcomes - years of learning, not only classrooms; a clinic that works, not only a mission logo.
- **Peg:** Growth versus welfare is a false war here: social spending is how a market economy keeps the bottom inside the growth story.

The honest verdict is **partial consonance**. The post-reform State spends more, and more visibly, on social services than the 1990s State did. It has not yet spent **enough, well enough, or evenly enough** to call the objective achieved.

Flow diagram

1991 reforms -> Social services outlay
Social services outlay -> Education largest
Social services outlay -> Health thinner
Education largest -> Inclusive growth test
Health thinner -> Inclusive growth test
Inclusive growth test -> Outcomes not only budget

Conclusion

Social-services spending rose after the mid-2000s, led by States and by education. That supports inclusive growth in direction, not yet in depth: health and quality still lag the inclusive-growth claim.

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Q2 · 10 marks

What are the causes of persistent high food inflation in India? Comment on the effectiveness of the monetary policy of RBI to control this type of inflation.

GS III · 2024 · Indian Economy

Revision summary

Indian food inflation is kept high by weather, perishable supply chains, rising protein demand, cereal floors and edible-oil imports.

It is mainly a supply and market problem, not a pure money problem.

RBI repo hikes cool demand and second-round wage effects; they do not grow a crop.

Flexible inflation targeting still must watch food because food sits inside CPI.

First-best tools are buffers, storage, timed imports and better mandis; monetary policy is the anchor.

Introduction

India's poor live on a **food-heavy CPI basket**. When onion, tomato, pulse or cereal prices stay high, **headline inflation** hurts them first. That pain has been **persistent** in several phases of the last two decades, even when industrial prices were quiet. The causes sit mostly on the **farm and the mandi**. The **RBI's interest rate** is a blunt tool against a failed monsoon.

Body

Why food inflation stays high

Food inflation in India is **recurring**, not a one-season accident. **Weather and climate** still swing output of onion, tomato, potato and pulses. **Small farms, weak storage and a long mandi chain** turn a local shortfall into a national spike. **Protein demand** (milk, egg, meat, pulses) rises with income faster than supply. **MSP and procurement** support cereal floors, which can hold rice and wheat up even when global prices ease. **Export bans and stocking limits** try to cool retail prices and often **scare planting** the next season. Fuel, freight and wages feed into farm costs. Global edible oil and fertiliser shocks pass through because India **imports** those. Hoarding and thin futures markets add noise. The result is a **high-frequency, supply-heavy** inflation, concentrated in a few perishable items that dominate the household's kitchen.

- **Peg:** Onion, tomato and pulses have repeatedly led CPI-food spikes even when core inflation was softer.
- **Peg:** Edible oils show how an import bill becomes kitchen inflation.

What monetary policy can and cannot do

The RBI's **flexible inflation targeting** (4 per cent CPI, with a band of two points either side) uses the **repo rate** to cool **demand**. That works better on **core** prices - services, durables, housing - than on a **failed kharif pulse crop**. A rate hike cannot harvest a tomato. It can, with a lag, slow the **second-round** pass-through into wages and expectations, and it can police a **credit boom** that would otherwise lift all prices. If the RBI chases every food spike with a hike, it **hurts growth and jobs** without planting a single acre. If it ignores a food spike that lasts, **inflation expectations** unhinge. The honest comment is therefore **limited short-run effectiveness, useful as an anchor**. Food inflation needs **buffer stocks**,

storage, import timing, competition in mandis, and climate-resilient horticulture. Monetary policy is the backstop, not the farm ministry.

- **Peg:** The 2016 monetary-policy framework made CPI the target; food is inside that CPI, which is why the RBI must explain food even when it cannot grow it.
- **Peg:** Supply action (open-market sale, import, onion buffer) is the first-best tool; the repo is the second-best.

Flow diagram

Weather storage protein -> Food CPI
Mandi and import shocks -> Food CPI
Food CPI -> Headline inflation
Repo rate -> Core and expectations
Core and expectations -> Headline inflation
Buffers and supply action -> Food CPI

Conclusion

Persistent food inflation comes from weather, storage, protein demand, import dependence and mandi frictions. RBI policy can hold the second round and the target's credibility. It cannot replace a working farm-to-kitchen chain.

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Q3 · 10 marks

What were the factors responsible for the successful implementation of land reforms in some parts of the country? Elaborate.

GS III · 2024 · Land Reforms

Revision summary

Successful land reform needed political will, peasant organisation and records that named the tiller.

West Bengal's Operation Barga and Kerala's occupancy reforms are the standard successful cases; early J&K also went far on ceilings.

Zamindari abolition was wide; ceiling and tenancy security were not.

Benami, litigation and informal tenancy explain failure in much of the heartland.

A gazette cannot substitute for a union and a mutation register.

Introduction

Land reform after Independence had a national statute book and a **very uneven map**. Zamindari abolition was wide. **Ceiling, tenancy security and redistribution** succeeded only where a government wanted them and a peasantry could **push**. West Bengal, Kerala and, in an earlier generation, Jammu and Kashmir are the usual successful parts. Large belts of the Hindi heartland show what happens when the same laws meet a **weak field staff** and a strong landlord.

Body

What "success" actually required

Land reform is not a gazette notification. It is a **change of who owns and who can stay on the field**. Where it worked, **political will came first: a party whose cadre lived among tenants, not among absentee owners. Peasant organisation** - bargadars in Bengal, agrarian unions in Kerala - supplied the names that the revenue office would otherwise never record. **Land records** that named the tiller were the next tool; without a record of rights, a ceiling law is paper. A reasonably honest **revenue administration**, and courts that did not stay every mutation forever, completed the kit. **Literacy and a left public culture** helped tenants know the law. Redistribution was easier where holdings were already mapped and where plantation or zamindari titles were legally clear enough to extinguish.

- **Peg:** West Bengal's Operation Barga recorded sharecroppers so they could not be thrown off at will.
- **Peg:** Kerala's land reforms under the first E.M.S. Namboodiripad government and later statutes transferred occupancy and limited remaining landlord rent.

Why only some parts

Jammu and Kashmir's early post-1947 reforms, including a sharp ceiling, went further than most princely areas because the **new State leadership** treated landlordism as a political enemy. Elsewhere, **benami transfers, gift to relatives, and litigation** ate ceiling surplus. In much of Bihar, eastern UP and parts of Andhra, tenancy hid as "labour" and records stayed with the powerful. **Green Revolution** Punjab achieved peasant prosperity more through **owner-cultivation and irrigation than through classic ceiling redistribution. Success**

was therefore a bundle: organisation plus records plus a government that would take on its own landed class. Copying a Bengal circular in a district without a peasant union does not copy Bengal.

- **Peg:** National zamindari abolition removed intermediaries; it did not, by itself, give the tiller a title.
- **Peg:** Where land reform stalled, tenancy went informal, which still blocks credit and investment on that plot.

Flow diagram

Political will -> Successful reform
Peasant organisation -> Successful reform
Live land records -> Successful reform
Successful reform -> Tiller security
Weak field staff -> Paper reform

Conclusion

Land reforms worked where political will, peasant unions and live records met. West Bengal, Kerala and early Jammu and Kashmir show the bundle. The rest of the map shows that a law without that bundle remains a file.

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Q4 · 10 marks

Explain the role of millets for ensuring health and nutritional security in India.

GS III · 2024 · Indian Economy

Revision summary

Millets such as jowar, bajra and ragi offer fibre, iron and calcium that polished rice does not.

They help dietary defence against diabetes and micronutrient gaps.

They grow on rainfed land with less water than paddy, which supports food security in a hotter climate.

India used 2023, the International Year of Millets, to brand Shree Anna and to widen recipes and some procurement.

Without mills, MSP and a place in meals, farmers will not keep the crop and the health case stays on a poster.

Introduction

Millets - **jowar, bajra, ragi, kodo, kutki, kangni** and their kin - were India's older grain before irrigation made **rice and wheat** the public plate. They are back because **health, drought and a protein-iron gap** have all become national problems. The Union now brands them **Shree Anna**. The case is not nostalgia. It is **nutrition per drop of water**.

Body

Health security

Health security here means fewer diet-linked diseases and a plate that a poor household can actually cook. Millets are typically **high in fibre**, which steadies blood sugar and helps against the **diabetes and obesity** wave in urban India. **Finger millet (ragi)** is valued for **calcium**. Pearl millet and several small millets carry **iron** and B-vitamins that polished rice does not. They are usually **gluten-free**, which matters for a minority of patients and, more broadly, for a less refined staple. A millet roti does not replace a hospital. It **lowers the dietary load** that public health is otherwise left to treat.

- **Peg:** Ragi's calcium and bajra's iron are the usual clinical reasons dieticians put millets back on the plate.
- **Peg:** Fibre and a lower glycaemic load are the link to India's rising non-communicable disease burden.

Nutritional and food-system security

Nutritional security is **calories plus micronutrients**, stable through climate shocks. Millets grow on **thin soils and thin rain**. They need less irrigation than paddy, which is why they fit **rainfed Deccan, Rajasthan and tribal central India**. A crop that survives a failed monsoon is a **household food reserve**. India is among the world's **largest millet producers**; 2023 as the **International Year of Millets** was used to push recipes, MSP procurement of some nutri-cereals, and inclusion in parts of **ICDS and midday meals**. Farmers need a **buyer and a mill**, or they will return to paddy. Health and nutrition security therefore meet **procurement, processing and a PDS that does not only speak in rice and wheat**.

- **Peg:** Nutri-cereals under MSP and some State PDS millet kits are the policy bridge from farm to plate.

- **Peg:** Climate resilience is the national-security face of the same grain: less water, more dietary diversity.

Flow diagram

Millets -> Fibre iron calcium
Millets -> Rainfed low water
Fibre iron calcium -> Health security
Rainfed low water -> Food and farm security
MSP PDS processing -> Millets

Conclusion

Millets thicken the plate with fibre, iron and calcium, and they grow where paddy would drink the aquifer. They serve health and nutrition security only if procurement and processing make them as easy as rice.

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Q5 · 10 marks

What is the present world scenario of intellectual property rights with respect to life materials? Although, India is second in the world to file patents, still only a few have been commercialized. Explain the reasons behind this less commercialization.

GS III · 2024 · Indian Economy

Revision summary

TRIPS allows members to exclude plants and animals but not necessarily microorganisms; CBD and Nagoya add benefit-sharing.

India bars patents on plants and animals under **Section 3(j)** and uses PPVFR for varieties, plus TKDL as a defensive record.

The US and others have patented engineered microbes and fought over genes; Myriad limited patents on mere natural sequences.

High Indian filing has not meant commercialisation because of weak lab-to-industry transfer, thin biotech capital and slow regulation.

Volume of patents is not a market; quality, licences and a usable product are.

Introduction

A seed, a gene, a microbe and a cell line are **life materials**. The world now treats some of them as **property** and some of them as **things no one may own**. India files a large number of patents, and the question notes that it stands **second in the world** on filings. **Commercialisation** - a product, a licence, a plant that actually runs - has not kept pace. Volume is not a market.

Body

Life materials and world IPR

After **Diamond v. Chakrabarty** in the United States, a genetically engineered bacterium could be patented. **TRIPS Article 27.3(b)** lets members **exclude plants and animals other than microorganisms**, and biological processes for their production, while still requiring some protection for plant varieties. The **Budapest Treaty** deposits microorganisms. The **Convention on Biological Diversity** and the **Nagoya Protocol** insist on **access and benefit-sharing** when genetic resources and traditional knowledge are used. The **European** debate on stem cells and on animal patents remains tighter than the US. Gene patents were cut back in the US after **Association for Molecular Pathology v. Myriad Genetics**: a mere isolated natural sequence is not an invention. India, under **Section 3(j)** of the Patents Act, **excludes plants and animals** (other than microorganisms) and essentially biological processes; **Section 3(d)** blocks evergreening of known substances; **Section 3(c)** blocks the mere discovery of a scientific principle. Plant breeders use the **Protection of Plant Varieties and Farmers' Rights Act, 2001**, which also protects the farmer's right to save seed. **Traditional Knowledge Digital Library** is a defensive database against misappropriation. The world scene is therefore **split**: patents on microbes and biotech tools in many offices, **no patent on plants and animals in India**, and a running fight over genes, CRISPR and digital sequence information.

- **Peg:** *Novartis v. Union of India* showed that a patent on a life-related medicine still has to clear Section 3(d).
- **Peg:** CBD/Nagoya sit beside TRIPS: a patent office grant does not erase a biodiversity permit.

Why so little commercialisation

Filing is a **count**. Commercialisation is a **firm, a trial, a factory and a buyer**. Indian patents are often **academic or CSIR/ICAR** filings with weak **industry liaison**. Many specifications are thin, so they do not survive opposition or attract a licensee. **Technology transfer offices** in universities are still young. **Venture capital** for deep biotech is thinner than for software. **Regulatory paths** for GM crops, biologics and diagnostics are slow and politically contested, so even a valid patent may never become a product. Firms **import licences** rather than scale a domestic file. **Quality versus quantity**: a rush to file for ranking, without freedom-to-operate searches, produces paper that cannot be sold. The missing piece is **governance of the last mile** - incubation, public procurement of innovation, and a farm or hospital that will use the thing.

- **Peg:** A patent without a technology-readiness path is a certificate, not a commercial asset.
- **Peg:** Software-style filing culture does not transfer to wet-lab products that need years of trial.

Flow diagram

TRIPS 27.3b CBD Nagoya -> Life-material IPR
Indian 3j 3d PPVFR -> Life-material IPR
High filings -> Lab-firm gap
Lab-firm gap -> Weak commercialisation
Regulation and capital -> Weak commercialisation

Conclusion

The world patents some life tools and still argues over plants, genes and benefit-sharing. India files a lot and sells little because labs, firms, regulation and capital do not yet form one pipeline. The remedy is transfer and quality, not a larger filing target.

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Q6 · 10 marks

What is the technology being employed for electronic toll collection on highways. What are its advantages and limitations? What are the proposed changes that will make this process seamless? Would this transition carry any potential hazard?

GS III · 2024 · Infrastructure

Revision summary

Electronic toll collection on Indian highways uses RFID FASTag, settled on NPCI's NETC rail.

Advantages are less cash leakage, less idling and a digital trail.

Limitations are failed reads, double deduction, lane mixing and plaza-only coverage.

The proposed seamless step is GNSS-based free-flow tolling, often with ANPR, so the car need not stop.

The transition hazard is continuous location tracking, spoofing and hard-to-dispute bills unless data rules and refunds are strong.

Introduction

- **Indian national highways moved from cash booths to FASTag: a radio-frequency identification** sticker on the windscreen, read in the lane, settled through banks on the **National Electronic Toll Collection** platform. The aim was a shorter queue. The next aim is a highway that **does not stop the car at all**. Each step trades a little **privacy and billing risk** for speed.

Body

FASTag and what it already does

The working technology is **passive RFID**. The tag is linked to a prepaid or bank account. A roadside reader identifies the vehicle class and deducts a toll. **NPCI's NETC** switches the payment among banks. **NHAI and State concessionaires run the plazas**. **Advantages are real: less idling**, less cash leakage, a digital trail against under-reporting, and some **fuel and time saved**. **Limitations are also real: a failed read** still creates a queue; **double deduction** and wrong-class charges produce grievances; a driver without a working tag is a **lane problem**; local roads and some State plazas lagged the national mandate; privacy is limited today because the tag mainly proves **presence at a plaza**, not a continuous track.

- **Peg:** FASTag became the default on national highway plazas after a nationwide push in the late 2010s.
- **Peg:** NETC is the payment rail; RFID is the sensor.

Seamless transition and its hazard

- **The proposed next step is** barrier-free electronic tolling: **GNSS / GPS-based** distance charging, often paired with **automatic number-plate recognition** cameras at validation points, so the car does not halt at a boom. A satellite trace can bill **actual kilometres**, which is fairer on a long corridor than a flat plaza fee. The potential hazard is not science fiction. **Continuous location** is a richer personal dataset than a plaza beep. It can be **abused for surveillance**, commercial profiling, or a leak. **Spoofing and jamming** of GNSS, and camera errors, can create **wrong bills**. A poor connectivity stretch can drop a trip record. If a **back-end dispute system** is weak, seamless hardware becomes a new harassment. Governance therefore

has to travel with the sensor: **data minimisation, retention limits, audit of who queries a vehicle path, and a fast refund**. Technology without that is a faster plaza and a slower citizen.

- **Peg:** GNSS plus ANPR is the usual global kit for free-flow tolling; India has announced this direction for national highways.

- **Peg:** The hazard is location privacy and billing error, not the RFID sticker itself.

Flow diagram

FASTag RFID -> NETC bank rail
NETC bank rail -> Plaza deduction
GNSS ANPR free-flow -> Distance bill
Distance bill -> Privacy and error hazard
Plaza deduction -> Shorter queue

Conclusion

Electronic tolling today is RFID FASTag on NETC. It cut cash and some queues, and it still fails at the reader. GNSS free-flow can make the highway seamless if billing and data protection are built in. Without them the hazard is tracking and a wrong charge with no boom to argue at.

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Q7 · 10 marks

Industrial pollution of river water is a significant environmental issue in India. Discuss the various mitigation measures to deal with this problem and also the government's initiative in this regard.

GS III · 2024 · Environment and Conservation

Revision summary

Industrial river pollution in India comes from tanneries, textiles, chemicals and similar clusters on living rivers.

Mitigation is source control, CETPs, ZLD where needed, online monitoring, zoning and closure under the Water Act.

Namami Gange, CPCB's grossly polluting industry list, CEPI cluster scores and **NGT basin** orders are the main public initiatives.

Sewage and industry mix, so a river mission that ignores either fails.

The binding constraint is enforcement at night, not the absence of a statute.

Introduction

Indian rivers take **factory effluent** as well as sewage. Tanneries, textiles, distilleries, paper, chemicals and electroplating have turned stretches of the **Ganga, Yamuna, Damodar, Patancheru streams and Pali** into industrial drains. Mitigation is not one machine. It is a **standard, a pipe, a plant, a court and a closure power**. The government's initiatives only work if those five stay joined.

Body

Mitigation measures

- **The first measure is** prevention at source: cleaner processes, less water per unit of cloth or leather, and a ban on the worst chemistries. The second is **treatment: common effluent treatment plants** for clusters of small units that cannot each afford a plant, and **zero liquid discharge** where the basin is already dead. **Online continuous effluent monitoring**, linked to the pollution board, makes a midnight bypass harder. **Zoning** keeps new dirty industry off a floodplain. **Polluter-pays cess**, bank guarantees and **closure under the Water Act** are the teeth. **Environmental flows** and wetland buffers dilute what still escapes, but dilution is not a licence to dump. **Community sampling** and river-basin data close the gap between a consent order and the actual colour of the water.
- **Peg:** CETPs for tannery and textile clusters, with ZLD in critically polluted industrial areas, are the standard engineering answer.
- **Peg:** The Water (Prevention and Control of Pollution) Act, 1974, and EPA, 1986, already allow consent, direction and closure.

Government initiatives

Namami Gange is the flagship basin mission: sewage plants, industrial cluster work, river-front and biodiversity, with the National Mission for Clean Ganga as the vehicle. **CPCB and SPCBs** set effluent standards and run the **Grossly Polluting Industries** list on the Ganga main stem. The **National Green Tribunal** has passed basin-wide orders on Yamuna and Ganga, including industrial inspection. **Critically polluted industrial clusters**

were scored so that expansion could be frozen until CEPI improved. **Amritsar to Ganga is not the whole map: Yamuna Action Plans**, State river programmes, and **extended producer** logic for some wastes sit beside it. The gap is **enforcement**: a CETP that is switched off at night, a board that is under-staffed, and municipalities that still pour sewage, which then mixes with industry so the public cannot see who poisoned the stretch.

- **Peg:** Namami Gange plus the GPI inventory is the Ganga industrial track; NGT orders are the judicial track.
- **Peg:** Technology without a working SPCB is a plant on paper.

Flow diagram

Industrial effluent -> CETP ZLD cleaner process
CETP ZLD cleaner process -> River stretch
Water Act SPCB NGT -> Industrial effluent
Namami Gange GPI -> CETP ZLD cleaner process
Enforcement gap -> River stretch

Conclusion

Industrial river pollution is mitigated by cleaner processes, CETPs, ZLD, online monitoring and closure powers. Government missions and tribunals have built the kit. The river improves only where that kit is switched on every night, not only on a foundation-stone day.

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Q8 · 10 marks

What role do environmental NGOs and activists play in influencing Environmental Impact Assessment (EIA) outcomes for major projects in India? Cite four examples with all important details.

GS III · 2024 · Environment and Conservation

Revision summary

- **EIA is a public process:** hearing, appraisal, clearance and compliance.

Activists influence it through hearings, RTI, NGT or Supreme Court cases, and Forest Rights gram sabhas.

- **Silent Valley:** KSSP-led campaign stopped a Kerala hydel dam; the valley became a national park.

Narmada Bachao Andolan put displacement at the centre of Sardar Sarovar; the World Bank left; the Court allowed height with rehabilitation conditions.

Vedanta's Niyamgiri mine was refused by Dongria Kondh gram sabhas after the 2013 Supreme Court order.

Sterlite Tuticorin was shut by Tamil Nadu after the 2018 protests and firing over expansion and pollution.

Introduction

- **An Environmental Impact Assessment is supposed to be a public argument:** what a dam, a mine, a smelter or a steel plant will do to forest, river and people, and whether that cost is acceptable. **NGOs and activists** enter that argument with **hearings, petitions, science notes and street pressure**. They cannot stamp a clearance. They can **delay, condition, reroute or kill** a project when the record is weak or the community is unwilling.

Body

How the influence works

Under the EIA notification, a major project needs **scoping, a public hearing, an appraisal and a clearance**, with later **compliance**. Activists use the **hearing** to put local knowledge on the minutes. They use the **Right to Information** and leaked draft EIAs to show copy-paste biology. They move the **National Green Tribunal** and the Supreme Court when a hearing was a farce or a sacred grove was listed as wasteland. They organise **gram sabhas** where the **Forest Rights Act** requires consent. The influence is therefore **procedural and political**: a better EIA, a set of conditions, a refusal, or a project that dies because finance will not wait. Capture is the other side: a weak NGO can also be sued into silence, and a loud campaign can over-claim. The four cases below are ones where the public record is clear.

- **Peg:** Public hearing minutes and FRA gram sabhas are the lawful hooks; courts are the backstop when those hooks are skipped.
- **Peg:** Media and science collectives (as in Silent Valley) can change a Union Cabinet's mind before a modern EIA code even existed.

Four cases

Silent Valley, Kerala. A State hydel project in a rainforest valley was opposed from the 1970s by the **Kerala Sastra Sahitya Parishad**, poets and the Save Silent Valley campaign.

They argued extinction risk for a unique evergreen tract, including the lion-tailed macaque habitat. **Indira Gandhi's government** stopped the dam. The area became **Silent Valley National Park** in the 1980s. It is the template: science plus a popular movement, before the 1994 EIA notification, still deciding a "development" outcome.

Narmada / Sardar Sarovar. The **Narmada Bachao Andolan**, with **Medha Patkar** and allied groups, used satyagraha, the **Morse independent review** for the World Bank, and long Supreme Court litigation to contest displacement and the height of **Sardar Sarovar**. The Bank stepped back. The Supreme Court eventually **allowed raising the dam with rehabilitation conditions**, so the activists did not "win a no-dam world", but they **forced rehabilitation onto the clearance bargain** and made EIA-style social impact a national argument.

Vedanta bauxite, Niyamgiri, Odisha. Dongria Kondh Adivasis, with activists and later **Amnesty and local groups**, opposed **Vedanta's** bauxite mine on a hill they hold sacred. The Supreme Court in **2013** required **gram sabhas** to decide. The sabhas **refused**. The mine did not go ahead. That is FRA plus EIA logic in one holding: a forest community can say no, and an appraisal that skips that no is not a real clearance.

Sterlite copper, Thoothukudi (Tuticorin), Tamil Nadu. Neighbourhood groups and environmental activists long alleged **SO2 and effluent** harm from **Vedanta's Sterlite** smelter. After a proposed expansion, **May 2018** protests met police firing and deaths. The **State government ordered permanent closure**. Courts have since wrestled with that order, but the EIA-expansion path was **broken by mass local refusal**, not by a quiet expert committee. (A parallel Odisha story is **POSCO's** Jagatsinghpur steel-plant plan, opposed over betel-vine land and forest clearance; the company **exited**. Niyamgiri remains the cleaner Supreme Court peg.)

- **Peg:** Silent Valley and Niyamgiri show a project stopped. Narmada shows conditions and a national debate. Sterlite shows a working plant shut after a public rupture.
- **Peg:** Influence is not a veto in every statute; it is the conversion of a hearing into a political fact the appraiser cannot honestly ignore.

Flow diagram

EIA hearing -> NGOs and locals
 NGOs and locals -> Courts FRA sabhas
 Courts FRA sabhas -> Stop condition or close
 Silent Valley -> Stop condition or close
 Niyamgiri -> Stop condition or close
 Sterlite -> Stop condition or close

Conclusion

NGOs and activists shape EIA outcomes through hearings, FRA sabhas, courts and public cost. Silent Valley, Narmada, Niyamgiri and Sterlite Tuticorin show stoppage, conditions, community refusal and closure. A major project that treats them as noise produces a clearance that does not survive contact with the ground.

Open WRAP page — <https://wrapexams.com/upsc/mains-answers/gs-3/2024/what-role-do-environmental-ngos-and-activists-play-in-influencing-environmental-impact-assessment-eia-outcomes-for-major-projects-in-india-cite-four-examples-with-all-important-details/>

Q9 · 10 marks

Explain how narco-terrorism has emerged as a serious threat across the country. Suggest suitable measures to counter narco-terrorism.

GS III · 2024 · Border Security and Organised Crime

Revision summary

Narco-terrorism is drug profit and drug routes used to fund terror and organised violence.

India is exposed on the Pakistan-Afghanistan side and the Myanmar-Northeast side, now including drone drops and synthetic drugs.

Punjab, J&K and the Northeast are the hardest-hit belts; highways and parcels move the inland trade.

- **Measures:** border and drone defence, NCB-ED-NIA money trails, precursor control, de-addiction, and UNODC-style cooperation.

Rights-compliant seizures and a clear line between addict and financier keep the strategy legitimate.

Introduction

Narco-terrorism is the use of **drug money and drug logistics** to fund terror, insurgency and organised violence - and the use of terror routes to move narcotics. India sits between the **Golden Crescent** and the **Golden Triangle**. That geography, plus a young domestic market, has made the threat **national**, not a Punjab-only headline.

Body

How the threat emerged

Heroin and other opiates enter from **Afghanistan-Pakistan** across the **Punjab, Rajasthan and Jammu** belts; some of that money has long been linked to **Pakistan-based terror**. In the **Northeast**, the Golden Triangle feeds **methamphetamine, heroin and precursor** traffic, overlapping insurgent taxation. **J&K** and **Punjab** have seen the mix of addiction, hawala and militant finance. **Coastal and air-cargo** routes, and later **drones** dropping consignments over the Punjab border, reduced the need for a walking mule. Inland, cartels use **National Highway** and railway parcels. Some **Left-Wing Extremism** zones have been accused of taxing poppy or ganja. The new seriousness is **synthetic drugs** (meth, MDMA) made from **diverted precursors**, which do not need an Afghan field. Terror and gang groups like the cash because it is **dense, portable and repeatable**. The public cost is a **lost youth cohort**, corrupted local police, and a finance stream that survives even when a terror module is shot.

- **Peg:** Golden Crescent to Punjab-J&K, Golden Triangle to the Northeast, drones on the western border: three maps, one business.
- **Peg:** NDPS is the criminal law; the terror link is investigated when the same network funds a module or a hawala chain.

Measures

Border and coastal sealing with better **drone detect-and-defeat**, not only a fence, is the first layer. **NCB, State ATS, ED and NIA** must share a **financial intelligence** picture so a seizure is not an orphan event. **Precursor control** under NDPS and customs has to bite chemical firms. **FATF-style** anti-money-laundering, already a India commitment, should follow

drug cash into real estate and betting. **De-addiction and harm reduction are security policy: a treated user is not a captive market. Fast NDPS courts and witness protection matter more than a louder ordinance. Rights are not optional: planted seizures** destroy the case and the village. International work with **Iran, Afghanistan's neighbours, Myanmar and the UNODC** has to match the map. A measure that only fills jails, and does not cut **demand or hawala**, will leave the terrorist's accountant in business.

- **Peg:** I4C-style cyber cells matter because retail now sits on encrypted chat, not only on a highway dhaba.
- **Peg:** Distinguish the addict, the petty peddler and the terror-financier, or the law loses the public.

Flow diagram

Golden Crescent -> Indian routes
Golden Triangle -> Indian routes
Drones hawala synthetics -> Indian routes
Indian routes -> Terror and cartel cash
Border AML treatment -> Terror and cartel cash

Conclusion

Narco-terrorism joins Golden Crescent and Triangle supply to Indian terror and gang finance, now including drones and synthetics. Counter it with borders, money trails, precursor control and treatment. A rights-blind seizure war will not starve the terrorist.

Open WRAP page — <https://wrapexams.com/upsc/mains-answers/gs-3/2024/explain-how-narco-terrorism-has-merged-as-a-serious-threat-across-the-country-suggest-suitable-measures-to-counter-narco-terrorism/>

Q10 · 10 marks

Describe the context and salient feature of Digital Personal Data Protection Act 2023.

GS III · 2024 · Indian Economy

Revision summary

The **DPDP Act, 2023**, follows the Puttaswamy privacy judgment and replaces a thin IT Act patch.

- **It regulates digital personal data:** Data Principals, Data Fiduciaries, consent and some legitimate uses.

Rights include access, correction, erasure, nomination and grievance redress; children get extra protection.

A Data Protection Board can penalise; Significant Data Fiduciaries carry heavier duties.

The Union may exempt State agencies on security and related grounds, which is the main rights tension.

Introduction

India's data economy grew faster than its **privacy statute**. After **Justice K.S. Puttaswamy v. Union of India** (2017) held privacy to be a **fundamental right**, a long draft trail - Justice Srikrishna, several bills, and the withdrawal of the 2019 Bill - ended in the **Digital Personal Data Protection Act, 2023**. The context is **Aadhaar-scale databases, platform power and a Court that asked for a law. The Act is that law: shorter than the 2019 draft, and still a first national code for digital personal data.**

Body

Context

Puttaswamy required a **proportionate, legal and legitimate** basis to touch personal data. India already had **IT Act section 43A** and **SPDI rules: a thin, harm-after-the-fact patch**. **Europe's GDPR** raised the bar for any firm that wanted EU custom. Domestic politics wanted **ease of doing digital business** as well as a privacy promise. The 2023 Act therefore sits between a **rights judgment** and a **growth agenda**: consent as the default, a Board instead of a heavy multi-regulator, and **wide Union exemptions**. That last piece is why rights groups still argue the Act is incomplete. It is nonetheless the **salient legal fact** students must know.

- **Peg:** **Puttaswamy (2017)** is the constitutional parent; the 2023 Act is the statutory child.
- **Peg:** The older 43A/SPDI regime did not create a Data Protection Board or a clear set of principal rights.

Salient features

The Act covers **digital personal data** processed in India, and some processing abroad if it offers goods or services in India. A **Data Principal** is the individual. A **Data Fiduciary** decides purpose and means. **Consent** must be free, specific, informed, unconditional and unambiguous, with a notice. **Certain legitimate uses** (including some State uses specified in the Act) allow processing without that consent track. Principals get rights to **access, correction, erasure and grievance redress**, and a right to **nominate** in case of death or incapacity. **Children's data** has extra care, including a bar on tracking or targeted ads in the terms the Act sets. **Significant Data Fiduciaries** may be designated for extra obligations

(data protection officer, audits, impact assessment). A **Data Protection Board of India** is to inquire and impose **financial penalties**. The Union may **exempt** agencies of the State in the interests of sovereignty, security, public order and similar grounds listed in the Act. Cross-border transfer is allowed except to countries the Union **restricts by notification**. The design is therefore **principle-plus-Board**, not a GDPR photocopy. The live tension is **security and administration versus the Puttaswamy tests** of necessity and proportionality - technology with governance, not technology as an exemption.

- **Peg:** Consent, legitimate uses, Significant Data Fiduciary duties, and the Data Protection Board are the working spine.
- **Peg:** Section-style State exemptions are the rights critique: a privacy Act that the State can step around still needs Puttaswamy in court.

Flow diagram

Puttaswamy 2017 -> DPDP Act 2023
DPDP Act 2023 -> Data Principal rights
DPDP Act 2023 -> Fiduciary duties
DPDP Act 2023 -> Data Protection Board
State exemptions -> DPDP Act 2023

Conclusion

- **DPDP 2023 answers Puttaswamy with a digital-personal-data code:** principals, fiduciaries, consent, a Board and penalties. It also leaves broad State exemptions. The Act is a start. Whether it protects privacy will depend on rules, the Board's spine, and how those exemptions are used.

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Q11 · 15 marks

Discuss the merits and demerits of the four Labour Codes' in the context of labor market reforms in India. What has been the progress so far in this regard?

GS III · 2024 · Indian Economy

Revision summary

The four Labour Codes (Wages 2019; IR, Social Security and OSH 2020) consolidate a stack of Central Acts.

- **Merits:** simpler compliance, a national floor-wage idea, fixed-term with benefits, and gig workers named for social security.
- **Demerits:** higher thresholds for standing orders and retrenchment permission, strike notice, and a risk of permanent temporaries.

Informal and contract work can still sit outside headcount, so welfare is not automatic.

- **Progress:** Codes passed and partly ruled, but full national enforcement still waits on aligned State rules.

Introduction

India's labour law was a **forest of Central Acts**. Parliament folded that forest into **four Codes**: **Wages (2019)**, **Industrial Relations (2020)**, **Social Security (2020)** and Occupational Safety, **Health and Working Conditions (2020)**. The claim is a **simpler, more investment-friendly market** with some new social cover. The fear is a **weaker union and a cheaper hire-and-fire**. Both are partly true. **Progress is the slow part: the Codes are passed, and a single national switch-on is still waiting on State rules.**

Body

The four Codes as reform

The **Code on Wages** unifies minimum wages, payment of wages, bonus and equal remuneration, and aims at a **national floor wage** with State minima above it. The **Industrial Relations Code** merges trade unions, standing orders and industrial disputes. The **Social Security Code** brings ESIC, EPF, gratuity, maternity and, on paper, **gig and platform workers** into one tent, with a promise of aggregators' contributions. The **OSH Code** merges factory, mine, contract-labour and related safety laws, and eases some **licence thresholds for contractors**. **Merits that reformers wanted are real: one registration and return instead of a dozen, fixed-term employment with pro-rata benefits, faster inspector-cum-facilitator language, and a chance to cover app workers who never saw a factory gate.** For a firm that was already compliant, the Codes can cut **harassment without cutting a right**.

- **Peg:** Four Codes replace a large stack of Central Acts; Wages 2019 came first, the other three in 2020.
- **Peg:** Gig and platform workers named in the Social Security Code is the most visible twenty-first-century addition.

Demerits

Unions read the **Industrial Relations Code** as a tilt. The **employee threshold** for standing orders and for prior government permission to **retrench, lay off or close** in larger

establishments was **raised** (the Code uses a higher headcount than the old Chapter V-B practice many States still lived with). A **fourteen-day notice** for strikes, and rules on **outside office-bearers**, make a spontaneous legal strike harder. **Fixed-term** can become a **permanent temporary** class if it is abused. The Social Security Code's gig chapter needs **schemes and money**; a name in a Code is not a PF account. **OSH** still has to reach the construction site and the warehouse, where most Indians actually work. Women's night work is allowed with conditions - a freedom and a safety burden at once. Informal workers, the majority, remain **easy to keep outside the headcount**. **Growth versus welfare is the exact trade: easier formal hiring can raise jobs, or it can raise insecurity** if enforcement is only a web portal.

- **Peg:** Strike notice and higher closure thresholds are the core union objections.
- **Peg:** Informalisation by contract is the demerit that no Code heading, by itself, cures.

Progress so far

The Union has **notified** the Codes; **full enforcement** has been held so that **State rules** can align, because labour is **concurrent**. Many States and Union Territories have published **draft or final rules** on some Codes. A few industrial States moved faster, hoping to advertise **ease of doing business**. **Central rules** have also been drafted in parts. **Gig social-security schemes** have been talked about more than they have been universally rolled out. The practical picture at the time of the 2024 paper is therefore: **law on the book, rules in patches, old Acts still the working law in much of the field**. That delay itself is a reform fact: federal labour change cannot be a Delhi gazette alone.

- **Peg:** Concurrent list plus State rules is why a 2019-20 Code can still be a 2024 implementation story.
- **Peg:** Pre-publication of rules is progress; a live floor wage and a live gig contribution are the tests that remain.

Flow diagram

Code on Wages -> Labour Codes
 Industrial Relations -> Labour Codes
 Social Security -> Labour Codes
 OSH Code -> Labour Codes
 Labour Codes -> Simplify and some new cover
 Labour Codes -> Thresholds and strike notice
 State rules -> Labour Codes

Conclusion

The four Codes simplify, name gig work, and ease some firm compliance. They also raise hire-and-fire thresholds and hem strikes. Progress is real on drafting and uneven on enforcement. Until State rules and schemes switch on, the old Acts still run the shop floor.

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Q12 · 15 marks

What is the need for expanding the regional air connectivity in India? In this context, discuss the government's UDAN Scheme and its achievements.

GS III · 2024 · Indian Economy

Revision summary

Regional air connectivity is needed for hills, islands, the Northeast and smaller cities that lack dense rail-air markets.

It supports medical access, tourism, perishables and a strategic civilian strip in border States.

UDAN (2016) auctions routes with viability-gap funding, some fare caps and cheaper airport charges.

- **Achievements:** multiple bidding rounds, revived and new regional airports, and some helicopter or seaplane experiments.
- **Limits:** several awarded routes lapsed; a flight survives only with catchment demand after the subsidy window.

Introduction

A country that is **wide, mountainous, islanded and unequal** cannot put every district on a broad-gauge timetable tomorrow. **Regional air connectivity** is the faster way to tie a hill capital, a pilgrimage town or a small industrial city to a metro hub. The Union's answer since 2016 has been **UDAN** - Ude Desh ka Aam Nagrik - a **viability-gap** scheme, not a free airline.

Body

Why regional air connectivity

Metro-to-metro aviation already works on **density**. The need is elsewhere. **North-eastern States, Himachal, Uttarakhand, J&K, the island territories and the tribal centre** lose doctors, investors and tourists to a two-day road. Air links cut **perishable time** for horticulture and medical evacuation. They support **balanced regional growth** so that a second-rung city can hold a firm that would otherwise sit in Bengaluru. They are also a **strategic layer: a civilian airport that can take a ATR or a small jet is a backup strip in a border State. Rail and highway remain the mass mode. Aviation is the thin, high-value mesh.** Without subsidy, those thin routes die, because a full-fare Airbus cannot live on forty seats.

- **Peg:** Last-mile for the Northeast, hills and islands is the core public-need case, not another Delhi-Mumbai frequency.
- **Peg:** Tourism, organs, pharma cold chain and administrative travel are the economic case.

How UDAN works

UDAN / RCS (Regional Connectivity Scheme), run by the **Ministry of Civil Aviation** with the **Airports Authority of India**, auctions routes. The winning airline gets a **viability gap funding** for a limited period, a **cap on some fares**, and extras such as **reduced landing and parking** at public airports. States are asked to join with **GST and fuel** concessions and to help with **security and slots**. The bargain is public money for a **thin route**, not a permanent nationalised airline.

- **Peg:** VGF plus a fare cap is the UDAN deal: the aam nagrik ticket is bought with a public top-up.
- **Peg:** State ATF/GST and land support decide whether a bid is only a Delhi PowerPoint.

Achievements and limits

Airports have been **revived or built** under the same political umbrella, including some **civil enclaves**. **Several rounds of bidding** have awarded routes to **previously unserved or underserved** airports; **new airports and revived strips** have entered the map in the hills and the Northeast; **helicopter and seaplane** windows were opened for terrain that cannot take a jet. Some routes **sustained** after VGF, which is the real success. Many others **lapsed** when an airline exited or traffic did not appear. UDAN has thickened the map. A route is still not a region until **catchment roads, tourism and a second operator** exist.

- **Peg:** Lapsed routes are part of the record; counting only inaugural flights would over-claim.
- **Peg:** The scheme is a market-plus-subsidy experiment, not a finished grid.

Flow diagram

Need: hills NE islands -> UDAN RCS
UDAN RCS -> VGF and fare cap
VGF and fare cap -> New and revived airports
New and revived airports -> Some routes last
New and revived airports -> Some routes lapse

Conclusion

India needs regional flights for hills, islands, the Northeast and second-rung cities that rail will not bind tomorrow. UDAN has auctioned VGF routes and revived airports, with real new links and real lapses. The scheme is a start on the map, not a finished grid.

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Q13 · 15 marks

What are the major challenges faced by Indian irrigation system in recent times? State the measures taken by the government for efficient irrigation management.

GS III · 2024 · Crops, Irrigation and Marketing

Revision summary

Indian irrigation is stressed by falling groundwater, leaky canals, climate swings, fragmented plots and cheap farm power.

Tube-wells now dominate many States; north-western paddy-wheat is a leading depletion case.

PMKSY bundles access, per-drop-more-crop micro-irrigation and watersheds.

Atal Bhujal supports community groundwater budgets in stressed blocks; command-area lining and water-user associations target the canal tail.

Solar pumps help energy but can increase extraction unless paired with a water limit and crop shift.

Introduction

Indian irrigation is still the difference between a **stable grain bowl** and a **rain gamble**. The system is under stress that is **recent as well as old**: aquifers falling, canals leaking, climate swinging, and a power-water nexus that pays farmers to **pump the future dry**. Efficiency is therefore not a sprinkler catalogue. It is **governance of a shared, shrinking litre**.

Body

Challenges in recent times

Groundwater now waters more Indian plots than canals in many States, and the water table in **Punjab, Haryana, western UP, Rajasthan and parts of the peninsula** has been in long decline. **Canal irrigation** still loses a large share to seepage and theft before the tail-enders see a wetting. **Climate makes the monsoon burstier: a flood week, then a dry spell, which wrecks both reservoir scheduling and a rainfed sowing**. **Fragmented holdings** make field channels expensive. **Energy subsidies** for pump-sets turn groundwater into a **free common**. **Waterlogging and salinity** persist in some command areas. **Inter-State river disputes** delay projects. Urban and industrial demand now **competes** with the field. Maintenance of **minor irrigation** tanks in the south and east has lagged, even though those tanks were climate buffers. The challenge is therefore **too much pumping, too little last-mile, and a climate that no longer matches the old reservoir rule-curve**.

- **Peg:** Tube-well India and canal India are two systems; both are stressed, for different reasons.
- **Peg:** The paddy-wheat MSP couple in the north-west is a groundwater story as much as a food story.

Measures for efficient management

PMKSY (Pradhan Mantri Krishi Sinchayee Yojana) is the **umbrella: Har Khet Ko Pani** for access, **Per Drop More Crop** for micro-irrigation, and watershed work. **Atal Bhujal Yojana** pays for **community groundwater management** in notified water-stressed blocks. **Command Area Development** and lining try to finish the last mile of old dams. **Drip and sprinkler** subsidies, often through State missions, cut flood irrigation on horticulture and

sugarcane. **Participatory Irrigation Management** and **Water User Associations** are meant to take the outlet out of a purely departmental hand. **Solar pumps** (including KUSUM) cut diesel but can **worsen extraction** unless they are paired with **feeder separation or a water budget**. **River-linking** is a larger, contested structural bet; efficiency first is the cheaper claim. **Crop diversification** out of paddy in depleted blocks is the agricultural measure that irrigation engineering cannot skip.

- **Peg:** PMKSY plus Atal Bhujal is the Union's efficiency pair: more crop per drop, and less reckless pumping.
- **Peg:** A solar pump without a water budget is a cleaner way to empty the aquifer.

Crop, power and federal water

Engineering fails if the **crop and the tariff** still reward waste. A **paddy-wheat MSP** couple on a falling water table cannot be cured only by a lined canal. **Feeder separation**, a **water budget**, and **diversification** are irrigation policy by other names. **Inter-State river** machinery (tribunals, the **Inter-State River Water Disputes Act**) still decides whether a dam's water ever becomes a field's water. Efficiency is therefore **agronomy plus electricity plus federal bargaining**, not only a drip-pipe tender.

- **Peg:** Cheap night power for pumps is an irrigation subsidy that can erase a micro-irrigation gain.
- **Peg:** A tribunal award without last-mile canals is a legal litre, not a wet field.

Flow diagram

Falling groundwater -> Irrigation stress
 Canal last-mile loss -> Irrigation stress
 Climate bursts -> Irrigation stress
 PMKSY micro-irrigation -> Efficient management
 Atal Bhujal WUA -> Efficient management
 Efficient management -> Irrigation stress

Conclusion

Recent irrigation stress is falling groundwater, leaky canals, climate swings and cheap power to pump. Government measures - PMKSY, micro-irrigation, Atal Bhujal, command-area work - aim at efficiency. They work only if the crop and the tariff stop rewarding waste.

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Q14 · 15 marks

Elucidate the importance of buffer stocks for stabilizing agricultural prices in India. What are the challenges associated with the storage of buffer stock? Discuss.

GS III · 2024 · Farm Subsidies and PDS

Revision summary

Buffer stocks buy rice and wheat at MSP so harvest prices do not crash, and release them through PDS and open sale so retail prices do not spike.

FCI and State agencies hold the central cereal pool; a Price Stabilisation Fund is used for some pulses and perishables.

- **Storage challenges:** CAP exposure, rodents and fungus, high carrying cost, and stocks piled in a few surplus States.

A rice-wheat mountain does not automatically cool onion or tur inflation.

Silos, WDRA warehouses and a wider commodity set are the storage reforms that match the price-stability claim.

Introduction

A bumper harvest without a buyer is a **crash**. A drought without grain in a godown is a **riot of prices**. **Buffer stocks are how the Indian State sits between those two failures: buy when the farm-gate is weak, sell or ration when the kitchen is dear**. Wheat and rice, held mainly by the **Food Corporation of India** and State agencies, are still the core of that instrument.

Body

Why buffers stabilise prices

Under **MSP procurement**, a floor is put under rice and wheat in surplus belts. Grain that would have flooded the mandi is **lifted into the central pool**. That **supports farm prices** in the harvest window. In a lean or shock year, **open market sale, OMSS and NFSA / PDS issue** put grain back, which **caps retail spikes** for the cereal poor. The buffer is also a **war and pandemic reserve**: 2020 showed why a public pile matters when private trade panics. For pulses and onion the Union has used a **Price Stabilisation Fund** and smaller buffers, because those items often lead CPI. The logic is textbook **counter-cyclical stock**: absorb surplus, release deficit. It is also political: India does not leave cereal security only to a futures screen.

- **Peg:** FCI plus DCP State agencies are the operational arms of the cereal buffer.
- **Peg:** NFSA off-take is the regular release valve; OMSS is the extra valve when retail rice or wheat runs hot.

Storage challenges

The pile is **uneven**. Procurement is concentrated in **Punjab, Haryana and a few other States**, so grain must **travel and sit**. **Covered capacity** has often lagged the stock, forcing **Cover and Plinth (CAP)** storage that is vulnerable to **rain, rodents and theft**. Quality loss - **refraction, fungus, weevils** - is a fiscal and a food-safety cost. **Older grain** is harder to move before a new harvest arrives. **High carrying cost** (interest, storage, transit) sits on the food-subsidy bill. **Regional mismatch** means a deficit State may still see a local spike while a

Punjab silo is full. **Nutritional narrowness is a policy challenge: a rice-wheat buffer does little for onion or tur** unless separate stocks exist. **Private warehouses and WDRA** receipts are the intended modernisation; uptake is still catching the political need to **show a mountain of grain**. Climate adds **heat and untimely rain** on CAP stacks. The challenge is therefore not the idea of a buffer. It is **where it sits, in what, and of which crop**.

- **Peg:** CAP versus silo is the physical quality fight; Punjab-Haryana concentration is the geographic fight.
- **Peg:** A cereal mountain can coexist with horticulture inflation; the buffer is only as wide as what is actually stored.

What a rice-wheat pile cannot do

Stabilisation is **crop-specific**. A full FCI godown does not cap **onion, tomato or tur** unless a **Price Stabilisation Fund** or a separate pulse buffer is actually used. **Export bans** on top of a pile can scare the next sowing. **Open-ended procurement** without a storage plan turns a price tool into a **quality and fiscal** problem. The buffer remains essential for **cereal security**. It is not a universal inflation switch.

- **Peg:** OMSS works when grain is moved in time to the deficit market, not when it only exists on a weekly stock statement.
- **Peg:** Diversifying buffers toward pulses, if storage exists, is how the instrument tracks the modern CPI kitchen.

Flow diagram

Harvest surplus -> MSP procurement
 MSP procurement -> Central buffer
 Central buffer -> PDS and OMSS and OMSS
 PDS and OMSS -> Kitchen price cap
 CAP pests cost -> Central buffer

Conclusion

Buffer stocks stabilise Indian farm and kitchen cereal prices by buying at MSP and releasing through PDS and open sale. Storage still leaks value through CAP, pests, cost and a narrow rice-wheat map. A modern silo in the right State is the missing half of the stabilisation story.

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Q15 · 15 marks

The world is facing an acute shortage of clean and safe alternative freshwater. What are the technologies which can solve this crisis? Briefly discuss any three such technologies, citing their key merits and demerits.

GS III · 2024 · Indian Economy

Revision summary

The world is short of clean, climate-safe freshwater as rivers and aquifers fail.

Desalination (mainly RO) can supply coasts regardless of rainfall, but it is energy-intensive and produces brine.

Wastewater reuse cuts pollution and freshwater demand if sewers actually reach working plants; public trust is a barrier to potable reuse.

Managed aquifer recharge and rainwater harvesting store the monsoon cheaply; they cannot invent rain or replace a city network alone.

A workable mix uses desalination where there is sea, reuse in cities, and recharge on the land.

Introduction

Rivers, lakes and aquifers are **finite, polluted and politically spoken for**. Climate change makes the reliable litre rarer. The world is therefore hunting **alternative freshwater**: water that is not a clean glacier stream. Three technologies already in the field are **seawater desalination, wastewater reuse, and managed aquifer recharge** (with rainwater harvesting as its city face). Each makes water. Each has a bill and a brine.

Body

Desalination

Reverse osmosis (and, less often now, thermal distillation) turns seawater or brackish water into potable or industrial water. **Merit:** it is **climate-independent** at the coast and can supply a city that has no river left. Gulf States and some Indian coastal plants already run on this logic. **Demerit:** it is **energy-heavy**, which means a carbon bill unless the plant is paired with clean power. **Brine** returned to the sea can harm local ecology. Capital cost is high, so the water is often too dear for **irrigation**. Inland, there is no sea to draw.

- **Peg:** Coastal RO is the mature large-scale option; brine and power are the constraints that never leave.
- **Peg:** Brackish-groundwater RO is a cousin used in some Indian inland belts, with a concentrate-disposal problem.

Wastewater reuse

Treating **municipal and industrial sewage** to a standard that allows **industrial cooling, horticulture, or, with higher treatment, potable reuse** creates a new river inside the city. **Merit:** it cuts both **pollution** and **fresh abstraction**; the source is located where the demand is. Singapore's reused-water story is the global teaching case; several Indian cities now mandate treated reuse for industry and parks. **Demerit:** **public distrust** of toilet-to-tap, **patchy sewage collection**, and plants that are built and not run. If the sewer never reaches the plant, the technology is a shed.

- **Peg:** Tertiary treatment plus dual plumbing or industrial offtake is the practical Indian path; direct potable reuse is rarer.
- **Peg:** A dry STP is not a technology failure; it is an O&M failure.

Managed aquifer recharge and rainwater harvesting

Check dams, percolation tanks, recharge wells and rooftop harvesting put monsoon water back into soil and aquifers instead of into a flood drain. **Merit: low energy**, local, and suited to India's **monsoon pulse**. It treats the aquifer as a **reservoir**. **Demerit:** it cannot **create** water in a drought year if there is no rain to harvest. Poorly designed recharge can **push polluted runoff** into drinking aquifers. It does not, by itself, supply a megacity's 24×7 pressurised network.

- **Peg:** Atal Bhujal-style community recharge and city rainwater by-laws are the Indian policy face of this technology.
- **Peg:** Three technologies, three scales: coast, city sewage, and monsoon land. None is a solitary saviour.

Flow diagram

Clean water shortage -> Desalination RO

Clean water shortage -> Wastewater reuse

Clean water shortage -> Aquifer recharge

Desalination RO -> Power and brine

Wastewater reuse -> O and Needs a monsoon and trust and Needs a monsoon and trust

Aquifer recharge -> Needs a monsoon

Conclusion

Clean alternative freshwater will come from desalination, reuse and recharge, not from a new planet. Desalination is sure and costly. Reuse is circular if sewers work. Recharge is cheap and rain-bound. A serious programme mixes all three and pays the power, brine and maintenance bills in public.

Open WRAP page — <https://wrapexams.com/upsc/mains-answers/gs-3/2024/the-world-is-facing-an-acute-shortage-of-clean-and-safe-alternative-freshwater-what-are-the-technologies-which-can-solve-this-crisis-briefly-discuss-any-three-such-technologies-citing-their-key-merits-and-demerits/>

Q16 · 15 marks

what are asteroids? How real is the threat of them causing extinction of life? What strategies have been developed to prevent such a catastrophe?

GS III · 2024 · Indian Economy

Revision summary

Asteroids are rocky, metal-rich small bodies; near-Earth objects are the ones that can meet our orbit.

An extinction-level impact is geologically real (Chicxulub) and very unlikely on a human calendar given current catalogues.

Smaller city-threatening objects are less fully known and are the practical hazard.

- **Planetary defence:** survey, characterise, then deflect, chiefly by kinetic impact.

NASA's DART mission in 2022 proved a spacecraft can change an asteroid moon's orbit; civil defence is the short-warning backup.

Introduction

Asteroids are rocky leftovers of the early solar system, orbiting mainly between Mars and Jupiter, with some thrown onto paths that **cross Earth's**. A large enough impact can **end a world of species**; that is not a film line, it is the **K-Pg story**. The daily threat to a city is **much smaller**. Strategy now is to **find, track and, if needed, nudge** - not to panic.

Body

What asteroids are

Asteroids are **small Solar System bodies** of rock and metal, larger than meteoroids and without a comet's routine coma. The **main belt** sits between Mars and Jupiter. **Near-Earth objects (NEOs)** are those whose orbits come close to ours. A **meteor** is the streak; a **meteorite** is what lands. Composition ranges from **rubble piles** to nickel-iron. They matter because their **kinetic energy** at closing speeds of many kilometres a second is enormous even for a modest diameter.

- **Peg:** Main-belt asteroids are the population; NEOs are the ones planetary defence cares about.
- **Peg:** **Chelyabinsk (2013)** was a small airburst that still blew out windows; it was not an extinction object.

How real is extinction?

Earth **has** taken extinction-scale impacts. The **Chicxulub** event is the standard link to the end-Cretaceous mass dying. That class of object is **very rare** on human timescales. Surveys of NEOs have already catalogued a large share of the **kilometre-class** bodies that could cause a global catastrophe; none on the public lists is on an **imminent extinction path**. Smaller objects that could **destroy a city** are more numerous and **less fully catalogued**. **So the honest answer is: extinction is real as geology, remote as this century's calendar; regional disaster** is the more practical risk. Complacency is wrong. Apocalypse as next year's policy is also wrong.

- **Peg:** Extinction-class impacts are low-probability, high-consequence; city-killers are the gap in the catalogue.

- **Peg:** NASA and other agencies publish impact-probability tables; a non-zero Palermo or Torino scale number is a watch, not a prophecy.

Prevention strategies

- **The first strategy is survey:** optical and infrared telescopes (ground and space) to find NEOs and compute orbits decades ahead. The second is **characterisation:** radar and fly-bys to know if the body is a rubble pile. The third is **deflection**. **NASA's DART** mission (2022) hit **Dimorphos**, moon of Didymos, and **shortened its orbital period**, proving **kinetic impact**. **ESA's Hera** follows up on that system. Other paper strategies are a **gravity tractor** (a spacecraft that hovers and tugs) and, in extreme theoretical cases, **nuclear standoff blast** - politically and legally fraught. **Civil defence** (evacuate, shelter) is the last layer if warning is short, as with Chelyabinsk's incoming from the sunward sky. International coordination sits in **UNCOPUOS** and planetary-defence groups. The workable doctrine is **early find, small nudge**, years before a predicted hit.
- **Peg:** DART is the first real deflection test, not a science-fiction sketch.
- **Peg:** Time is the weapon: a millimetre-per-second change years out is a miss at Earth.

Flow diagram

Asteroids -> NEOs
NEOs -> Rare extinction class
NEOs -> City-scale risk
Survey and track -> DART kinetic nudge
DART kinetic nudge -> Miss Earth

Conclusion

Asteroids are rocky Solar System bodies; some are near-Earth. Extinction impacts have happened and are unlikely this century; city-scale objects are the live risk. Strategy is catalogue, track and kinetic nudge, as DART showed. Early astronomy is the defence.

Open WRAP page — <https://wrapexams.com/upsc/mains-answers/gs-3/2024/what-are-asteroids-how-real-is-the-threat-of-them-causing-extinction-of-life-what-strategies-have-been-developed-to-prevent-such-a-catastrophe/>

Q17 · 15 marks

What is disaster resilience? How is it determined? Describe various elements of a resilience framework. Also mention the global targets of Sendai Framework for Disaster Risk Reduction (2015-2030).

GS III · 2024 · Disaster Management

Revision summary

Disaster resilience is the capacity to anticipate, absorb, adapt and recover without losing essential functions.

It is determined by hazard knowledge, exposure, vulnerability and institutional as well as household capacity.

A resilience framework includes assessment, risk reduction, preparedness, response, build-back-better recovery, finance and learning.

The Sendai Framework (2015-2030) has seven global targets on mortality, affected people, economic loss, infrastructure, national/local strategies, international cooperation and multi-hazard early warning.

Sendai's four priorities are understanding risk, governance, investment in resilience, and preparedness for recovery.

Introduction

A disaster is a **hazard plus a vulnerable society**. **Resilience** is the capacity of that society to **absorb, adapt and recover** without losing its basic functions - a school that reopens, a clinic that still has power, a household that is not permanently poor after the flood. It is determined by **what was built and practised before the siren**, not by the bravery of the week after.

Body

Meaning and determination

Disaster resilience is the ability of people, infrastructure and institutions to **anticipate, resist, absorb, accommodate, adapt to, transform and recover** from a hazard, in time and in a way that preserves essential identity and function. It is **determined** by a mix of **risk knowledge** (hazard maps, climate data), **exposure** (who lives on the floodplain), **vulnerability** (poverty, caste, disability, housing quality), **coping capacity** (savings, social networks), and **institutional capacity** (codes, drills, insurance, a working NDMA-SDMA-DDMA chain). Engineers measure some of it in **building codes and redundancy**. Economists measure **how fast GDP and livelihoods return**. Communities measure **whether the poorest still eat**. A high-rise with no fire stair is not resilient because it is new. A mangrove belt can be more resilient than a concrete wall that fails once.

- **Peg:** Resilience is capacity before impact, not only relief after impact.
- **Peg:** Determination is multi-layer: $\text{hazard} \times \text{exposure} \times \text{vulnerability} \div \text{capacity}$.

Elements of a resilience framework

A usable framework has **risk assessment** (what can happen, to whom). It has **risk reduction**: land-use, building norms, ecosystem buffers, retrofits. It has **preparedness**: early

warning, drills, stockpiles, last-mile communication in local languages. It has **response**: incident command, search and rescue, medical surge. It has **recovery and "build back better"**: not reconstructing the same death-trap. It has **governance**: who decides, how finance flows, how the disabled and women are not an afterthought. It has **finance**: contingency funds, insurance, social protection that **scales on a shock**. It has **learning**: post-disaster reviews that change the next map. India's official architecture (NDMA guidelines, SDMA, the **Disaster Management Act, 2005**) is one national version of that framework.

- **Peg**: Anticipate, absorb, adapt, transform: four verbs that should appear as budget lines, not posters.
- **Peg**: Early warning without a last-mile volunteer is an element missing its pair.

Sendai global targets (2015-2030)

The **Sendai Framework for Disaster Risk Reduction**, adopted at Sendai, Japan, in 2015, sets **seven global targets for 2030**: (a) **substantially reduce global disaster mortality** by 2030, relative to 2005-2015; (b) **substantially reduce the number of affected people**; (c) **reduce direct economic loss** as a proportion of global GDP; (d) **substantially reduce disaster damage to critical infrastructure and disruption of basic services**, including health and educational facilities; (e) **substantially increase the number of countries with national and local disaster risk reduction strategies** by 2020 (a date now passed, used as a process target); (f) **substantially enhance international cooperation** to developing countries; (g) **substantially increase the availability of and access to multi-hazard early warning systems** and disaster risk information. Those seven sit on **four priorities**: understanding risk, strengthening governance, investing in resilience, and enhancing preparedness for better recovery.

- **Peg**: Sendai shifted the global script from disaster response toward risk reduction, with countable 2030 targets.
- **Peg**: India is a Sendai party; NDMA planning is meant to map onto those targets, not only onto relief norms.

Flow diagram

Hazard -> Resilience
 Vulnerability -> Resilience
 Risk knowledge -> Framework
 Framework -> Warning and codes
 Framework -> Governance and finance
 Sendai 7 targets -> Framework

Conclusion

Resilience is the pre-built capacity to take a hit and continue. It is read off maps, poverty, codes and institutions. A framework joins assessment, reduction, warning, response, recovery and finance. Sendai's seven 2030 targets count deaths, affected people, losses, infrastructure, strategies, cooperation and early warning.

Open WRAP page — <https://wrapexams.com/upsc/mains-answers/gs-3/2024/what-is-disaster-resilience-how-is-it-determined-describe-various-elements-of-a-resilience-framework-also-mention-the-global-targets-of-sendai-fr>

amework-for-disaster-risk-reduction-2015-2030/

WRAP Exams

Q18 · 15 marks

Flooding in urban areas is an emerging climate-induced disaster. Discuss the causes of this disaster. Mention the features of two such major floods in the last two decades in India. Describe the policies and frameworks in India that aim at tackling such floods.

GS III · 2024 · Disaster Management

Revision summary

Climate-linked urban floods come from heavier downpours on sealed soil, lost wetlands, clogged drains and tidal lock.

Mumbai on 26 July 2005 combined record rain, a choked Mithi and high tide; rails and the airport stopped.

Chennai in late 2015 saw prolonged monsoon rain, tank and river overflow, and city-wide disruption tied to wetland loss.

National response sits in the **Disaster Management Act**, NDMA urban-flooding guidelines, AMRUT/Smart Cities, and Wetlands Rules.

- **The binding failure is still local:** encroachment and drains that exist on a map.

Introduction

A city flood used to be called a **drainage problem**. It is now also a **climate-induced disaster**: a **shorter, harder rain** falling on **concrete, clogged drains and missing wetlands**. Mumbai in 2005 and Chennai in 2015 are the two large, well-documented shocks of the last twenty years. Policy has caught up in **guidelines and missions**. The water still finds the old drain.

Body

Causes

Climate is loading the dice: warmer air holds more moisture, so extreme daily rainfall is more likely. **Urbanisation** seals soil with asphalt. **Wetlands, tanks and floodplains** - the city's old sponges - are **plotted and built**. **Storm-water drains** are undersized, blocked with solid waste, and often **combined with sewage**. **Encroachment on riverbanks** (Mithi, Cooum, Adyar, many nallahs) removes the channel. **Tidal lock** in coastal cities stops drainage at high tide. **Upstream dams and sudden releases** can add a pulse. **Poor mapping and housing on low ground** put the poor in the first storey of the flood. The disaster is therefore **climate plus planning plus garbage**, not rain alone.

- **Peg:** Extreme rain is the climate limb; the sealed floodplain is the governance limb.
- **Peg:** Solid waste in a drain is a flood policy failure, not a civic footnote.

Two major floods

Mumbai, 26 July 2005. A record **single-day downpour** over the city, with the **Mithi** overflowing, **airports and rails stopping**, and **large loss of life in low-lying and slum belts**. **Features:** an extreme rain event, a river-turned-drain, high tide, and a megacity whose suburbs had eaten the catchment. The **Fact-Finding Committee** (Chitale) and later work made the Mithi and storm drains a public file.

Chennai, November-December 2015. Weeks of **excess northeast-monsoon rain**, overflow of **Chembarambakkam** and other tanks, the **Adyar and Cooum** in spate, a city-wide halt, and a death and livelihood toll that made it a **national disaster**. **Features: a reservoir-and-tank** system that could not be operated only as flood control, **wetland loss** (including the IT corridor's relationship with the marsh), and rainfall that sat far above what the colonial-era drain assumed.

(Other large events exist - Uttarakhand 2013 is more mountain than city; Kerala 2018 was statewide; Hyderabad 2020 and Bengaluru 2022 were serious urban floods. The question asks for two; Mumbai 2005 and Chennai 2015 are the clearest megacity pair.)

- **Peg:** Mumbai 2005: one brutal day, Mithi, tide, transport collapse.
- **Peg:** Chennai 2015: a monsoon month, tanks and rivers, wetland memory.

Policies and frameworks

The **Disaster Management Act, 2005**, and **NDMA** guidelines on **urban flooding (2010)** ask cities for **drainage master plans, wetland protection, and early warning**. **State disaster plans** and city **Heat-and-Flood SOPs** sit under **SDMAs**. **AMRUT** and **Smart Cities** fund storm-water and some lake revival. **National Water Mission** and **wetland rules** (including the **Wetlands Rules, 2017**) try to keep sponges legal. **Model Building Bye-Laws** and some State rules require **rainwater harvesting** and, in a few cities, **zero-dumping into nallahs**. **NGT** orders on lakes and construction-and-demolition waste are a judicial track. **National Cyclone Risk Mitigation** and coastal zone rules matter for tidal cities. The gap is **municipal capacity and encroachment politics**: a guideline does not move a mall off a drain. Climate policy (National Action Plan, State Action Plans) now names **urban flooding** as an adaptation item, which is the right heading if the budget follows the drain, not only the flyover.

- **Peg:** NDMA urban flood guidelines plus the DM Act are the national framework; AMRUT/Smart Cities are the money pipes.
- **Peg:** Wetland Rules and lake litigation are the ecological half of the same policy.

Flow diagram

Extreme rain -> Urban flood
 Sealed wetland -> Urban flood
 Blocked drain -> Urban flood
 Mumbai 2005 -> Urban flood
 Chennai 2015 -> Urban flood
 NDMA AMRUT wetland rules -> Urban flood

Conclusion

Urban floods combine harder rain with sealed catchments and dead drains. Mumbai 2005 and Chennai 2015 showed a megacity can stop in a day or a month. India has NDMA guidelines, wetland rules and urban missions. They work only if the floodplain is not sold before the next cloud.

Open WRAP page — <https://wrapexams.com/upsc/mains-answers/gs-3/2024/flooding-in-urban-areas-is-an-emerging-climate-induced-disaster-discuss-the-causes-of-this-disaster-mention-the-features-of-two-such-major-flood-s-in-the-last-two-decades-in-india-describe-the-policies-and-frameworks-in/>

Q19 · 15 marks

India has a long and troubled border with China and Pakistan, fraught with contentious issues. Examine the conflicting issues and security challenges along the border. Also give out the development being undertaken in these areas under the Border Area Development Programme (BADP) and Border Infrastructure and Management (BIM) Scheme.

GS III · 2024 · Border Security and Organised Crime

Revision summary

With Pakistan the live issues are the LoC, PoK, Sir Creek, Siachen, infiltration and drone-aided terror or narcotics.

With China the issues are an undelimited LAC, Aksai Chin, Arunachal, patrol face-offs and a roads-and-villages race after Galwan 2020.

A two-front stress is the strategic envelope.

BADP funds border-block development so hamlets do not empty.

BIM funds fencing, lighting, BOPs, roads and surveillance; it must not reduce the border resident to a cleared field of fire.

Introduction

India's **land frontier with China and Pakistan** is long, high and **politically unfinished**. With Pakistan the wound is **Jammu and Kashmir, terrorism and a Line of Control**. With China it is an **undefined Line of Actual Control**, a 1962 memory and a **2020 clash** that ended the old peace-by-patrol habit. People still live on those edges. **BADP and Border Infrastructure and Management** are how the State tries to make that edge a **livable, watchable** strip, not only a trench.

Body

Pakistan: LoC, terror and the west

The **International Boundary** in the west is largely settled; the **Line of Control** in J&K is not a recognised international border. **Pakistan-occupied J&K, Sir Creek** in the Rann, and **Siachen** remain dispute files. **Cross-border terrorism**, infiltration, and **ceasefire violations** on the LoC are the standing security challenge. **Drone drops** of weapons and narcotics, and **tunnel** attempts, are newer tactics. **Punjab and Rajasthan** see smuggling and, at times, drone narcotics more than infantry assault. Nuclear overlay makes a conventional war a last resort, which is why **sub-conventional violence** is the persistent form.

- **Peg:** LoC infiltration and IB drone-narcotics are two Pakistani-border grammars, not one fence problem.
- **Peg:** Siachen and Sir Creek remain unfinished political files beside the daily terror watch.

China: LAC, 2020 and the two-front envelope

The boundary with China is not fully delimited. **Aksai Chin**, the **western LAC**, the **middle sector**, and **Arunachal Pradesh** (which China contests) are the geographic files. **Transgressions, face-offs and dual-use villages** opposite Indian tracts are the peacetime pattern. **Galwan 2020** showed that a patrol clash can kill. The **infrastructure race** - Chinese

roads and villages, Indian roads and landing grounds - is itself a security challenge, because the first truck to a ridge changes facts. **Water** (upstream Brahmaputra dams) and **cyber/info** operations sit beside the infantry. Collusion risk - a **two-front** stress with Pakistan - is the strategic envelope.

- **Peg:** LAC friction is territorial and infrastructural; it is not the same as LoC terrorism, and both can heat together.
- **Peg:** Aksai Chin and Arunachal are the named map disputes; roads and villages are how those maps are pressed daily.

BADP and BIM

The **Border Area Development Programme** (MHA) funds **blocks along the international border** (and, in practice, designated difficult border tracts) for **roads, schools, health, sports, livelihoods and irrigation-like local works**, so that a border hamlet is not forced to empty toward the interior. The aim is **security through presence**: a populated, serviced village is a **human sensor** and a political fact. The **Border Infrastructure and Management** (BIM) scheme, also under the Home Ministry's border-management work, is the harder kit: **fencing, floodlighting, border roads, Border Out Posts, hi-tech surveillance** (including along the west) and related civil works that let the BSF and other forces **see and reach**. Complementary Union efforts - **BRO roads, Vibrant Villages** on the northern border, **rail to Kashmir**, advanced landing grounds - sit in the same family even when the budget head differs. The rights caution is real: **fencing and a security zone** can cut a farmer from a field or a herder from a pasture. Development that is only a **lateral road for the battalion**, with no clinic, will not keep the young from leaving. Security with welfare is the GS-III test on this frontier.

- **Peg:** BADP is the village-and-livelihood head; BIM is the fence-road-BOP-surveillance head.
- **Peg:** Vibrant Villages is the northern political cousin: stay, don't migrate, on the China-facing edge.

Flow diagram

Pakistan LoC terror -> Indian borders
 China LAC friction -> Indian borders
 BADP livelihoods livelihoods -> Border people stay
 BIM fence road BOP fence road BOP -> Force reach
 Border people stay -> Indian borders
 Force reach -> Indian borders

Conclusion

Pakistan's border challenge is terrorism and an unfinished LoC; China's is an unlimited LAC and an infrastructure race. BADP tries to keep people on the rim with schools and roads. BIM builds the fence, light and post. Both fail if the resident is only a spectator of a patrol.

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Q20 · 15 marks

Social media and encrypting messaging services pose a serious security challenge. What measures have been adopted at various levels to address the security implications of social media? Also suggest any other remedies to address the problem.

GS III · 2024 · Indian Economy

Revision summary

Social media amplifies incitement, deepfakes and fraud; encrypted messengers hide both family chat and terror planning.

- **India's tools:** IT Act (including 69/69A), IT Rules 2021, CERT-In, I4C, cyber police, poll-time takedowns and platform grievance officers.

Traceability versus end-to-end encryption remains the hard technical and legal knot.

- **Further remedies:** no universal backdoor, warrant-based access, cyber courts, forward limits, deepfake provenance, literacy and faster MLATs.

Security measures fail if they become a political speech filter rather than a riot-and-terror filter.

Introduction

Social media scales a rumour to a riot in an hour. **Encrypted messengers** hide a terror chat in the same app that hides a family grocer. That is the security challenge: **speed, anonymity, cross-border servers, and cryptography that works**. India has already written **rules, takedown powers and cyber police**. The remaining work is **capacity and literacy**, not only a louder demand for a **backdoor** that would break everyone's lock.

Body

The challenge

Platforms amplify **communal incitement, fake mobilisation, deepfakes, radicalisation and financial fraud**. Hashtags can organise a **lynching or a stampede of panic**. Foreign **influence operations** ride the same rails. **End-to-end encryption** on WhatsApp-like services means even the company cannot read the payload; law enforcement then wants **traceability** of the first originator, which cryptographers say is hard to do without weakening the lock for all. **Closed groups** are where terror and child-abuse material also travel. **VPNs and offshore hosting** frustrate a simple ISP block. The challenge is therefore **content, cash and command**, sitting on tools that also protect **journalists, dissenters and ordinary privacy**. Security with rights is not a slogan here; it is the design constraint.

- **Peg:** Open platforms (feeds) are an amplification problem; encrypted apps are an access-to-content problem.
- **Peg:** Deepfakes and UPI-linked phishing are the newer pair beside old communal forwards.

Measures already adopted

Statute: the **IT Act, 2000** (including sections on intermediaries and cyber offences) and the **Bharatiya Nyaya Sanhita** provisions on incitement, false information and terrorism-related speech, used with older IPC practice. **IT Rules, 2021** (and later amendments) impose **grievance officers, traceability language for significant messaging services, compliance with takedown orders, and a proposed government appeals body** that

remains legally contested. **Section 69/69A** of the IT Act allow **interception, monitoring and blocking** under specified grounds. **CERT-In** directions on incident reporting, **I4C** (Indian Cyber Crime Coordination Centre), **State cyber police**, and the **National Security Council Secretariat / MHA** handle the operational layer. **RBI and I4C** have run **helplines (such as 1930)** against cyber financial crime. **Election Commission** and **MIB** issue takedown and silence-period directions in polls. At **platform level**, companies use **hash-matching, fact-check partners and India grievance offices**. At **international level**, India argues in **UN, G20 and FATF** spaces for cooperation against terror use of ICT, while remaining wary of a single Western speech code. Courts have both **upheld blocking** in some cases and **struck or stayed** overbroad official machinery when it looked like a censor board.

- **Peg:** IT Act plus 2021 Rules are the main domestic lever; CERT-In and I4C are the operational lever.
- **Peg:** Traceability versus encryption is the unresolved legal-technical fight inside those Rules.

Further remedies

Do not mandate a global decryption backdoor; it would be used by criminals against Indian firms and citizens as well. **Do build targeted lawful access** with a **court or senior independent warrant**, on metadata and, where a device is seized, on the endpoint. **Fast-track cyber courts** and **trained prosecutors** matter more than a new offence every year. **Platform design:** default **forward limits, labelling of political ads, provenance watermarks** for public-figure deepfakes, and **real-time crisis protocols** with SDMAs during riots. **Media and school literacy** so a forward is not treated as evidence. **Follow the money:** mule accounts and crypto off-ramps. **Mutual legal assistance** that actually returns a log from an Irish or Californian server in days, not years. **Community fact networks** in regional languages. **Protect whistle-blowers and journalists** so the same toolkit is not only a political takedown machine. The remedy set is **governance of speed**, not a fantasy of a fully transparent chat.

- **Peg:** Literacy plus warrant-based access plus faster MLATs is a rights-compatible package.
- **Peg:** A riot SOP that includes the platform liaison cell should be as normal as a police control room.

Flow diagram

Social feeds -> Rumour fraud radicalisation
 Encrypted apps -> Rumour fraud radicalisation
 IT Act and 2021 Rules Act and 2021 Rules -> Rumour fraud radicalisation
 I4C CERT-In -> Rumour fraud radicalisation
 Literacy warrants MLAT -> Rumour fraud radicalisation

Conclusion

Social media and encrypted apps scale rumour, fraud and terror planning. India already has the IT Act, 2021 Rules, CERT-In and I4C. Further remedies are literacy, warrants not backdoors, faster cross-border legal aid, and platform design that slows a riot without silencing a citizen.

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WRAP Exams

Compiled answer key

Last pages of this pack. Each question links to the WRAP model answer on wrapexams.com.

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Q1 10 marks	Q2 10 marks	Q3 10 marks	Q4 10 marks
Q5 10 marks	Q6 10 marks	Q7 10 marks	Q8 10 marks
Q9 10 marks	Q10 10 marks	Q11 15 marks	Q12 15 marks
Q13 15 marks	Q14 15 marks	Q15 15 marks	Q16 15 marks
Q17 15 marks	Q18 15 marks	Q19 15 marks	Q20 15 marks

Question-wise key

Q1 · 10 marks Solution

Q2 · 10 marks Solution

Q3 · 10 marks Solution

Q4 · 10 marks Solution

Q5 · 10 marks Solution

Q6 · 10 marks Solution

Q7 · 10 marks Solution

Q8 · 10 marks Solution

Q9 · 10 marks Solution

Q10 · 10 marks Solution

Q11 · 15 marks Solution

Q12 · 15 marks Solution

Q13 · 15 marks Solution

Q14 · 15 marks Solution

Q15 · 15 marks Solution

Q16 · 15 marks Solution

Q17 · 15 marks Solution

Q18 · 15 marks Solution

Q19 · 15 marks Solution

Q20 · 15 marks Solution

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