TEST-2

GEOGRAPHY OF INDIA & WORLD

MODEL ANSWERS

Q.1 Different reasons can be cited for the occurrence of floods in eastern, northeastern, western and southeastern parts of India. Explain. Also, suggest some effective solutions to mitigate the effects of floods?

Answer

Approach

Define flood

Explain how geography plays critical role in determining floods

Explain commons reasons of flood

Show flood prone areas via map

Suggest some mitigating steps

Conclude well

Floods occur commonly when water in the form of surface runoff exceeds the carrying capacity of the rivers and streams and flows in outer low-lying areas. Floods are relatively slow in occurrence and occur in well-identified areas in particular time of the year

Reasons for the occurrence of floods

Eastern and North Eastern areas

- The majority of the rivers flowing in this region are perennial in nature. The melting of ice along with long and sudden rainfall with cloud burst causes flooding
- Construction of big dams e.gFarrakka barrage, deforestation, large-scale construction activities in river beds cause flooding
- The plain topography of the region causes a siltation which leads to the breaking of embankments.
- The change in the course of the river for e.gKosi causes large scale destruction and flooding.

Western Areas

- States like Rajasthan, Haryana Gujarat, and Punjab are also getting inundated these days due to flash floods.
- This happens partly because of monsoon and partly because of blocking of rivers channels by human activities.

Southeastern areas

- In these areas, retreating monsoon causes heavy rainfall in the months of October and November.
- This area is also prone to tropical cyclones which cause heavy downpour in less time.

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Fig. 13.25 Map showing flood-prone areas in India.

Solutions for mitigating floods

- Construction of flood protection embankments, afforestation, constructions of small dams and discouraging major construction activities in upper reaches of most of flood creating rivers.
- Removal of the human population from flood-prone areas, avoiding throwing of debris in river channels and maintaining the flow of the river are some other solutions.
- Teams of National Disaster Relief Force(NDRF) should be placed at a distant location well before the the occurrence of floods.
- Post relief measures such as hygienic food, new clothes, potable water should be provided immediately.
- Participation of local people in mitigating the effects of floods is necessary. They should be trained in flood management
- Use of technology which includes flood warning system, wireless communication sets, message based weather forecast system should be adopted.

Conclusion-

Effective flood management depends on the participation of various stakeholders viz government, NGOs, and local people. A coordinated effort along with early preparedness will surely lead to effectively minimising the effects of the floods.

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Q.2 Demand by states such as Madhya Pradesh, Maharashtra, and Tamilnadu for the extension of GI tag to aromatic basmati rice in these areas has created a new set of debate and confrontation with traditionally GI tag holder Basmati rice producing areas of Punjab, Haryana, and Jammu. Critically examine the issue and importance of G.I tag

Answers

Approach

Define geographical indicator

Mechanism to get it GI tag,who provides it,International norms

Why demand is arise in states such as M.P,T.N etc ?

Importance of G.I,why its demand is increasing ?

Write it with pros and cons

Conclude well

Basmati rice of Punjab-Haryana region is recognised for its typical aroma, milling quality and distinguish texture. The states of Punjab, Haryana, Uttar Pradesh, Himachal Pradesh and Jammu and Kashmir have got GI tag for its production.

Arguments in favour of the extension of GI tag to other regions such as Madhya Pradesh and Maharashtra

- Farmers of Madhya Pradesh Maharashtra have benefitted from the cultivation of basmati rice. Their income has nearly doubled. Extension of GI tag will help in recognising their rice produce.
- Procurement of basmati rice by the private companies in the farm itself has reduced the need to find the market for the produce.
- Variation in rainfall does not affect rice cultivation as compared to other crops such as soyabean.
- The problem of farmers' suicide is severe in these areas. The introduction of GI tag will certainly help to lift the poor farmers from the shackles of poverty.
- Mostly women are involved as a tenant cultivator. Extension of GI tag will indirectly empower them.

Arguments against the extension of GI tag in other areas such as Madhya Pradesh and Maharashtra

- As per the arguments of Agriculture and Processed Food Product Development Authority (APEDA), the other mentioned regions do not have the tradition of producing basmati rice which is a prerequisite for GI tag.
- For the production of best quality of basmati rice, the sunshine of fewer than 12 hours is required. At the same time, day temperature should be around 30 degrees and night temperature of around 20 degrees is required which is not found in this region.
- Prevalence of high temperature in this area affects the quality. It results in higher percentage of broken rice during milling.
- If GI tag will be issued then there may be a possibility that the low-quality rice from this area may overall degrade the popularity of Basmati rice.
- Low price offered to low-quality basmati rice may cause a reduction in its cultivation which may affect the financial security of the farmers.
- Our competitiveness for the quality, face to face with Pakistan may reduce due to poor quality of basmati rice.

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Conclusion-

Before extending GI tag to the other areas all the concerns must be taken into account. GI tag should be extended to only those areas or districts which can produce the same quality of aromatic basmati rice having the same climatic condition.

Q.3 In what ways do the Andaman-Nicobar Island and Lakshadweep differ in their geological evolution and topographical condition? Also explain the significance of these islands to India in different spheres?

Answer

Approach

Explain their geological and topographical formations first,their differences

Draw map of Indian ocean where these islands are located

Significance of these islands

Economic- tourism,resources,

Strategic-balance of power,pivot to asia,naval base of India,energy security,blue economy of India

Diversity of India, races, tribes, flora and fauna, biodiversity hotspot

Andaman-Nicobar islands are the two major islands having wide socio-economic and strategic significance. They are formed by the different geographical phenomenon.

Evolution and topography of Andaman and Nicobar island

Andaman-Nicobar islands are the extension of Arakan Yoma hills of Burma. They are mainly of continental in origin and some of them are of volcanic origin.

The topography of Andaman group of islands is hilly in nature. It has a very small proportion of plain surface. The coastline of Andaman and Nicobar Island is indented having a smooth slope.

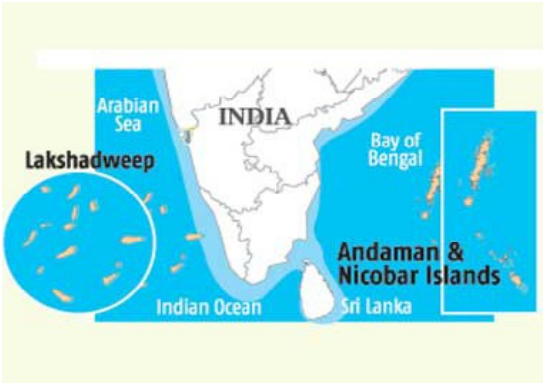
Andaman Nicobar Islands are covered by evergreen forests having a wide range of flora and fauna. Coastlines are covered by Mangroves.

Evolution and topography of Lakshadweep group of islands.

Lakshadweep group of islands are coral in origin. These islands are formed by agglomeration of the skeleton and calcium carbonate of tiny marine animals called polyps.

These are basically atolls with a flat surface and are lacking in matured soil. The outer edges of these islands are having steep slopes.

Compared to Andaman, these islands do not possess reach variety of flora and fauna.



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Significance of Andaman-Nicobar and Lakshadweep group of Islands

- Historically, Andaman Nicobar Island has wide significance. The cellular jail was infamous for holding India's Freedom fighters. Azad Hind Sena of Subhash Chandra Bose was successful in liberating this part of India from Britishers.
- In strategic sphere, its proximity to Malacca strait makes it a significant place. The Andaman andNicobar Command is the only Tri-service theater commandof the Indian Armed Forces, based at Port Blair. Lakshadweep's proximity to Maldives, a democratically disturbed country, makes it very significant to India.
- In Agriculture sphere, paddy, coconut, areca nut along with different fruits such as banana and oranges are the main produce of Andaman group of islands. While Lakshadweep produces mainly coconut.
- Both islands are the major tourist attraction having wide beaches, historical places and natural flora and fauna.
- Andaman and Nicobar islands are home to anthropologically significant ethnic tribes such as Great Andamanese, Jarawa, and Sentinelese.
- In Environmental perspective, Andaman is famous for many national parks, wildlife sanctuaries and biosphere reserves having many endemic species of plants and animal.

Conclusion-

The very fact that these islands are ecologically sensitive, strategically important, and culturally significant creates a need to channelize resources and bring a sustainable development on these islands.

Q.4 The polymetallic nodules present at the bed of sea can become next big mineral resource for major countries. Explain the condition required for the formation of polimetallic nodules. Also highlight about India's efforts in the exploration of these nodules?

Answer

Approach

Explain polymetallic nodules

Explain conditions required for their formation

India's efforts for deep sea operations.

Conclude well

Polymetallic nodules are the Fe-Mn oxide deposits. They are potato shaped, porous, black earthy colored. They occur at the depth of around 4000m to 5000m in the deep sea. In the Indian Ocean, these nodules occur in different basins such as Crozet basin, Madagascar basin, Somali basin, South Australian basin, Wharton basin and the Arabian Sea.

Next big Mineral resource

- Manganese, copper, nickel, and cobalt are the important minerals that can be extracted from these nodules.
- Successful extraction minerals from these nodules can fulfill the infrastructure need of the world.
- With increasing global population and pressure on conventional metal, these minerals extracted from the nodules can act as an alternative.

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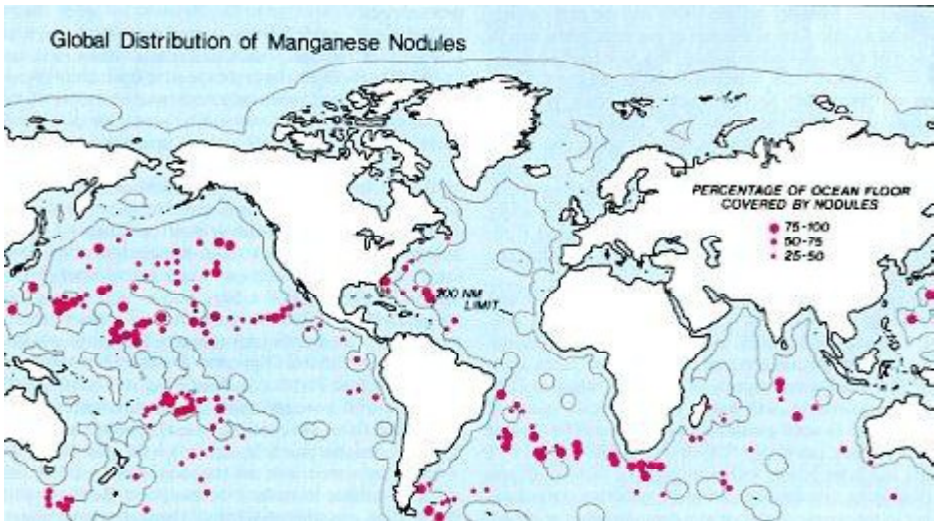

Conditionrequired for the formation of polymetallic nodules

- There should be a low sedimentation rate in Deep Ocean.
- Availability of oxidizing environment is another prerequisite condition
- There should be availability of nucleus around which accretion of oxides can take place
- Bottom currents should be of the low velocity.

India's efforts in the exploration of these nodules

- India has entered into 15-year contract with International seabed authority starting from the year 2002 which is a regulating and nodal agency for allocation of blocks for exploration
- Indiahas started Polymetallic Nodules Program aimed at exploration and development of technologies for harnessing nodules from Central Indian Ocean Basin (CIOB) allotted to India.
- The program has four components 1) survey and exploration 2) Environment impact assessment 3) Technology development for mining 4) technology development for metallurgy
- India has developed a remotely operable submarine called ROSUB 6000. It can operate at the depth of 5 to 6 km.
- Similarly, a remotely operable in-situ soil tester is also developed by India.
- A demonstrable pilot plant is also developed at Hindustan Zinc Limited Udaipur. Another National the metallurgical laboratory is also been developed at Jamshedpur.

Conclusion-

The success of mineral exploration program will depend on the speedy development of technology for exploration and extraction. In order to sustain India's economic engine, we must seriously look into providing all resources for exploring this alternative source of mineral wealth.

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Q.5 Location of cotton industry in India can be attributed to various factors. Explain. Further discuss the various factors that are prohibiting the growth of cotton textiles industry in India?

Answer

Approach

Define cotton industry ,indicate locations on map.

Explain factors that affect location of cottage industries.

Explain problems of cotton industries,what factors that are prohibiting their growth in India.

Social issues arising out of it

Suggestions

Conclude well

Cotton textiles industry is one of the oldest traditional industries of India. It has a Himalayan contribution in bringing out equitable and inclusive growth in both urban as well as rural areas.

Factors associated for the location of cotton textiles.

Historical factors- British government established first cotton textiles industry in the Mumbai. It was close to cotton producing area of Maharashtra and Gujarat. Same time it was connected to Manchester and Liverpool via sea route. Similarly, they established cotton mills in Ahmadabad and Kolkata.

Raw material – Though cotton does not lose its weight with time. But the location of industries near the cotton producing area reduces transport cost.

Power – availability of power helps to locate industry away from cotton producing areas. In Tamilnadu, the hydel power plants have helped to sustain cotton mills. Similarly, availability of hydropower has helped Kolkata to locate industries in its proximity.

Labour – Lower labor cost centre like Ujjain, Agra, Hathras, Coimbatore, Tirunelveli have helped to locate cotton mills away from cotton producing areas.

Market- Availability of market plays an important role in establishing industries. Cotton Industries at Mumbai, Kolkata, Ahmedabad can largely be attributed to this reason.

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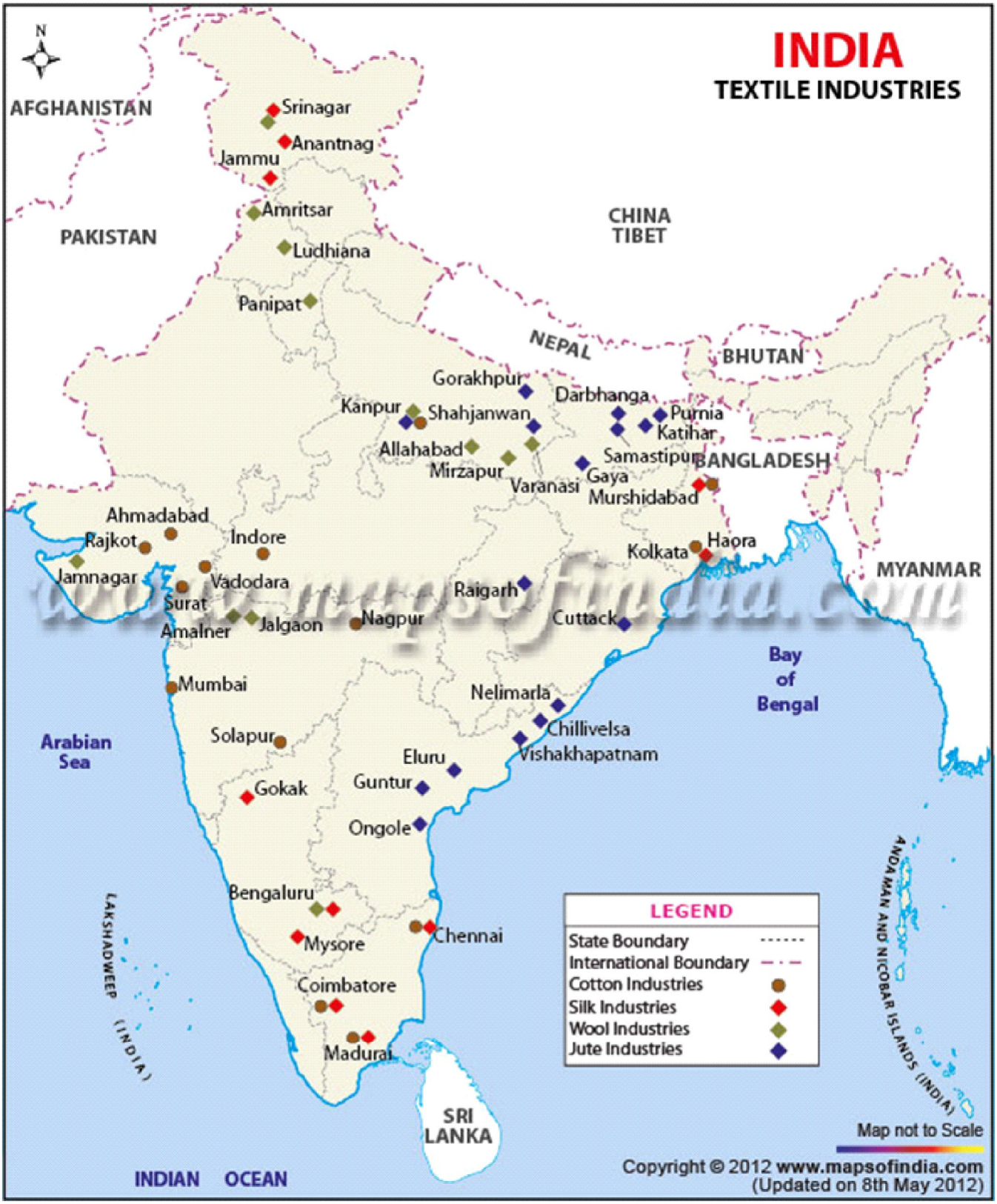

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Factors that are prohibiting the growth of cotton Industry

1. Scarcity of Raw Cotton:
   Indian cotton textile industry suffered a lot as a result of partition because most of the long staple cotton growing areas went to Pakistan. Further Issues associated with BT cotton and debt trap leading farmer's suicide is creating a hindrance.
2. Obsolete Machinery:
   Most of the textile mills are old with obsolete machinery. This results in low productivity and inferior quality.
3. Erratic Power Supply:
   Power supply to most cotton textile mills is erratic and inadequate which adversely affects the production.
4. Low Productivity of Labour:
   Labour productivity in India is extremely low as compared to some of the advanced countries. On an average, a worker in India handles about 2 looms as compared to 30 looms in Japan and 60 looms in the USA.
5. Strikes:
   Labour strikes are common in the industrial sector but cotton textile industry suffers a lot due to frequent strikes by a labour force.
6. Stiff Competition:
   Indian cotton mill industry has to face stiff competition from power loom and handloom sector, synthetic fibres and from products of other countries.
7. Sick Mills:
   The above factors acting singly or in association with one another have resulted in many sick mils.

Conclusion –

Growing and sustaining demand can improve and incentivise cotton Industry. For that, it is necessary to popularise 'swadeshi fashion' with the help of advertisement and persuasion campaigns.

Q.6 Indian ocean has large no. of islands having wide spread over it provides huge strategic positions but also threat for security ? explain

Answer

Approach

Firstly define indian ocean and near by geographical areas such as islands via map denote locations that are strategic to India's security.
What opportunities that India have ?
External threats to security of india ?
Solutions to cope up with
Conclude well

India wishes to build and strengthen its global image, commensurate with its size, population and the strength of its economy. It espouses the ideals of democracy, secularism and peaceful co-existence. These aspirations, however, are challenged by a range of factors: a large population; ethnic, religious and federal-state differences; food, water and energy security concerns; and the realisation that it

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may face a challenging China and an unstable, nuclear-armed Pakistan. Yet, to sustain its current growth and achieve its great power ambitions, India sees the Indian Ocean Region as critical to achieving its national interests.

Indian Ocean Objective

Attempting to spread its influence across the entire Indian Ocean Region, through trade and investment, diplomacy and strategic partnerships.

Upgrading relations with Africa, the Middle East and Southeast Asia; regions that hold mineral deposits and energy reserves critical to India's economic development and great power aspirations.

Positioning itself to emerge as the dominant Indian Ocean power in the decades ahead.

Ensuring that China does not gain a significant strategic foothold in the region.

Strengthening influence and control over Indian Ocean choke points through security relationships with key littoral states such as Singapore, Mauritius and Oman

India's Strategic Objectives in the Indian Ocean

Broadly speaking, the success so far behind India's foreign policy in the Indian Ocean has been due to its focus on: using trade and investment; concessional loans; diplomacy, including the upgrade and creation of new embassies or consulates; multi-lateral initiatives, such as the India Africa Forum and the Indian Ocean Naval Symposium; education/training placements for foreign students through the Indian Technical and Economic Cooperation, Tele-Education, Tele-Medicine and Pan African E-Network programmes; training billets in Indian military academies for foreign military personnel; capacity building programmes in education, government and military affairs; and defence cooperation.

The role of naval diplomacy in enhancing India's influence is an increasingly important feature of its strategy for engaging Indian Ocean littoral states. India is currently engaged in modernising and expanding its navy, which is very much in line with its strategic objective to become a major Indian Ocean powerbroker. The salient aspects of its naval modernisationprogramme include: upgrading naval base facilities and listening stations, acquisition of a nuclear-powered submarine capability and aircraft carriers.

India's rationale for, and emphasis on, naval diplomacy and, generally, the expansion of its navy, has been illustrated on numerous occasions by its most senior naval officials."To fully understand the operational challenges to our fleet it is important that we recognise that India is essentially a maritime nation and that our prosperity, power and prestige are inextricably linked to the oceans," stated Vice Admiral Sangram Singh Byce, Flag Officer Commanding-in-Chief, of the Indian Navy's Western Naval Command. "The Indian Ocean encompasses about one-fifth of the world's sea area and the Indian Peninsula juts two thousand kilometres into the sea, bringing approximately 50 percent of the Indian Ocean within a 1000-mile arc ascribed from Indian territory," he said. "India's dominant position in the middle of the Indian Ocean and astride some of the busiest strategic Sea Lanes of Communications imposes on us huge operational responsibility to ensure security of both the choke points and the SLOCs so that there is free and unhindered flow of international trade,

Q.7 Besides India has a vivid geography of huge land mass,elongated coastline, and large hilly area,why India is lagging behind in the process of economic development.

Answer

Approach

Describe briefly about topography of India

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Put some fodder points to decorate the answer
Reasons for India to lag behind in the growth process
Queston is straight hit it with some arguments with pros and cons to balance the answer
Conclude well

Presently, though India is one of the most booming economies in the world, which is facing the financial recession phase (when developed economies like USA, UK, Europe, etc are financially breaking down). The basics of livelihood and civilization as food, shelter, clothing, education is not at all available to the people of India. The infrastructure in metropolitan cities is bad which becomes evident during monsoons (eg. Mumbai, country's commercial capital has buildings and roads being destroyed when Nature spells rains on it, killing many people). Delhi is all set to host the Common Wealth Games 2010, but the condition of the JawaharLal Nehru Stadium is not upto the mark (security reasons and for the games to be played smoothly). Many scams and government irregularities are coming up, yet being an Indian I hope that India will leave a mark on the world .These are the state of metro states in the country. The villages and the Below Poverty Line (BPL) masses live in really deplorable conditions. Yes, there has been a drastic growth among all the social classes in India, yet the country lags behind all the nations who are developing or were once upon a time behind India. To name a few, Africa and China.

Over explosion of its population – Indians lack basic education for every child upto class 10^{th}. This creates lack of exposure, awareness and knowledge. This leads to no birth control. Hence the country still leads among nations with the highest amount of population.

Lack of compulsory basic education – Children who live in slums in India do not study after class 2^{nd} or 3^{rd} as their parents do not have money. The children start working as rag pickers, beggars or maids in streets and houses, respectively.

Poverty – Yes. This is the major cause and result of the points mentioned above. Over-population and lack of education causes poverty. Poverty causes crime and ill acts which gets reflected in Indian mentality wherever they survive.

This is because of the orthodox, opposition leaders of India. Our Prime Minister too has fought many hurdles for the Nuke deal. He still faces many problems yet is running the country well and with good intentions. The state governments are different and regionlised. This causes more problems for the masses as they try to influence their local masses to achieve their selfish motives, hurting the general well-being of all.

I am positive for India that the hurdles will go away one day, as young leaders are coming in and trying to do something good. Here terrorism and climate change issues are fatal and very disturbing. Man needs to come together to save the human race and not think about their selfish needs,anymore.

Q.8 Changing climate conditions are creating hurdles for agriculture as country is facing deficiat monsoon from last two years?what are the factors responsible for it?suggest some mitifation strategies for fighting it.

Answer

Approach

Briefly describe about climate conditions over Indian subcontinent
How climatec conditions can affect agriculture of India,socio economic impacts.
Factors affect monsoon of India
Suggest some mitigation strategies for climate change
Conclude well

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Climate change leads to abnormalities in climatic conditions of a region, consequently there is change in one or many of the patterns like precipitation, average temperature, wind, vegetation cover etc.

Every crop type requires unique set of climatic conditions for its normal growth namely temperature, period and amount of precipitation, type of soil, mineral content of soil etc.

Because of climate change there is change in the pattern and period of precipitation leading to extreme conditions like flood or drought, delay in the onset of rainfall during the critical phase after sowing or unseasonal rains during harvesting like the rains which destroyed rabi crops in major parts of india can adversely affect the crop production, to mitigate the drought problem agriculture practices should be based on the changing agro climatic conditions and the areas prone to be affected by such conditions should use drought prone variety of seeds, efficient water management like rain water harvesting, drip irrigation etc. to meet water requirements

Agriculture, the backbone of Indian economy, contributes to the overall economic growth of the country and determines the standard of life for more than **50%** of the Indian population.

Agriculture contributes only about **14%** to the overall GDP but its impact is felt in the manufacturing sector as well as the services sector as the rural population has become a significant consumer of goods and services in the last couple of decades.

Problems faced by the Agriculture Sector

- ***Fragmented land holding***
  Nearly 80% of the 140 million farming families hold less than 2 acres of land. Large land holdings enable the farmer to implement modern agricultural techniques and boost productivity. Small land holdings restrict the farmer to use traditional methods of farming and limit productivity.

- ***Irrigation problems***

  Most of the farming in India is monsoon dependent – if monsoons are good, the entire economy (and not just the agricultural sector) is upbeat and when the monsoon fails, everyone everywhere takes a hit to some extent. The problem here is of proper management of water or the lack of it.

- ***Seed problems***
  Most of the farmers – especially the poor and marginal ones – are dependent on seeds sold in the market. Moreover, the HYV seeds as well as the GM seeds which promise higher yields force the farmers to buy seeds for every crop. With spurious seeds hitting the market, the farmers' woes have exceeded all limits. Sometimes seeds do not give the stated/claimed yields and farmers run into economic troubles.

- ***Sustainability problems***
  Indian agricultural productivity is very less compared to world standards due to use of obsolete farming technology. Coupled with this, lack of understanding of the need for sustainability in the poor farming community has made things worse.

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Water usage is also unplanned with some arid areas misusing the irrigation facilities provided by planting water intensive crops. In areas where irrigation in the form of rivers and canals is not sufficiently available, ground water resources are heavily exploited.

Sustainability in agriculture is of utmost importance as many problems faced by farmers are related to this. Excess fertiliser usage not only makes the plants dependent on artificial fertilisers but also erodes the land quality, polluted ground water and in case of a surface runoff, pollutes the nearby water bodies.

- ***Over dependence on traditional crops like rice and wheat***

  Every crop requires certain climatic conditions to give the best yields. Though rice and wheat are produced in a large area in India, certain areas can readily switch to other crops to get better productivity. India is importing cooking oil from abroad though we have the necessary conditions to grow more oilseeds here.

  Heavy dependence on traditional rice and wheat points to the lack of a proper national plan on agriculture. Excess stocks in a few crops lead to problems in the selling of the produce, storage and shortage of other essential farm output.

  Moreover, if the farm output is skewed towards crops like rice, irrigation and ground water facilities are misused by farmers, which leads to a host of other problems.

Solutions

1. Consolidation of village lands and cooperative farming will ease the burden of **fragmented land** holdings. When the farmers form a consortium at the village level, the aggregate land can be farmed by using the latest technology.
2. Banks too will be willing to lend money to a village consortium which can be utilised to boost farm productivity, employ sustainable farming methods, reduce over – dependence on fertilisers and thus solve many problems.
3. The overall risk of a crop failure is less in this case and small farmers have a higher chance of earning a decent income at the end of the harvest season. Agricultural intensity also rises when a planned strategy adopted at the village level is implemented.
4. Agricultural credit and farm mechanisation for small and marginal farmers will continue to be difficult unless pooling of farm resources and/or a joint usage of farm technology are employed.
5. **Irrigation problems** can be addressed by Government – preferably at the State and National levels. Though the Government cannot force farmers to produce only the designated crops in particular areas, it can surely educate them about the alternatives.
6. When proper techniques (in water management at the regional, state and national levels as well as a crop plan of what to produce and where to produce) are employed, it will be a win – win situation for both the farmers as well as the country.
7. Irrigation problems as well as problems due to single/traditional crop dependence can be solved by a national level plan for agricultural production. Government can encourage farmers to shift to cash crops (oil seeds etc) instead of food crops in areas where food crops are not at an advantage to reduce imports and also to boost exports.

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8. **Seed problems** can be overcome by creating in house seed banks at the village level for traditional crops (thereby reducing farmer dependence on external seed banks), selling Government approved seeds through proper channels (to eradicate spurious seeds) and strict penalties on seed marketing companies in case the seeds do not match the claims – germination and yield - of the companies. Terminator seeds should not be encouraged as a matter of principle as they force farmers to buy seeds for every crop.
9. Scientific research in this subject is to be encouraged to promote seeds which are mild on resource requirements but help the farmers in boosting the yields.
10. Sometimes small innovations at the grass root levels can solve a host of problems specific to a particular region. District agricultural officers must make it a habit to encourage such ideas and also take part in knowledge sharing to implement the ideas at a regional level.
11. Some **sustainability** solutions are proper crop management on the basis of water availability, crop rotation, deploying modern agricultural practices to boost productivity, switching over to organic farming (village pools will reduce costs), thrust on allied activities.
12. For organic farming, first of all, a proper awareness has to be built – among both the farmers as well as consumers. **Organic farming** reduces the unnecessary usage of artificial fertilisers, reduces water consumption, strikes a good balance between the local environment and the farm output, helps the land retain its fertility for a long time, reduces costs in the long run and also with the creation of a proper market in the towns and cities establishes a virtuous cycle between consumers and farmers.
13. **Storage facilities** can be boosted by small cold storage or granaries at village level which can be established from Panchayat funds and loans to the village society (this eliminates dumping of excess crops in the market yard).
14. A 700 ton cold storage cum warehouse will cost around Rs. 1.5 crores which is very reasonable cost for a group of villages or a large Panchayat, provided the State or Union Government funds the cost. E-Mandis will also help the farmers to correctly predict the prices and thus market them profitably.
15. At the **National level** an **agricultural strategy or policy** to improve information exchange, national level cold storage chains and logistic network (If Walmart can do, then Government of India can also do!) is the need of the hour.
16. Proper management of **PDS** has to be done to cut down wastes so that a reliable estimate of the food grain needs will be made. The excess (after keeping reserves for a potential drought year) can be exported provided the quality is maintained by means of proper storage.
17. Food wastage can thus be cut down and agricultural trade balance can be improved if there is a national level plan.

Q.9 Explain how inland waterways are important in the economic development of the country?discuss

Answer

Approach

Briefly explain about national waterways
How national waterways can help in the economic development of India
Economic importance of national waterways
Current development in national waterways and government initiatives
Conclude well

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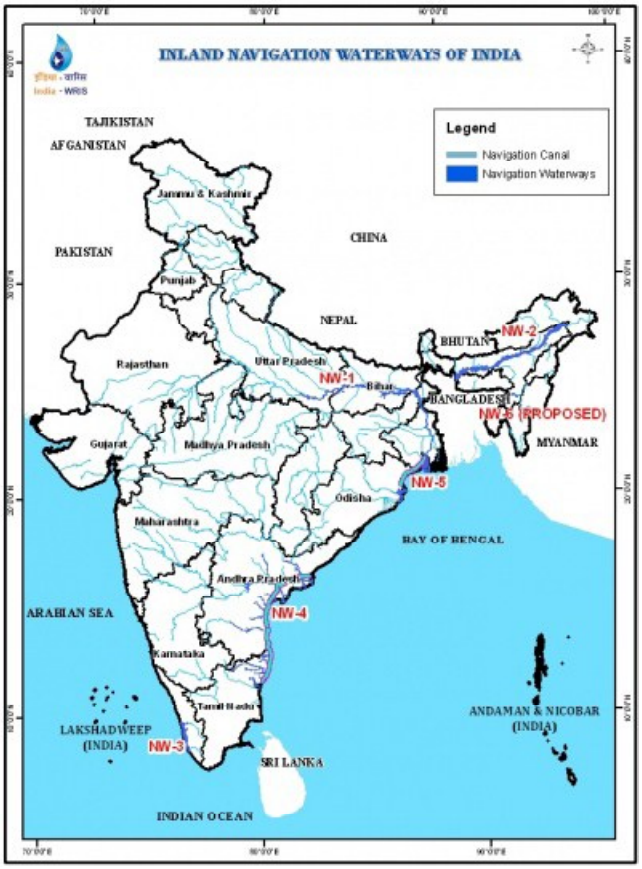
Inland Waterways Authority of India (IWAI) was constituted in October 1986, for the development and regulation of inland waterways for shipping and navigation. The Authority undertakes various infrastructure development works on national waterways. It also carries out feasibility studies and prepares proposals for declaration of other waterways as National Waterways. It also assists States in development of IWT sector and provides subsidy to IWT operators for acquiring IWT fleet for transportation of cargo and passengers.

The National Waterways Bill, 2015

- The National Waterways Bill, 2015 was introduced in LokSabha on May 5, 2015 by the Minister of Road Transport and Highways and Shipping, Mr. NitinGadkari.
- Under Entry 24 of the Union List of the Seventh Schedule of the Constitution, the central government can make laws on shipping and navigation on inland waterways which are classified as national waterways by Parliament by law.
- The Bill identifies additional 101 waterways as national waterways. The Schedule of the Bill also specifies the extent of development to be undertaken on each waterway.
- The Bill repeals the five Acts that declare the existing national waterways. These five national waterways are now covered under the Bill.
- The Statement of Objects and Reasons of the Bill states that while inland waterways are recognised as a fuel efficient, cost effective and environment friendly mode of transport, it has received lesser investment as compared to roads and railways. Since inland waterways are lagging behind other modes of transport, the central government has evolved a policy for integrated development of inland waterways.



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Advantages of water transport :1. cost : Rivers and oceans are natural and does not require any cost of construction. even the maintenance cost is less as compared to roadways and airways.2. capacity: Heavy and bulky goods can be transported easily at a little cost through water transport.3.Power requirement : comparatively less tractive power is required for its operation which results in a lesser cost of operation.4. It is indispensable to foreign trade.5. During natural calamities like floods, etc. when rail or road transport is disrupted, water transport alone is possible.Challenges faced by the water transport sector in India :It is the least preferred mean of transport because of the time factor. It is susceptible to ocean calamities.seasonal characteristics of river - water may freeze during winter or the water level may go down during summers. sometimes the river changes its course causing dislocation in normal route.not suitable for small businesses. construction of canals reduces the volume of water in the rivers (effects peninsular rivers as they are rain dependent)government has not put too much effort in the water transport sector, hence it is lagging in infrastructure.India has huge scope for water transport with a large part of it covering the Indian ocean and so many rivers in the main land. Water transport can help trade a lot and it should be used with its full potential.Challenges. 1. Ship building expenditure is heavy.2. The material used in port sndharbour building is in huge manner so it consume large part of capital. 3. Climatic condition affect on transportation. 4. Incidents like oil spills can deteriorate ocean environment. 5. Deposition of silt by rivers can reduce the capability of ships. 6. Water transportation also depends on political relationship among countries.

Q.10 Define earthquake ,what are the interrelated geographical phenomen to earth quake,identifyvulnearable areas in India,suggest some preventative measures for it.AnswerApproach

Briefly define earthquake and their geological phenomena and related events
Draw map of seismic zones in India and related threats pertaining to it.
States which are highly vulnerable to earthquake
Suggest some mitigation and prevention measures
Conclude well

Earthquakes are by far the most unpredictable and highly destructive of all the natural disasters. Earthquakes that are of tectonic origin have proved to be the most devastating and their area of influence is also quite large. These earthquakes result from a series of earth movements brought about by a sudden release of energy during the tectonic activities in the earth's crust. As compared to these, the earthquakes associated with volcanic eruption, rock fall, landslides, subsidence, particularly in the mining areas, impounding of dams and reservoirs, etc. have limited area of influence and the scale of damage. It was mentioned that the Indian plate is moving at a speed of one centimetre per year towards the north and northeastern direction and this movement of plates is being constantly obstructed by the Eurasian plate from the north. As a result of this, both the plates are said to be locked with each other resulting in accumulation of energy at different points of time. Excessive accumulation of energy results in building up of stress, which ultimately leads to the breaking up of the lock and the sudden release of energy causes earthquakes along the Himalayan arch. Some of the most vulnerable states are Jammu and Kashmir, Himachal Pradesh, Uttarakhand, Sikkim, and the Darjiling and subdivision of West Bengal and all the seven states of the northeast. Apart from these regions, the central-western parts of India, particularly Gujarat (in 1819, 1956 and 2001) and

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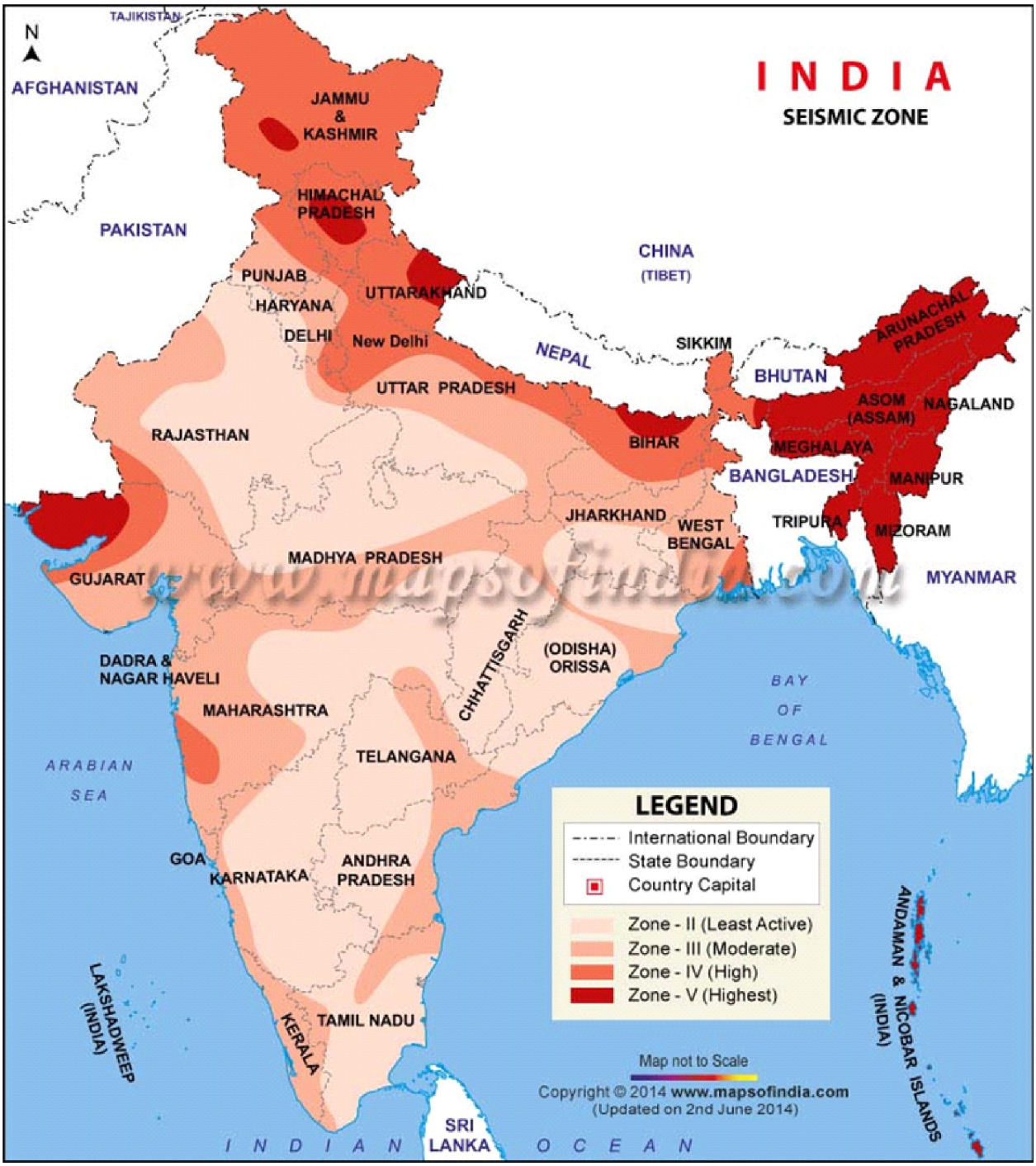
Maharashtra (in 1967 and 1993) have also experienced some severe earthquakes. Earth scientists have found it difficult to explain the occurrence of earthquakes in one of the oldest, most stable and mature landmass of Peninsular block for a long time. Recently, some earth scientists have come up with a theory of emergence of a fault line and energy build-up along the fault line represented by the river Bhima (Krishna) near Latur and Osmanabad (Maharashtra) and the possible breaking down of the Indian plate. National Geophysical Laboratory, Geological Survey of India, Department of Meteorology, Government of India, along with the recently formed National Institute of Disaster Management, have made an intensive analysis of more than 1,200 earthquakes that have occurred in India in different years in the past, and based on these, they divided India into the following five earthquake zones: (i) Very high damage risk zone (ii) High damage risk zone (iii) Moderate damage risk zone (iv) Low damage risk zone (v) Very low damage risk zone. Out of these, the first two zones had experienced some of the most devastating earthquakes in India. areas vulnerable to these earthquakes are the North-east states, areas to the north of Darbhanga and Araria along the Indo-Nepal border in Bihar, Uttarakhand, Western Himachal Pradesh (around Dharamshala) and Kashmir Valley in the Himalayan region and the Kuchchh (Gujarat). These are included in the Very High Damage Risk Z one. Similarly, the remaining parts of Jammu and Kashmir, Himachal Pradesh, Northern parts of Punjab, Eastern parts of Haryana, Delhi, Western Uttar Pradesh, and Northern Bihar fall under the High Damage Risk Zone. Remaining parts of the country fall under moderate to very Low Damage Risk Zone. Most of the areas that can be considered safe are from the stable landmass covered under the Deccan plateau. Socio-Environmental Consequences of Earthquakes The idea of an earthquake is often associated with fear and horror due to the scale, magnitude and suddenness at which it spreads disasters on the surface of the earth without discrimination. It becomes a calamity when it strikes the areas of high density of population. It not only damages and destroys the settlements, infrastructure, transport and communication network, industries and other developmental activities but also robs the population of their material and socio-cultural gains that they have preserved over generations. It renders them homeless, which puts an extra-pressure and stress, particularly on the weak economy of the developing countries.



Earthquake Hazard Mitigation Unlike other disasters, the damages caused by earthquakes are more devastating. Since it also destroys most of the transport and communication links, providing timely relief to the victims becomes difficult. It is not possible to prevent the occurrence of an earthquake; hence, the next best option is to emphasis on disaster preparedness and mitigation rather than curative measures such as: (i) Establishing earthquake monitoring centres (seismological centres) for regular monitoring and fast dissemination of information among the people in the vulnerable areas. Use of Geographical Positioning System (GPS) can be of great help in monitoring the movement of tectonic plates. (ii) Preparing a vulnerability map of the country and dissemination of vulnerability risk information among the people and educating them about the ways and means minimising the adverse impacts of disasters. (iii) Modifying the house types and buildingdesigns in the vulnerable areas and discouraging construction of high-rise buildings, large industrial establishments and big urban centres in such areas. (iv) Finally, making it mandatory to adopt earthquake-resistant designs and use light materials in major construction activities in the vulnerable areas.

Q.11 India is a land of races, define distribution of different human races in Indian subcontinent and reasons for their distribution. Explain ?

Answer
Approach
Define race concept briefly, theirorigin, characteristics, treatsetc
Link how indian subcontinent is a land of different races, how geography plays critical role in that.
Types of races in indian subcontinent
Their distribution in indian subcontinent
Migration of races due to crises in settlement

Various attempts have been made, under the British Raj and since, to classify the population of India according to a racial typology. After the independence, in pursuance of the government's policy to discourage distinctions between communities based on race, the 1951 Census of India did away with racial classifications. The national Census of independent India does not recognize any racial groups in India.Some scholars of the colonial epoch attempted to find a method to classify the various groups of India according to the predominant racial theories popular at that time in Europe. This scheme of racial classification was used by the British census of India. It was often mixed with considerations about the caste system.**Great races** of IndiaScientific racism of the late 19th and early 20th centuries divided mankind into three "great races", Caucasoid(white), Mongoloid (yellow) and Negroid (black) in accordance with their own world-viewThe populations of the Indian subcontinent, however, were problematic to classify under this scheme They were assumed to be a mixture of "Dravidian race", tentatively with an "Australoid" grouping, with an Aryan race, identified as a sub-race to the Caucasoid race, but some authors also assumed Mongolic admixture, so that India, for the purposes of scientific racism, presented a complicated mixture of all major types.Edgar Thurston identified a "Homo Dravida" who had more in common with the Australian aboriginals than theirIndo-Aryan. As evidence, he adduced the use of the boomerang by Kallar and Maravar warriors and the proficiency at tree-climbing among both the Kadirs of the Anamalai hills and the Dayaks of Borneo.The "Negroid" status of the Dravidians however remained disputed. In 1898,

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ethnographer Friedrich Ratzel remarked about the "Mongolian features" of "Dravidians", resulting in what he described as his "hypothesis of their [Dravidians] close connection with the population of Tibet", whom he adds "Tibetans may be decidedly reckoned in the Mongol race". In 1899, *Science* summarized Ratzel's findings over India with, "India is for the author [of the History of Mankind, Ratzel], a region where races have been broken up pulverized, kneaded by conquerors.Doubtless a pre-Dravidian negroid type came first, of low stature and mean physique, though these same are, in India, the result of poor social and economic conditions. Dravidians succeeded negroids, and there may have been Malay intrusions, but Australian affinities are denied.Then succeeded Aryan and Mongol, forming the present pot porri through conquest and blending."In 1900, anthropologist Joseph Deniker said, "the Dravidian race is connected with both the Indonesian and Australian... the Dravidian race, which it would be better to call South Indian, is prevalent among the peoples of Southern India speaking the Dravidian tongues, and also among the Kols and other people of India... The Veddhas... come much nearer to the Dravidian type, which moreover also penetrates among the populations of India, even into the middle valley of the Ganges.". Deniker groups "Dravidians" as a "subrace" under "Curly or Wavy Hair Dark Skin" in which he also includes the "Ethiopian" and "Australian". Also, Deniker mentions that the "Indian race has its typical representatives among the Afghans, the Rajputs, the Brahmins and most of North India but it has undergone numerous alterations as a consequence with crosses with Assyriod, Dravidian, Mongol, Turkish, Arab and other elements." His theories have been discarded by post-modern anthropologists.

Q.12 Salinity of the oceans of different areas varies considerably due to a different set of factors. Explain. Also, compare the salinity of major oceans of the world and trace the reasons for the different level of salinity in these oceans?

Answers
Approach
Explain ocean salinityFactors that affect ocean salinity,differences in ocean salinity,reasons for their differences
Consider geographical factor,physicalphenomena,biologicalprocesses,climatic conditions etc.
Explain some technical aspects which affect ocean salinity
Conclude well

Salinity is the amount of salt present in water. It is expressed in percentage or parts per thousand. The salinity of the ocean is dependent upon different climatic and area-specific factors.

Factors affecting the salinity of watera)

(a) Rate of evaporation- Oceans lying in High-pressure belts particularly that between 20 degrees to 30 degrees latitude on both sides of the equator have a high level of salinity. This is because of high temperature and low humidity which causes a high rate of evaporation.- Oceans in temperate areas have low salinity due to low temperature and low rate of evaporation.

(b) The amount of water added by precipitation streams and rivers. - The salinity of equatorial water is less because of the high level of rainfall and high humidity. - poleward regions of the arctic show less salinity due to the melting of icebergs.

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(c) The degree of water mixing by currents. - Inland seas show less salinity since the flow of fresh water is absent. - The range of salinity is less where there is free mixing of water by upper and lower surface.

Comparison between the salinity of major oceans and its reasons-

- Pacific ocean is less saline compared to Atlantic ocean due to its vast area and openness.- Indian ocean is comparatively less saline due to its proximity to the equatorial region which is an area of high rainfall.
- Enclosed seas such as Caspian sea, Red seas show high salinity due to the high rate of evaporation and absence of fresh water intake.
- Arctic sea and antarctic sea shows less salinity due to very less temperature and thus having very low evaporation.
- The seas like Mediterranean and Persian gulf show more salinity due the absence of penetration by any ocean current.
- In the Indian subcontinent, Bengal sea shows less salinity compared to Arabian sea because of flow of river such as Ganga.

Conclusion. The very fact that saline water fulfils an important daily need of salt for a human being and at the same time its penetration in the fertile area makes soil infertile, creates a need have an area-specific approach in management.

Q.13 Himalayan and Tibetan highlands play an important role in the development of South west monsoon. Explain. Also analyze what would have been winter climate in India in the absence of Himalayas.

Answers

Approach

Explain how Himalaya mountain plays important role in formation of monsoon

Explain climatic conditions in their formation

Explain importance of Himalaya's in saving us from cold winds coming from arctic Side,what would happen if Himalaya is not in front of India's border?

This is typical geography question

Write it with strong arguments.

Conclude well

Tibetan highland is flat top surface lying north of Himalaya. It acts as a physical barrier creating two thermal engines on either side.

- Its flat surface results in the insolation of heat. This results in the occurrence of anticyclones over this area. These anticyclones play an important role in the weakening of westerly jet streams and setting up of easterly jet streams.
- These upper air easterlies descend into the permanent high-pressure area formed over the southern Indian Ocean and intensifies the high-pressure area already present there. It is from this high-pressure cell that the onshore winds start blowing towards the thermally induced low-pressure area, developed in the northern part of the Indian subcontinent. Thus, Tibetan Highland plays an important role in setting up of monsoon in Indian Subcontinent.

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Winter climate in India in the absence of Himalaya.-

- In the absence of Himalayas cold Siberian, cold winds from the north may enter India and it may cause a severe cold condition. It will change cropping pattern in a substantial way.
- Most of the north India continues to be warm and mildly cool during winter. A tropical climate is preserved due to the Himalayas. If there would be no Himalaya then dry continental air may reach interior portions of India.
- In the winter season, whole of western and central Asia remains under the influence of westerly jet streams. The movement of sun from equator to tropic of Capricorn steers this jet stream to move towards equator
- Himalaya bifurcates this jet stream into two branches. The southern branch steers the cyclonic disturbances originating from the Mediterranean region into the Indian subcontinent. These cyclones may not reach India in the absence of Himalayas.

Conclusion-

Monsoon determines the way of life in the Indian subcontinent. If we want to preserve the very ethos of the Indian way of life then we will need to preserve the rich heritage of Himalayan ecosystem on a priority basis.

Q.14 Discuss the measures taken by Government of India to mitigate the advance impact of tropical cyclone.

Answers

Approach

Define tropical cyclone briefly
Explain how tropical cyclone affects life of peoples lived near coastal areas
Steps taken by government to mitigate its effect
Suggestions
Conclude well

A tropical cyclone is an intense low pressure area or a whirl in the atmosphere over tropical or sub-tropical waters, with organised convection (i.e. thunderstorm activity) and winds at low levels, circulating either anti-clockwise (in the northern hemisphere) or clockwise (in the southern hemisphere). From the centre of a cyclonic storm, pressure increases outwards. The amount of the pressure drop in the centre and the rate at which it increases outwards gives the intensity of the cyclones and the strength of winds.

Tropical Cyclones in India:

With about 6 per cent of the world wide cyclones, the Indian subcontinent is one of the worst cyclone affected areas of the world. About 8 per cent of the total land area, particularly along the eastern coast and Gujarat coast is vulnerable to tropical cyclones.

In fact, Indian Ocean is one of six major cyclone prone regions of the world. On an average, about 5-6 tropical cyclones are formed in the Bay of Bengal and the Arabian Sea every year, out of which 2 or 3 may be severe.

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More cyclones form in the Bay of Bengal than in the Arabian Sea. As such, the eastern coast is more prone to cyclones and about 80 per cent of the total cyclones generated in the Indian Ocean strike the east coast of India. There are two definite seasons of tropical cyclones in the North Indian Ocean. One is from May to June and the other from mid-September to mid-December.

May, June, October and November are known for severe storms. The entire east coast from Orissa to Tamil Nadu is vulnerable to cyclones with varying frequency and intensity. Along the west coast, the Gujarat and Maharashtra coasts are more vulnerable as compared to the southern part. Most of the cyclones have their origin between 10°N and 15°N during the monsoon season. Almost all storms in the Bay of Bengal have their genesis between 16°N and 21°N and west of 92°E in June. By July, the Bay storms form north of 18°N and west of 90°E. It is also noteworthy that most July storms move along a westerly track.

They are generally confined to the region between 20°N and 25°N and re-curvature to the Himalayan foothills is comparatively rare.

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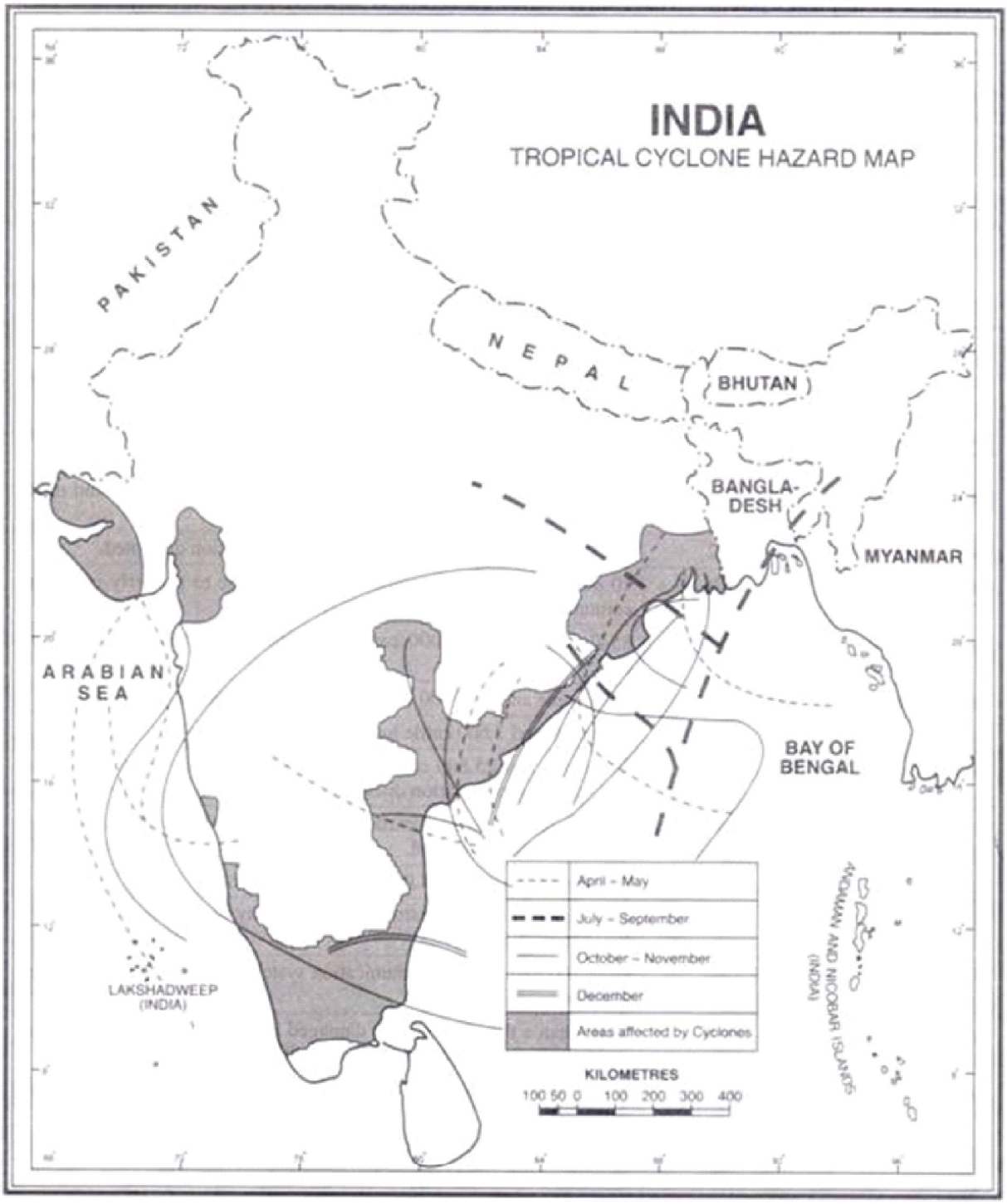

FIG. 8.23. India : Tropical Cyclone Hazard Map

Four steps disaster management
Early Warning System
Disaster Prevention
Mitigation
Preparedness
Mitigation measures taken by government

First stage Pre warning and second stage sounded 48 hours in advance of the expected commencement of adverse weather over the coastal areas. Forecasts of commencement of strong winds, heavy precipitation along the coast in association with arrival of cyclone are issued at the alert stage. Landfall point is usually not identified at this stage.
The third stage warning known as 19 "Cyclone Warning" is issued 24 hours in advance. Landfall point is forecast in this stage of cyclone warning. In addition to the forecasts for heavy rains and strong winds, the storm surge forecast is also issued. Since the storm surge is the biggest killer so far as the devastating attributes of a storm are concerned, information in this regard is most critical for taking follow up action for evacuation from the low lying areas likely to be affected by the storm. After the landfall of the cyclone the strong winds with gale force speeds continue over certain interior districts of the maritime States hit by the cyclone. To take cognizance of that, a fourth stage known as 'Post-landfall Scenario Stage' is now identified usually as a part of the 'Cyclone Warning Stage' either at the time of landfall of the disturbance or about twelve hour in advance of it. It includes warnings of strong winds and heavy rains likely to be encountered in the interior districts.

A National Core Group on Cyclone Monitoring & Mitigation has been constituted. Experts from Indian Meteorological Department, National Centre for Medium Range Weather Forecasting, Central Water Commission, National Remote Sensing Agency and Indian Space Research Organisation have been made the Members of the Core Group, besides administrators from the relevant Ministries/ Departments and State Governments vulnerable to cyclones.
The Group has been assigned with the responsibility of looking warning protocols for cyclones; coordination mechanism between different Central and State Ministries/Departments/Organisations; mechanism for dissemination of warning to the local people and; cyclone mitigation measures required to be taken for the coastal States. The Group will also suggest short-term and long-term measures on technology upgradation.

A cyclone mitigation project has been formulated.The project inter alia includes components on strengthening of monitoring/warning systems, coastal shelter belt plantation, mangrove plantation, construction of cyclone shelters, storm surge modeling and water envelope studies. The focus will be on regeneration of coastal shelter belt plantation and mangrove plantation where these have degenerated. The location of the cyclone shelters will be decided in such a manner that no person in the vulnerable zone is required to walk more than two kilometers to reach a cyclone shelter. The cyclone shelters will be multi purpose units to be run as schools or community centres in normal times and will have capacity to house 3000 to 5000 persons with adequate number of toilets, community kitchen and other facilities. Areas will be identified for providing shelter to livestock.

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Q.15 "Floods and droughts in India are both Natural and manmade Phenomenon". ExplainAnswersApproach

Define floods and droughts briefly
Explain geographical phenomena behind them
How floods and droughts in India are both natural and man made.
Question is straight write it with some arguments
Suggest some mitigation measures
Conclude well

Disasters fall into two major categories. These include man made and natural disasters. There is a major difference between these two and it is important to learn more about the same in order to increase your knowledge on the occurrence and causes of each and hence ensure that your disaster preparedness is heightened. For starters, natural disasters are brought about by change in natural phenomenon or what is known as acts of God. The extent of loss experienced is dependent on the vulnerability of the population.

As such, this means that this can only occur in areas that are susceptible to vulnerability. On the other hand, man made disasters are influenced by humans and they are often as a result of negligence and human error among other factors.

- Natural disasters: Natural disasters include things such as floods, volcanic eruptions, earthquakes, floods, tornadoes, landslides and hurricanes.
- Man made disasters: These can be divided into different categories and they include technological hazards, sociological hazards and transportation hazards among others. Despite the difference between these two, it is ideal to note that they can cause irrevocable damage if the right measures are not put in place to avoid the same. This is where the need for disaster preparedness comes in. It goes a long way to cushion people from the after effects of such happenings. There are several sources that provide useful resources that make it possible to meet this end. Whether the disaster is natural or man made, the manner in which action is taken goes a long way to determine how people fair from the experience. In both instances, casualties should be treated immediately and the best way to meet this end is placing the necessary measures in place that counteract this. Note that the costs associated with handling of the man made and natural disasters run to billions of shillings every year and this negatively affects the economy.

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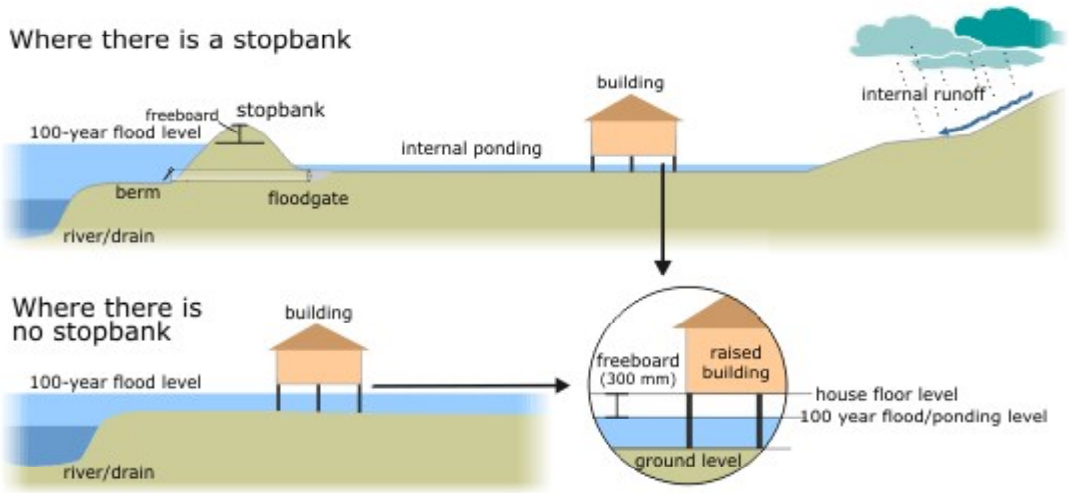
Floods:



- The term flood is generally used when the water-flows in rivers, streams and other water bodies cannot be contained.
- Floods occur regularly in India affecting about 10% of area.
- According to the estimates of the National Flood Commission (1980), commonly known as the RashtriyaBarhAyog, Assam and Bihar are the States worst affected by floods followed by U.P. and West Bengal.
- In many cases, the natural process of flooding is aggravated by man-made due to
- Unplanned or unauthorized construction activities;
- Increasing pace of urbanization,
- The incidence of floods in recent times in urban areas such as Mumbai, Surat, Vadodara and other places is symptomatic of this trend and is the direct result of unauthorized construction activities.
- Poor urban planning and implementation,
- Lack of investment in storm water drainage and sewerage
- The country has to shift towards efficient management of flood plains, disaster preparedness, response planning, flood forecasting and warning
- There should be strict regulation of settlements and economic activity in the flood plain zones along with flood proofing, to minimise the loss of life and property on account of floods.
- Flood forecasting activities should be modernized

Prevention, Control and Mitigation:

Though floods are a natural hazard, it is sometimes intensified due to undesirable human activities. The measures that can be taken to control the extent of flood damage include land use planning, building of physical barriers, preventing human encroachment and use of technology for relief.

- **Drought:** Droughts refer to a serious shortfall in availability of water, thus affecting agriculture, drinking water supply and industry.

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- Droughts in India have their own peculiarities requiring appreciation of some basic facts. These are:
- India has an average annual rainfall of around 1150 mm; no other country has such a high annual average, however, there is considerable annual variation
- More than 80% of rainfall is received in less than 100 days during the South-west monsoon and the geographic spread is uneven.
- Inadequacy of rains coupled with adverse land-man ratio compels the farmers to practice rain-fed agriculture in large parts of the country
- Irrigation, using groundwater aggravates the situation in the long run as ground-water withdrawal exceeds replenishment; in the peninsular region availability of surface water itself becomes scarce in years of rainfall insufficiency

Prevention, control and mitigation: Rains are caused by a number of natural factors like air currents, wind direction, etc. Thus, droughts are a natural phenomenon, beyond human control and prevention. Though, global warming may have changed the pattern of rainfall in the recent times. In modem times, by the use of satellites, we can predict the weather pattern over a particular area. Drought-like conditions can be overcome by better water harvesting techniques. Certain precautions can be taken in drought prone areas, which relate to management of water resources, proper agricultural techniques and relief by different agencies.

Q.16 Discuss the measures taken by government of India to exploits Deep Sea marine resource. Examine its economic and strategic significance.
Answers Approach

Explain briefly about the location of indian ocean by map
Short description about deep sea marine resource
Its economic and strategic importance
Steps taken by indiangovernment,policies and bills
Suggestions
Conclude well

Indian Ocean has gained tremendous importance over the years and has now become the most concerted area where global economic activity conjoined political interests. It is a home to world's busiest waterways and chokepoints such as the Suez Canal, Bab alMandeb, Strait of Hormuz and the Strait of Malacca. All these chokepoints and waterways are highly important for the rising nations of the world. This is why world's major economic as well as political concentration has shifted towards the Asian and African continents which border Indian Ocean at large. This aims to unveil the emerging Economic and Geopolitical significance of Indian Ocean by highlighting the evolving roles of India China and the USA in Indian Ocean, and by delineating the geographical features of this mighty ocean.

It also has several small island nations such as the Madagascar, The Seychelles, Reunion Island, Maldives, Mauritius and Sri Lanka. While a cluster of islands forming Indonesia borders the ocean in east. Indian Ocean got its name after the huge Indian subcontinent in its north. It has remained an important area throughout the realms of history due to its unique strategic location and bulk of

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natural resources. However, in recent periods more with the spread of globalization the significance of Indian Ocean both politically as well as economically has been rapidly increased. Furthermore, ever since the attacks on World Trade Centre on 9/11, 2001, world's major powers including America due to her policy of counter terrorism and more specifically China in order to overcome her distant location vulnerabilities with the Ocean have shifted their focus towards it.

Of all the resources that developing countries in Indian Sub-Continent or Indian ocean Rim is the most important role in providing those necessities like:

Economic wealth of the Indian Ocean's continental wealth includes:

Oil Fields - This fuel treasure is plenty in the western part that includes red sea, gulf area and coasts of Indonesia. India can also boast of its Aliabet, Bombay High and KG basin for its oil and Gas reserves.

Placer Deposits – Vitally important, thorium resources in placer sands of Malabar coast are a promise to Nuclear Energy security. Similarly Placers of Thailand, Indo-China and Australia are source of precious heavy metals critically important for Electronics and semi conductors industry.

Tourism - Coral atolls in itself are endowments of nature to tropical shelves

Fisheries - Food security of every nation is BIMSTEC is depend on fisheries.

Mari-Agriculture- Brackish water Agriculture for Rice is successfully practiced now and thus is a remedy for land shortages. Other innovations like oyster farming can add supplementary value to Continental Shelves

Cyclone Mitigation - Mangroves and other plantation helps in mitigating the ugly consequences of storms and storm surges along the heavily populated coastal areas like Mumbai, Chennai, Kerala coast, Maldives, etc.

No industrial development, no commercial growth, no stable political structure is possible for her unless her shores are protected. In spite of this India's economic security demands that all the sea lanes leading to the Indian Ocean, particularly the Suez Canal and the Straits of Malacca are peaceful and economically vibrant.Initiatives taken by government of India for strategic and economic importance of Indian ocean

- The convergences in the IORA and SDG agendas have to be developed into action, especially when there exists no strategic clarity per se. Therefore, the initiative must be built upon and sustained—
  - To boost India's own civilian maritime infrastructure
  - To ramp up its capabilities to take up major maritime projects in other countries
  - To lend some vigour to its defence diplomacy in the region
  - To frame the government's plans for a more purposeful maritime engagement in the Indian Ocean

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- India's neighbourhood policy assumes primary importance in light of the blue economy as well as India can profitably integrate its ongoing programmes like Make in India, Smart Cities, Skill Development and self-reliance in defence.
- A process of training of a diplomatic cadre can help India move towards immediate grasping of the immense possibilities forwarded by the blue economy and Delhi's forthcoming chairmanship of the **BRICS** will offer a splendid opportunity to highlight the cooperation needed for the blue economy which needs to be encashed in a timely manner.

Connecting the Dots:

- Outline the steps India needs to take to establish its strategic and economic interests in the Indian Ocean Region.
- Stating the importance of IOR-ARC, briefly describe the challenges that the 'ocean diplomacy' presents with itself?

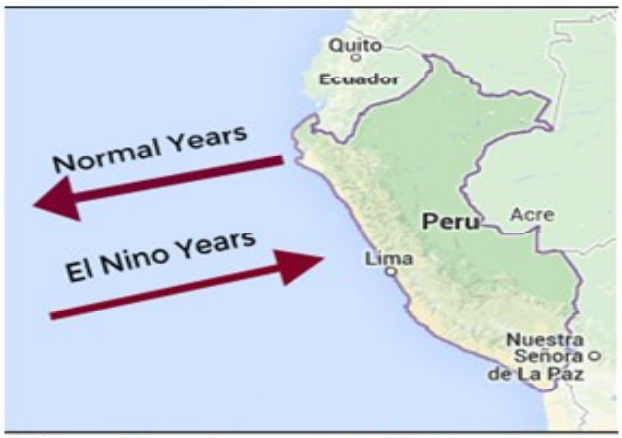
Q.17 Examine the effect of El-Nino on the Pattern of global rainfall.

Answer

Approach

Define El-Nino and grographical phenomena
Draw map of its origin
Explain how it impacts global rainfall
Question is straight
Conclude well

El Niño was originally recognized by fisherman off the coast of Peru in South America. The ocean off the coast of Peru is one of the world's richest fisheries regions. In most years trade winds flow from the southeast push warm surface water away from the coast. In its place, the cold water comes up on the surface due to upwelling. This cold water is full of nutrients and provides nourishments to planktons. These planktons serve as food for fishes. Fishes in turn provide food to the sea birds. Due to all this, not only there is a good catch of fishes but also good collection of the Guano, the bird excreta, used as a valuable fertilizer. This is what that made Peru number one fishing nation in the world by the early 1970s.



Pattern of flow of warm winds off the coast of Peru

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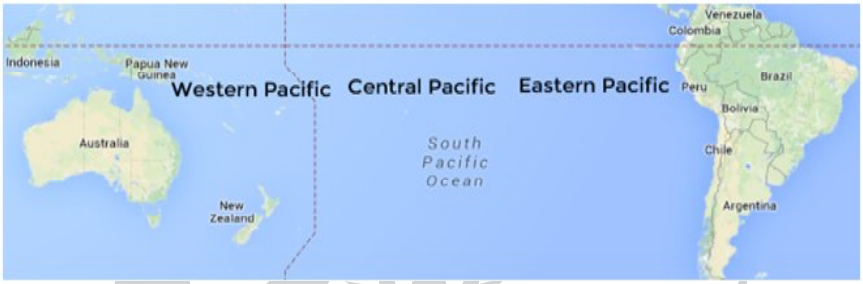
However, every few years, there is a change in the pattern of air circulation. It changes in such a way that the trade winds reverse direction, blowing from west to east. Due to this reversal, the upwelling of the cold water gets weakened. The surface water is warm. This lowers the nutrients available to fish and thus poses problems to the economics of fisheries. The problems don't end here. The accumulation of large mass of warm water allows formation of more and more clouds and this would bring destructive rains that occur in normally dry areas of Peru and Chile. The same is also responsible for bring outbreaks of Malaria and Cholera in some parts of South America. Peru , as you may know is a Hispanophone country as many people speak Spanish out there. The above mentioned reversal of the winds occurred during Christmas times (Please note that we have Christmas in winter, but Peruvians have in summer, because they are in southern hemisphere), so they named it El Niño or "Christ Child" or "The Little Boy" in their own language. Before, you read further, please understand the location of Eastern, Central and Western Pacific on the map, otherwise it would be too confusing (earth is round…after all) Now, here is how it affects the entire tropical region. Off the coast of Peru (read in Eastern Pacific and Central Pacific), there is normally cool surface water. But El Niño makes it go warm. When the water becomes warm, the tread winds, which otherwise flow from East to west, either reverse their direction or get lost.



The warm water causes lots of clouds getting formed in that area, causing heavy rains in Peruvian desert during El Niño years. Due to this warm water, the air gets up and surface air pressure above Eastern Pacific gets down. On the other hand, the waters cool off in western pacific and off Asia. This leads to rise in surface pressure over the Indian Ocean, Indonesia, and Australia So, while there is raining (read flooding) in Eastern Pacific; the drought sets in over Asia as high pressure builds over the cooler ocean waters. The net result is: Normal or high rainfall in eastern / central pacific.

Effect on global rainfall

Drought or scant rainfall in western pacific / Asia. Although El Niño originally referred to local conditions off the coast of Peru and Ecuador, the use of the term has been broadened by many scientists to represent all surface temperature warming in the eastern and central Pacific. The impacts of El Niño , which have been well documented include the following: Heavy rains in Ecuador and Peru. Heavy rains in southern Brazil but drought in north East Brazil Drought in Zimbabwe, Mozambique, South Africa, Ethiopia Warm winter in the northern half of the United States and southern Canada Drought, Scant rains off Asia including India, Indonesia, and Philippines etc. Coral bleaching worldwide Drought in eastern Australia

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Q.18 Explain how availability of coal has determined the location of iron steel centers in the world.

Answers

Approach

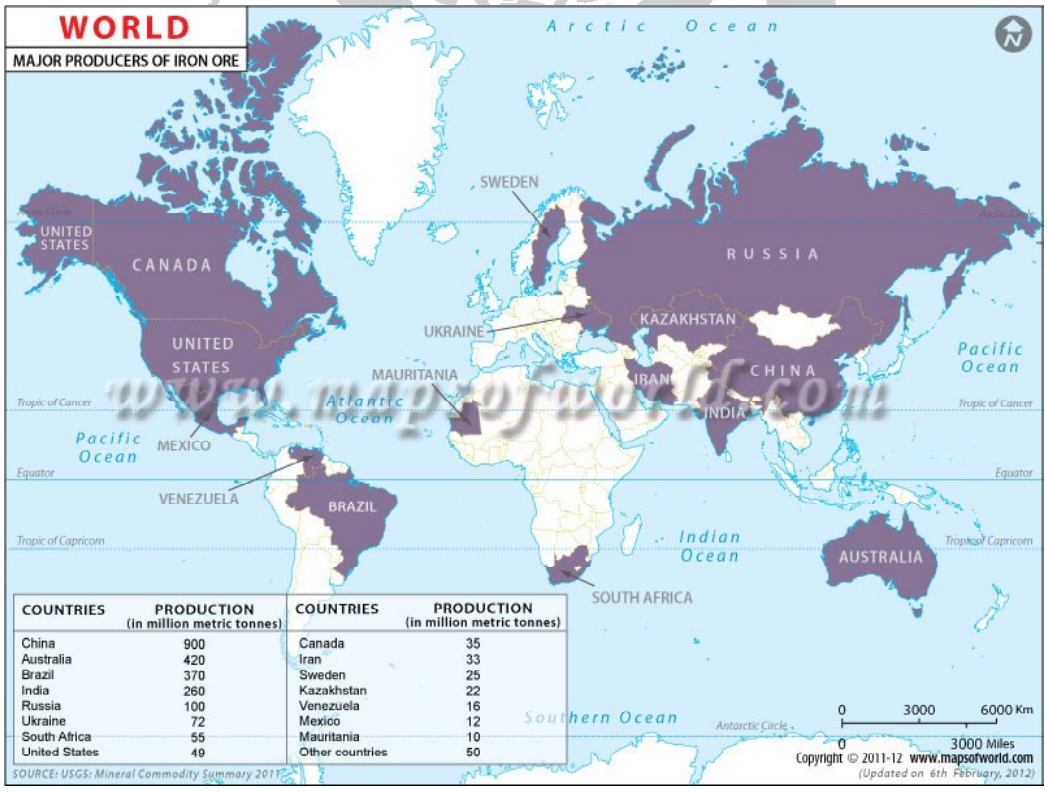
This is typically geography question
Explain briefly about locations of iron industries
Define the reason behind their location
Deaw map of world and indicate locations

Certain industries have affinity towards particular locations. Of-course, availability of raw material is one of the major reasons, but that is not the sole determinant. This post explores the distribution of major industries across the world, and reasons for the variations.

- Iron ore + coke + limestone ==heat==> pig iron.
- pig iron=more processing=>cast-iron, wrought iron, steel and variety of alloys

Therefore, Essential inputs are:

1. iron ore, coking coal and limestone
2. water for cooling
3. energy for heatingSteel industry also requires dolomite, manganese etc. but in small quantities=> their presence is not the main deciding factor for the location.



COUNTRIES	PRODUCTION (in million metric tonnes)
China	900
Australia	420
Brazil	370
India	260
Russia	100
Ukraine	72
South Africa	55
United States	49

COUNTRIES	PRODUCTION (in million metric tonnes)
Canada	35
Iran	33
Sweden	25
Kazakhstan	22
Venezuela	16
Mexico	12
Mauritania	10
Other countries	50

The three locations

1. Near Forest
2. Near Coalmines
3. Near Coastal Areas

#1: Near Forest

- Until the end of medieval period, iron production was done on small scale.
- Energy was immobile (No wires to move electricity, No trains to move coal).
- To produce five tons of iron, you had to chop down one acre of forest to get sufficient charcoal.
- Therefore, wood supply=primary factor for deciding location. And smelters were usually setup near forest areas
- Even in Modern times, Visvesvaraya Iron and Steel Plant (Karnataka) was setup near jungle to get wood-charcoal. (Later switched to hydro-electricity from Sharawati river)

#2: Near coal fields

During the Industrial Revolution, iron and steel industry were setup near coalmines, due to following reasons:

1. The coalfield region had a tradition of iron working based on charcoal as a result coalfield areas already had the labour and technology.
2. In Britain, iron ore was found embedded with coal seams= same area provided both iron ore + coal
3. During that era, to process 1 tons of iron ore, you needed 8-12 tons of coal. Railway engines were also inefficient. So, weight-wise, it was cheaper to transport iron ore to coalfields rather than transporting coal to iron ore site.

Iron-industry near coalmines:	
Germany	Ruhr Valley, Saxony region
Britain	Lancashire, York shire, South Wales
United States	Appalachian-Pennsylvania-great Lakes
Australia	New South Wales region
China	Wuhan, Anshan, Chongqing

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#3: Near coastal areas

- By early 20th century the coal and iron ore mines in US-Europe started getting depleted. So, they started importing iron ore from other countries.
- As a result the iron space and steel industry started moving toward coastal sites to reduce cost of transporting ores from port to factory via railways.

Near Coastal region:	
Japan	Iron steel industry is developed @coastal areas/port location because they rely on imported coal and iron-ore. E.g. steel industry in Osaka-Kobe
India	Steel plants @Vishakhapatnam, Ratnagiri, Mangalore
Malaysia	Has iron ore but not enough coalTherefore steel plants located near coastal area to get imported coal @minimum transport cost.
USA	In the coastal cities of Cleveland, Detroit, Chicago (using imported ores from Canada)

Q.19 "Energy security and sustainable development requires greater thrust on renewable source of energy". Examine.

Answer

Approach

Define energy security and sustainable development
How both are interrelated
Explain briefly about renewable energy and how they are important For India
Steps taken by Indian government for renewable energy sources
Suggestions
Question is straight write it with some arguments arguments.
Conclude well

Energy security concerns have moved up the global agenda due to unpredictable " supply and rising demand of energy "Countries in the Asia-Pacific region concerned about energy security are seeking to protect themselves against shortages of affordable fuel and energy resources. But the policies they choose will have ramifications far beyond the supply of fuels and energy resources. They will

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also have a profound impact on economic and social development, and on the natural environment and the global climate. The first is unpredictable supply: the region's economies have been faced with high and often volatile prices for energy, particularly for oil and gas, combined with supply disruptions caused by political instability in some main supplier countries. The second reason is rising demand: rapid industrialization and impressive economic growth are increasing the use of oil, as China and India in particular have emerged as economic powers. Although there is no internationally agreed definition of the term, a country is generally understood to have "energy security" if it is protected against shortages of affordable fuel and energy resources.The form this security takes will necessarily depend on national circumstances. For countries with their own resources, energy security involves the capacity to cope with changes in energy supplies using their own resources, while countries with fewer resources will be looking for reliable external supplies. Energy-exporting countries, on the other hand, will be looking for security in demand, from a stable energy market.To sustain economic growth and raise living standards, energy shortages could be met by increasing supplies. But there are two other important considerations: environmental sustainability and social development. The current pattern of economic growth has caused serious environmental damage—polluting the air, creating large quantities of waste, degrading biologi cal systems and accelerating climate change—with many of these effects coming from the energy sector. At the same time, it is also vital to consider the impact on social development. The lack of access to energy services aggravates many social concerns, including poverty, ill-health, unemployment and inequity—and ESCAP, the United Nations Statistics Division, UNDP, APERC, BP and IEA. For demand forecasts, it uses IEA methodology, albeit modified for Asia-Pacific condi tions. The study uses the international standard energy units.

Renewable & Non-Conventional Sources Of Energy

- 1.1 Biomass [Conventional Source]
- 1.2 Petro crops (Plants)
- 1.3 Geothermal Energy
- 1.4 Hydrogen Energy
- 1.5 Fuel Cell Technology
- 1.6 Solar Energy

- 1.7 Tidal energy

1.8 Hydropower Energy

Government initiatives for renewable energy and sustainable development

- Jawaharlal Nehru National Solar Mission (JNNSM)
- Remote Village Lighting Programme
- National Biogas and Manure Management Programme (NBMMP)
- Solar Lantern Programme LALA
- Solar thermal energy Demonstration Programme
- National Biomass Cookstoves Initiative (NBCI)[8]
- National Offshore Wind Energy Authority

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Q.20) "Can food security be ensured merely by increasing food productivity". Critically analyze.

Answers

Approach

Explain briefly about food security and food productivity
Links between food security and food productivity
Global efforts in field of food security
Repots of FAO,UN etc quote points
Steps taken by Indian government for food security
Suggestions
conclude well.

Production and food security

Nearly 1 000 million people currently live in what is defined as absolute poverty, with incomes of less than US$1 a day.

Most of these suffer from chronic hunger. In the developing countries, more than one child in four is underweight - and in the poorest of these countries, every other child is underweight. Such children are at great risk to disease, and many of them never become adults: the underlying cause of more than half of all child deaths in developing countries is malnutrition. Those that do survive to adulthood face a future that is likely to be scarred by hunger, homelessness, illiteracy and unemployment.

Hunger is not a natural condition: it is produced by human action (or lack of it) and, in a world that can produce more than enough food for everyone, its root cause is poverty. Remarkably, in the early 1990s nearly 80 percent of all malnourished children lived in developing countries that produced food surpluses.

Although the number of people going hungry has declined by about 5 percent since the early 1990s, it is estimated that almost 800 million still go hungry in the developing countries and some 30 million in other countries. As populations increase and more people move from rural to urban areas, the task of reducing hunger will become even more difficult than it is today.

Governments play an important role in helping achieve food security. Regrettably, some government policies interfere with markets, remove price signals to farmers and inhibit trade. Public sector support for research and development, enhancements in agricultural infrastructure, and support of open trade all contribute to increased food security.

Enabling open markets
To ensure food surpluses can reach areas of deficit, Cargill believes it is essential that governments support open trade. Trade helps create jobs, supports local economies and helps raise living standards. Export restrictions and trading bans isolate local markets and give farmers little incentive to expand production for the next season, limiting the potential supply response
Supporting smallholder farmers Governments, civil society, academia and the private sector must all work together toward solutions to help smallholder farmers fulfill their expanding role in feeding the hungry and fighting malnutrition.

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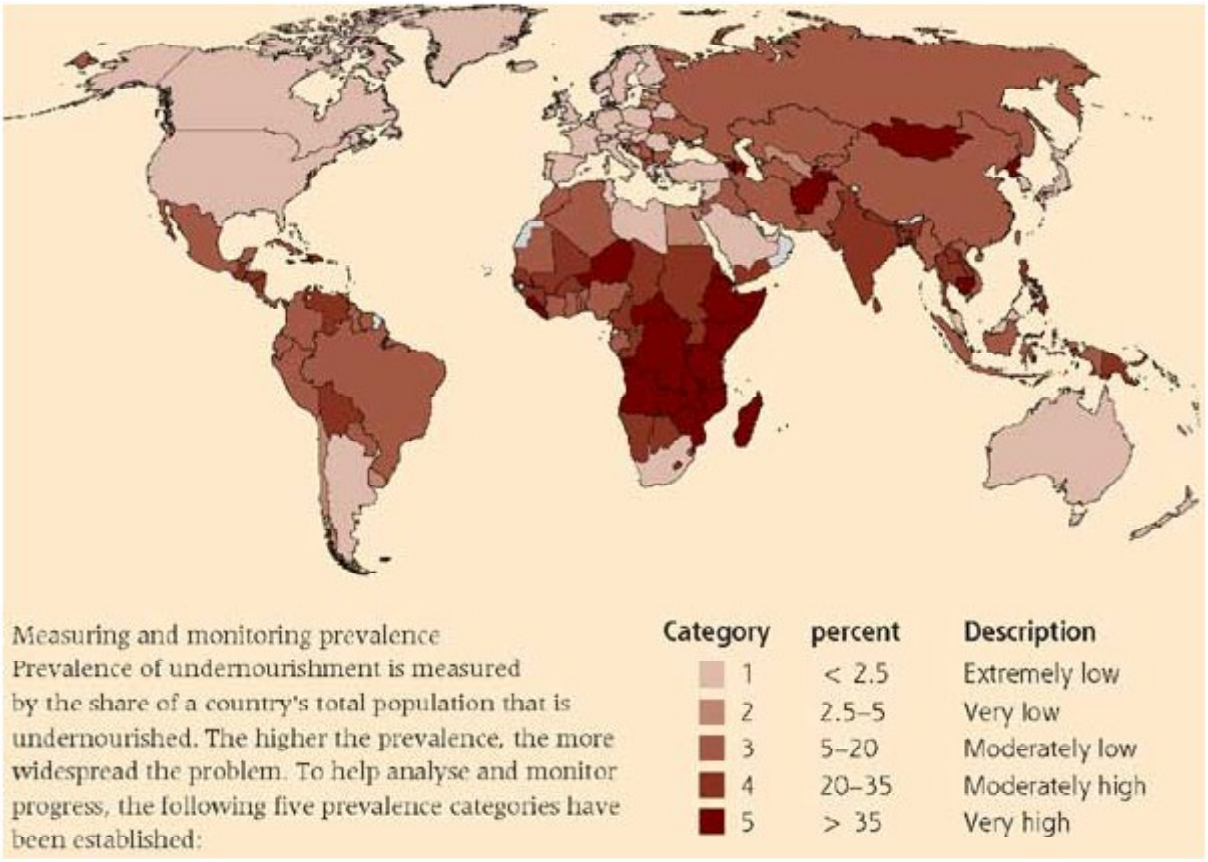

FAO's Special Programme for Food Security

FAO launched its Special Programme for Food Security (SPFS) in 1994. Focusing on low-income, food-deficit countries, SPFS was endorsed during the World Food Summit in 1996. The main objective is to help countries to improve their national food security - through rapid increases in productivity and food production, and by reducing year-to-year variability in production - on an economically and environmentally sustainable basis. By working with farmers and other stakeholders to identify and resolve constraints to food production and to demonstrate ways of increasing production, the SPFS opens the way to improved productivity and access to food. The Programme is currently operational in 55 countries and under formulation in 25 others.

In drought-prone areas, limited access to water is often a major constraint to improving food production, making small-scale irrigation, water harvesting and water development technologies top priorities for the SPFS

Investing in agriculture

Greater investment in agriculture by the public and private sectors is necessary to increase global food production. A boost in funding and attention in the following key areas is needed: transportation,

distribution, storage and energy infrastructure; agricultural research and development; agricultural science, extension, education and the promotion of best practices; and governance around legal and business structures to encourage private sector investments.

Reforming biofuels mandates

Demand for biofuels has spurred investment in agriculture, but mandated use of biofuels creates inelastic demand and increased volatility in the food system. To help balance food, animal feed and biofuel uses of agricultural feedstocks, governments can help by:

- Taking steps to ensure biofuels are not prioritized as outlets for raw materials that also serve the food market, including ensuring biofuels policies include waivers or other trigger mechanisms to lift mandates in times of stress so that the market can direct short crops to those sectors where they are most needed.Facilitating emergency food aid To ensure access to food in times of crisis, governments can help by:
- Providing mechanisms for temporary assistance to consumers who are otherwise unable to access food, ensuring that the demand side of the market continues to operate
- Providing mechanisms and programs to assist farmers during crop failures so they are able to plant crops for the next year, thereby ensuring that the supply side of the market continues to operate
- Providing funding (not only in-kind contributions) to the World Food Programme to enable it to purchase food as and where most appropriate to address dire emergencies
- Improving current stocks-to-use ratios of major crops by encouraging sustainable production and functioning markets with public and private stocks rather than focusing on holding public stocks
- Ensuring that any public stocks held by governments are clearly targeted only for emergency use with transparent rules for buying in and selling out in order to avoid disrupting the normal passage of accurate price signals to farmers