

Q-1-Describing the distribution of rubber producing countries indicate the major environmental issues faced by them?

Approach-

A simple straightforward question where candidates need to write about distribution of rubber producing countries and in second part write about major environmental issues faced by them.

Introduction -

According to Fao Stat (Food and Agricultural Organization Corporate Statistical Database) of 2022, Thailand is the largest Producer of Rubber in the World followed by Indonesia, Vietnam ,ivory coast ,Malaysia, India, China etc.there are major environmental issues in these countries including deforestation,biodiversity loss, climate change, etc .

Body -

Natural rubber contributes to deforestation, biodiversity loss, pollution, and more. But climate change and disease also threaten natural rubber producing countries .

- There are 28 countries worldwide that produce natural rubber.
- The most distinct characteristics they share is a tropical climate.Tropical climates with consistent temperatures around 25-30 degrees and rainfall of 200 cm support healthy rubber trees .
- Countries with this ideal equatorial climate that produce natural rubber are found primarily in south America ,Africa ,and southeast Asia.
- for decades Thailand has been the worlds biggest producer of rubber , growing 35% of worlds natural rubber supply in 2019 .
- The top five countries that produced the most rubber in 2019are Thailand ,Indonesia , Vietnam ,India and china.

Major environmental issues faced by these countries are ,

- Deforestation-growing natural rubber is leading cause of deforestation in mainland south Asia
- Biodiversity loss . rubber is grown by deforestation of equatorial vegetation which are known for their species biodiversity .
- Climate change -deforestation of equatorial vegetation which are known as lungs of the forest will affect the carbon sequestration and this accentuated the rate of global warming
- Diseases -rubber being a monoculture plantation is highly vulnerable to pest attacks and diseases .
- Man animal conflicts -monkey human conflict in tripper because of deforestation of land for rubber plantation .
- Cases of stealing of land from indigenous communities .

- Pollution - sulphate are released from latex processing facilities (latex are extracted from rubber trees)
- a large-scale of natural rubber plantation results in environmental issues such as the Nitrous oxide (N₂O) emission which is obtained from the use of synthetic fertilizer during the cultivation process.
- The postulate of Environmental Kuznets Curve (EKC) was employed to examine the relationship between economy and environment from the natural rubber plantation in major producers using secondary data ranging from 2005 to 2018.
- Therefore, the N₂O emission in which represents environmental degradation was regressed with the value of natural rubber production as the proxy for the economy growth using a fixed effect model on the panel data regression analysis.
- Results show that there is an inverted U-shape curve from the relationship between the N₂O emissions and the value of natural rubber production. Hence, this study supports the postulate of EKC's hypothesis.
- In addition, results found that the average value of natural rubber production from major producers was not yet reached the turning point of EKC.
- Some suggestions were made in order to increase the productivity while maintaining yet reducing the emission obtained from the use of synthetic fertilizer during cultivation process.

Conclusion -

The best way to ensure more responsible production of natural rubber is to grow trees for rubber production on low quality degraded land instead of clearing high quality natural forests to plant them. WWF goal is to have majority of companies that produce and use rubber commit to ethically and sustainable produced rubber .this include car manufacturer, tire makers and rubber processors.

Q.2 Discuss the multidimensional implications of uneven distribution of mineral oil in the world.

Approach

Start with basic intro with referring to mineral oil distribution and then explain how uneven distribution has several multiple implications.

Introduction

Petroleum is unevenly distributed around the planet. The Middle East contains slightly less than half of the world's proven reserves (including Iran but not North Africa). Following the Middle East are Canada and the United States, Latin America, Africa, and the former Soviet Union region, which includes Russia, Kazakhstan, and other countries.

Body

The immense strategic importance of mineral oil and its lop-sided distribution across the globe have many multi-dimensional implications:

- Political: Many historical and present-day conflicts involve nations trying to control resource-rich territories. For example, the desire for diamond and oil resources has been the root of many armed conflicts in Africa.
- USA's interference in the geopolitics of West Asia is also one of the reasons for uneven distribution of oil minerals.
- Employment & Migration: Availability of Oil reserves leads to more job opportunities in the Middle east. That is the reason why India has a large diaspora in the middle east.
- Balance of Trade: The un-even distribution of the mineral oil resources affects the balance of trade between the importing and the exporting countries. This in turn affects the Foreign-exchange reserves of the country.
- Growth: Un-even distribution of mineral oil also has led to un-even growth across the globe. Rise in import prices directly hamper the capabilities of the government to spend on welfare objectives.
- Energy Security: The un-even distribution of the mineral energy resource has led to high degree of energy insecurity in the oil deficient countries. It also, directly affects their strategic autonomy.
- Diplomatic leverage : The lop- sided distribution of the vital mineral oil resource is a vital factor in leveraging its availability for diplomatic gains. For example, India's major dependence on Middle East for oil, provides it with a diplomatic bargain over India.
- Economic implications: Uneven distribution of the mineral oil across the world, leads to economic consequences like inflation, for the importing country. For example, India is susceptible to global shocks in oil prices.
- Regional conflict: As the mineral oil resource is strategic in nature, its uneven distribution leads to great power conflict over the control of the region. For example, disputes in oil rich regions of middle East.

Conclusion

As the uneven distribution of the mineral oil resources leads to various implications ranging from economic to energy security. This highlights the need for India to diversify its energy basket both in terms of content and geography.

Q.3 India is well endowed with fresh water resources. Critically examine why it still suffers from water scarcity.

Approach

Candidates can start the answer by basically referring to Indian water resources and then shortly analyse the causes of water scarcity.

Introduction

India's average total annual rainfall which is higher than the world average of 990 mm should normally suffice to meet the country's critical needs. India has enough fresh water to meet its needs but the problem is the unequal distribution and sporadic nature of monsoon.

Body

- India is a monsoonal country with abundant surface and ground water across its length and breadth. It accounts for 18% of the world population and about 4% of the world's water resources.
- Water resources in India include precipitation, surface, groundwater storage and hydropower potential.
- India receives an average rainfall of about 1170 mm which corresponds to an annual precipitation of about 4000 BCM (Billion Cubic Metre) including snowfall.
- As per the latest assessment, the annual replenishable ground water resource of country has been estimated as 433 billion cubic meter (bcm), out of which 399 bcm is considered to be available for development for various uses.

Causes of water scarcity:

- Unequal water distribution as most of the rainfall that is received in India is distributed over a specific time and area. The level of water table rises during rainfall months but then decreases when there is no rainfall.
- Overpopulated cities, which create pressure on natural resources add to the problem of water scarcity.
- Due to inefficient irrigation techniques and small land holdings for agriculture, over-exploitation of groundwater is in practice. This has lowered the water table, leading to conflict between the demands from industry, agriculture and domestic sector.
- Lack of recycling capacity for used water and low emphasis on water treatment and reuse along with dumping of municipal and industrial waste in water bodies has led to reduction in input to water sources.
- Low awareness about rain water harvesting, water usage efficiency coupled with increasing purchasing power of people has increased demand leading to magnification of the problem.
- Increasing Geogenic groundwater pollution as well as increasing river pollution limits utilizable water in the country.
- The concretization in urban areas and encroachment of water bodies in both urban and rural areas not only prevent surface storage and groundwater recharge but also causes disasters like floods. Guwahati's Deepor Beel, for example, is used by the municipal corporation to dump solid waste.
- Climate change increases incidences of droughts and reduce annual precipitation in drought prone central and North West India.

- The water harvesting and reuse technology is still a luxury in India, the people in rural and small towns face hardship for purchase, use, and repair because of less motivation among both public officials and general public for use of these equipment.

Way forward:

- Water-use efficiency in agriculture can be ensured by making farmers aware and by providing them, on the ground, technologies like the one related to water resistant crops.
- In-situ water conservation techniques like rain water harvesting, check dams need to be continued.
- Managing the demand side of water management is crucial as India cannot increase the per capita availability of water.
- Hiware Bazar Model like replication where village very well manages the 300-400 millimeters (mm) of rainfall that it receives every year.

Conclusion

The Government needs to holistically handle the supply as well as the demand side of water management and everybody in the society, i.e., the central government, the state governments (water, being the state subject), citizens, NGOs and companies need to come together to tackle water crisis in the country.