Target PT 2019
Complete Revision through
4000+ MCQs

- 45 Days Concept cum Revision Classes with Daily Test
- 15 Days Prelims Current Affairs Classes + Tests
- Special Classes on Economic Survey & Budget
- Special Classes on India Year Book & Mapping
- Prelims Mock Test Series
- Prelims Study Material

- This programme covers the complete syllabus including History, Geography, Polity, Economy, Science, Environment and Current Affairs with the correct mix of Fundamental and Advance level of study to cover micro detailing of sub-topics & current developments.
- 45 Days Concept cum Revision Classes for covering basic concepts. In each session there will be a test of 50 questions (based on the topics given in schedule) followed by Class to cover basic aspects of each topic and approach to handle questions.
- The idea behind taking test before classes is that, first students should brainstorm on the given topics through the test to find their strong and weak areas. Then a class on same topics will provide a conceptual clarity that helps to revise the topics twice on the same day.
- 15 days Current Affairs classes covering last 2 years current topics/issues, updates on Indian Year Book (IYB), PIB, Budget and Economic Survey supplemented by notes.
- Current Affairs Classes will also include updates on Indian Year Book (IYB), PIB, Budget and Economic Survey.
- Special Classes on Mapping (World & Indian Geography).
- Prelims Test Series including 15 Mock Test and 8 Current Affairs Tests.
- Complete Prelims Study Material & Prelims Current Affairs Material will also be provided (It will cover Current Affairs of past 2 years).

Batch Starts 10 JANUARY 2019
Test Timings : 9:00 AM to 10:00 AM
Class Timings: 10:00 AM onwards
Fee ₹ 17,000 /- (+GST)

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Introduction

Recent reports about the loss of parts of the Aravalli mountains along some stretches in Rajasthan and Haryana, as a consequence of rampant mining and unplanned urbanization, have come as a shock. People from all walks of life are raising their voices to help save the mountains. The Aravalli Ranges play a crucial role in defining the catchment of river basins that recharge the depleting aquifers of plains in Rajasthan, Haryana and Delhi, protecting the wild flora and fauna and arresting desertification. The need to protect and preserve the fragile mountain environment and associated ecosystem has reached a critical point as increasing air pollution and scarcity of ground water at shallow depths is making life difficult. The present issue is an attempt to focus on concerns related to the vanishing Aravalli, drying up of water bodies in the region, loss of endemic biodiversity and increasing air pollution in and around Delhi, in an attempt to devise a holistic policy for sustainable development of this region. The laudable role of the judiciary in stepping in to try salvage the situation has been brought out at more than one place. The insight provided by Professor C R Babu, an environmentalist of repute, on the key role played by Aravalli has greatly added to the discourse.

Depletion of Aravallis

- The Aravalli mountain range stretches from Gujarat in the southwest to Delhi in the northeast for about 700 km and sculpts the topography of eastern Rajasthan and adjoining parts of Haryana and Delhi, creating a picturesque backdrop for flourishing settlements, with its highest point at Guru Shikhar on Mount Abu in Rajasthan. At this point, the peak rises to about 1,722 m (5,653 feet). The ranges have a pronounced effect on the biodiversity and environment of the entire region and support open forests, famous forts and temples of historical importance apart from exerting a direct impact on the micro climate and the hydrological status of the area.

- Aravalli mountains comprise two distinct group of rocks, geologically—the older meta sedimentary rocks with volcanics (>2,500 million years old) belonging to the Aravalli Supergroup and the younger sedimentary rocks intercalated with volcanic rocks belonging to Delhi Supergroup (1,700 million years or older), well known for its mineral wealth.

- It is no wonder therefore that the Aravalli have been supporting the mining industry from way back in history. The claim is backed by the existence of copper mines dating back to the fifth century BC (Srivastava, 1998), the presence of zinc smelters in the Zawar area of Rajasthan, dating to the thirteenth century and several historical monuments built using local construction material from this range.

- The Aravalli have lost about 40 per cent of their total area over the last four decades.

Importance of Aravalli mountain ranges:

- Ground Water Recharge:
  It is not just the biodiversity and forest cover of the Aravalli that underscores their immense importance. The Aravalli also serve as a source of groundwater recharge for the cities of Gurgaon and Delhi, as well as many other cities in its ambit. The aquifers in these ranges are interconnected and any disturbance or alterations in the pattern can significantly alter the groundwater table. A Central Ground Water Board (CGWB) study from June 2017 mapped five transect in the Aravalli that help recharge the groundwater in Gurgaon. These are responsible for channeling groundwater to the Badshapur, Sector 56 and 45, Haryahera and Bhondsi areas in the city. But with rampant mining and construction taking place in the foothills, the aquifers are increasingly threatened. The disturbance in the Aravalli is worrying as studies show that groundwater levels in Gurgaon are depleting at a rate of 0.73 m annually.
Natural barriers to check desertification

The Aravalli have for years acted as a barrier for checking the movement of sand from the Thar Desert in Rajasthan to the Delhi-NCR region, Haryana and Western Uttar Pradesh. The degradation of the hills has resulted in a situation where while in 1972-75 they stretched out over 10,462 sq km, in 2018, they have been reduced to mere 6,116 sq km. In all, 12 breaches in the Aravalli have opened up extending from Ajmer to Jhunjhunu (Rajasthan) and the Mahendragarh district in Haryana. Another study, conducted by the Wildlife Institute of India found sand dunes have been found in villages close to Gurgaon and Delhi, raising the chances of more dust from the deserts of the Thar blowing into the cities.

Ecological significance

The Aravallis are ecologically very significant, and form the catchments of rivers and nallas that originate from the hills and irrigate the plains.

Biodiversity rich region

The Aravallis have also been identified as an important groundwater recharge zone and are very important to the future groundwater security of south Haryana towns like Gurgaon and Faridabad, and provide sweet drinking water to millions of people. The Aravallis also consist of unspoilt forests like the Mangarbani which are home to close to 300 native plant species, 120 bird species and many animals (jackal, Neelgai, Mongoose). The Aravallis provide the only major forest cover in the state of Haryana which has a total forest cover of just 3.59%, the second lowest among Indian states.

Major causes of depletion of ranges of Aravalli:

- Rapid Urbanization: Rapid urbanization from Palanpur in Gujrat to Delhi has caused degradation of ranges of Aravallis. This is mainly due to expansion of urban settlements alongside mountain range. Levelling of ridges for housing and other purposes has caused loss of area under Aravalli.
- Illegal Mining: Many rocks such as red sandstone, marbles and other rocks are mined from Aravalli which are used as building material. Beside this, Zawar zinc mines, Khetri copper mines e.t.c are important mines from which minerals have been extracted for hundreds of years. This has caused replenishment of ranges. Many historical monuments have been built using rocks from Aravalli signifies their better quality. Rampant mining of white marble has caused negative relief features at Makrana marble mines.
- Deforestation: Deforestation is one of the major causes of vanishing profile of Aravallis. It has caused exposure of bare Aravalli to geomorphic agents causing degradation of its profiles. It has also resulted in deformation and erosion of landform of that area.

Disappearing Lakes in Aravalli Region

- Introduction:

There are many lakes which are located in Harayana on the outcrops of Aravallis which are disappearing due to less recharge of underground water and over utilization of ground water by rapid increasing urban settlement. Damdama and Badhkal, two prominent lakes situated in the north and south of the Aravalli outcrops, have all but vanished. Increasing human interference, unprecedented rise in built up area, privatization of land for recreational purposes and unsustainable cropping activities in recent years are wiping out these lakes. The Badhkal is a dammed lake built by embanking the down slope of the catchment, while Damdama is a natural lake, recharged each year by the monsoon. These lakes were popular weekend destinations—about 60-90 minutes away from Delhi, especially during winter when many migratory birds came visiting. Several minor streams meandered its way into the lakes, serving as a splendid feeding ground for birds and supported diverse habitats. The water level at one point in the early 50s used to reach 50 to 60 feet during the monsoon, but in recent times reaches barely 7 feet post monsoon.

Causes of change in water level of two lakes

- Increase in agricultural activity in the region

Damdama is now a marshy tract instead of a lake. The satellite images reveal that there has been a marked decrease in the lake area over the period of study with two primary reasons for the drying up of this region—increase in agricultural activity and rise in built-up area. Satellite images clearly indicates that in recent years agricultural activities have extended to nearly the edge of the lake area (in dark red), replacing the semi-arid forested tracts that abounded this region. The increased agricultural activities have drawn significantly
on the groundwater, leading to a fall in aquifer levels and resulting in a reduction of the extent of lake waters, which dropped to 0.03 sq km in the month of May 2017.

**Eco tourism around the lakes**

Coupled with agriculture, there is the rise in built up area around the lake. Being promoted as an eco-tourism destination the lake area is dotted with camp sites and hotels, with even a high end resort of a five-star chain in the locality. A site visit to the field to validate the study found resorts standing out in sharp contrast to the rural backdrop of haphazard villages, narrow brick-lined lanes and open drains.

**Dredging of lakes**

The dredging that attempted to deepen the lake and increase its capacity. Locals allege that the water levels in the lake has declined post-dredging as the clay plug that helped retain the water was removed enabling the water to seep out of the region into the aquifer and beyond. Although there are evidences of dredging in certain parts of the lake, which was reportedly undertaken in 2017, there is no clear indication of where the dredged material was deposited. Locals say that the soil was used to raise the bund height—but the claim was unsubstantiated by visible evidence. It is quite possible that the dredged material may have been used as landfill in the adjoining regions to level out agricultural lands being claimed incessantly from the little left wilderness around the lake.

**Levelling of Aravalli ranges**

Levelling, although advantageous for agriculture, enabling equitable distribution of water in the field, is disastrous for the catchment as it changes slopes, leading to channel blockage and ultimate drying up of water bodies.

**Danger of biodiversity in Aravallis**

- **Introduction:** The unique climatic and edaphic characteristics of India assist biological invasion by alien species like the Vilayati Keekar that damages native diversity. Control methods for eradicating the species have proved futile. Although the biocontrol efficiency of Cuscuta Reflexa has been established, the agent requires further trials for successful deployment.

- **Vilayati keekar and its mitigation strategy:**
  - The Vilayati Keekar (P. juliflora) is the most dominant species in India’s arid and semi-arid tracts, especially in the states of Gujarat, Rajasthan and Haryana. Aravalli, the oldest mountain range in India, cuts diagonally across these states, running from the southwest to the northeast.
  - Vilayati Keekar is one of the most extensively found species in the Aravalli, especially in its northern and central trails in the states of Haryana and Rajasthan. However, knowledge on controlling and eradicating IAS (Invasive Alien Species) is still limited, which has resulted in numerous problems including the extinction of endemic and threatened species.
  - Studies have revealed that P. Juliflora is one of the worst IAS species in India, having the potential to successfully survive in hostile climatic conditions and establish themselves in several vital habitats including forests, wetlands, bunds of crop fields and wastelands. It becomes imperative at this stage to investigate the role of C. Reflexa as an effective bio-controller, which has been till now used as an ineffective measure.
  - However, control of IAS is not an isolated event. It requires a long-term effort, aided by constant monitoring and investigation. Preliminary observations clearly established the biocontrol potential of C. reflexa. However, in order to confirm and quantify the biocontrol efficiency of C. reflexa on P. Juliflora, field trials in different climatic zones and habitats are needed.

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Role of Judiciary in setting Environmental Norms

Introduction:
In recent times, the Indian judiciary is playing a key role in the development of environmental norms. While various judgements passed by the courts and the National Green Tribunal have sought to prohibit environmentally harmful activities, in the absence of rigorous implementation, little progress has been made so far.

Role of Indian Judiciary in implementation of environmental norms
- Various judicial and quasi-judicial bodies have been empowered to hear and dispose cases pertaining to the environment. At the highest level, the Supreme Court (SC) can hear appeals from the aggrieved parties and decide accordingly. In this regard, even matters that have earlier been decided by the National Green Tribunal (NGT) can be entertained directly by the SC, provided they are brought under its notice within 90 days from the date of the NGT order.
- The NGT was created in 2010 through the National Green Tribunal Act, 2010, in light of the decisions taken at the United Nations Conference on Environment and Development (UNCED) held in Rio de Janerio in 1992, in which India participated. At the UNCED, different countries agreed to provide effective access to judicial and administrative proceedings, including redressal and remedy.
- In 1976, Articles 48 (A) and 51A (g) were inserted in the Directive Principles of State Policy and Fundamental Duties, respectively through the 42nd Amendment. While 48 (A) states that the State shall endeavor to protect and safeguard the environment and safeguard the forests and wildlife of the country, 51A (g) imposes a duty upon the citizens of India to protect and improve the natural environment and confers upon them the right to approach the courts for appropriate relief.
- The SC, in its judgement in Sachidanand Pandey vs State of West Bengal, held that Indian courts are bound to bear in mind the above principles whenever a problem pertaining to the ecology or environment is brought up before them, thus, setting a precedent for the judgements that followed in the future (Supreme Court of India, 1987).
- In another judgement in 1991, the SC held that Right to Life under Article 21 of the Constitution includes the right to live in a healthy and clean environment.
- The SC has upheld principles such as the Absolute Liability Principle and Polluter Pays Principle.
- Absolute Liability Principle
- Under Absolute Liability Principle if an industry or enterprise is engaged in an inherently damaging activity from which it is deriving commercial gain, the said industry is bound to pay compensation to parties that face harm from its activities, regardless of the fact that it had taken measures to check any pollution or damage.
- Polluter Pays Principle
- The Polluter Pays Principle states that financial costs of preventing or remediying damage caused by pollution shall lie with the undertakings that have caused pollution. When the SC first invoked the Polluter Pays Principle in the case of Indian Council for Enviro-Legal Action v. Union of India (UoI), it was tied in with the Absolute Liability Principle. The SC stated that the principle implies that the absolute liability for harm to environment extends not only to compensate the victims of the pollution but also the cost of restoring the environmental degradation.

The problems of implementation-
polluter pays principle
- The NGT has repeatedly used this principle to deliberate on matters of environmental violations
and decide on the cost that is to be incurred by violators. Most notably, in its judgements in The Forward Foundation vs State of Karnataka (2014), S P Muthuraman vs UoI (2015), among others, the NGT has imposed a penalty of 5 per cent of total project cost on the developers who have commenced work without obtaining required permissions and have in turn harmed the environment.

Further, in judgements such as Vardhaman Kaushik vs UoI (2018), the NGT took pre-emptive measures to check vehicular pollution in Delhi-NCR by imposing an ‘environment compensation charge’ on vehicles entering the region. The principle has also been used to direct cleanup and prevent pollution of rivers. For instance, in Manoj Mishra vs UoI (2015), the NGT ordered that anyone found guilty of dumping debris in the Yamuna River would be liable to pay a compensation of INR 50,000.

However, in most instances, despite NGT orders collecting fines from the violators has proved difficult. It has been noted that despite the fact that NGT has ordered several states to implement environmental fines as preemptive and compensatory measures, actual collection of fines has remained poor.

Under the NGT Act of 2010, the amount to be paid as fine or compensation by a party is to be remitted into an Environment Relief Fund (ERF) within a period of 30 days. However, even in cases where the NGT has ordered a fine on a violator, the payment to the ERF has been recorded in only two out of seven cases.

The first case is related to mining activities in the Aravalli hills. It was in 2002, in the case of M C Mehta vs UoI, that the SC had first passed an order wherein a complete prohibition on mining activities in the Aravalli ranges (in both Rajasthan and Haryana) was to be enforced. However, with collusion of politicians, bureaucrats and the mining mafia, illegal extraction of minerals continues to raze the Aravallis. Court orders, passed repeatedly through the years, have failed to bring about any change.

### Impact of Environmental Legislations on Industries

- A large number of instances of violations of environmental norms can be found in cases
- where industries are concerned. In 1994, by the powers vested to it under the Environmental Protection Act, 1986, the central government introduced the Environmental Impact Assessment (EIA), a procedure that gauges the potential environmental impact of an economic project so as to allow measures to minimize the likelihood of damage or pollution of the environment.
- Under the EIA all industries are bound to submit an environmental assessment report, environmental management plan and the details of a public hearing (where concerns are raised by people) conducted in the vicinity of the project to the Ministry of Environment, Forests and Climate Change (MoEFCC).
- However, a large number of cases testify to the fact that the EIA as a procedure exists only on paper. Most recently, the tragic incident of Thoothukudi can be taken as example, when residents who had gathered to protest the operation of the Vedanta Resources owned Sterlite copper plant, were gunned down. A total of 13 people lost their lives in the event.
- Other example includes industries alongside the bank of river Ganga where many industries have not been regulated causing pollution in the river.

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Air Pollution and Health Risk Reduction

Introduction:

- The burgeoning mega cities, especially in developing countries are expected to experience higher levels of risk and exposure to health hazards from a combination of individual, physical and environmental factors. The Lancet Global Health Survey (2018) has found that there is a link between death from chronic respiratory diseases and air pollution in North Indian cities with as high as 8.7 per cent of Chronic Obstructive Pulmonary Disorders (COPD) being caused by air pollution. It is clear that air pollution is likely to affect human health in disastrous proportions.

Trend of air pollution: Case of Delhi

- The three major pollutants in India are SO2, NO2 and PM10. Under the National air quality monitoring programme (NAMP), these pollutants have been identified for regular monitoring at all stations (CPCB-ENVIS, 2016). Power sector and thermal power plants are the primary sources of SO2 although researchers have also listed transport as a source. However, it has been found that following the implementation of policies for checking concentration of SO2 and NO2 and increased usage of compressed natural gas (CNG), there has been significant temporal variation between areas that were using CNG and those that were not. Similarly, studies have stated that the transport sector may not be a major source of SO2 in Delhi. Hence the lower concentrations of SO2 may be due to the policies on better quality of diesel and use of CNG in public vehicles. Similar study also points out similar trends for SO2. Annual mean levels of SO2 indicate that it has mostly been lower than the prescribed limit (50 μg/m3). The levels of NO2, on the other hand, indicate an increasing trend and are much above the limit of 40 μg/m3. The massive rise in vehicular fleet is considered a major cause for this increase. The rise of NO2 is a threat to environmental and human health as the reactions of NOX in the presence of sunlight produces ground level ozone that is highly dangerous (Lo and Quattrochi, 2003). Suspended particulate matter (SPM) and RSPM levels are soaring in the Delhi region (prescribed limits being 40 and 60 μg/m3 respectively).

Impact Of Air Pollution On Human Health

- It is well established that apart from disorders in the respiratory system, air pollution causes harm to eyes, skin, lungs and other respiratory organs. Air pollution may also worsen the circulatory system, making it vulnerable to failure.
- A study using the mortality data obtained from New Delhi Municipal Council established that there is a positive relationship between particulate pollution and deaths from respiratory and cardiovascular problems.
- Dry cough, wheezing, breathlessness and chest discomfort are notable health problems in the city. Hypertension was found to be positively correlated with RSPM. Delhi has shown significantly higher levels of chronic headache, eye irritation, skin irritation and various types of lung functions deficits.
- Oxides of nitrogen generated from power plants, electric utility boilers and vehicular emission have shown to cause airway resistance, chest tightness, lung and eye irritation and viral infections. It is clearly visible that the various orders of respiratory illness and deaths are increasing manifold.

Steps Need to be taken

- Study of the impact of different environmental and socioeconomic factors on human health in mega cities is required as they play a major role in shaping national health indicators.
- Such concepts will form the scientific basis for providing health security and carrying out locally
differentiated sets of preventive measures aimed at environmental enhancement as well as at the identification of linkages between different territories’ geographic features and public health.

**Further steps to be taken:**

- Analysis of urban environment factors through the example of cities in India as well as their impact on public health including, physiographic characteristics, demographic characteristics and socio-economic landscape.
- Probability distribution function of the ranks of cities based on mortality and urban area factors. Development of the integral indicators for the quality assessment of complex urban life system.
- Comparative analysis of comfort conditions for health and wellbeing of urban and rural areas by studying the temporal dynamics of the bioclimatic indexes (BI). Extremes in BI and their connection with different climate extremes, particularly to estimate the relationship of climate extremes with disaster frequency for disaster risk reduction in urban areas can be studied. BI determines the comfort level and assesses the spreading out of climate sensitive diseases using climate model data.
Pollution caused by Rural-Urban Interlinkages

Case Study: Delhi’s increasing air pollution

Introduction:
- Trapped by the inversion of temperature, a characteristic feature of winter, along with burning of stubble and fire crackers, pollution exacerbates in Delhi. It is calling for urgent and effective countermeasures for abatement. The city is enveloped in a thick blanket of pollutants that deteriorate air quality to hazardous levels, posing grave threats to human health. This phenomenon disrupts daily activities in the city as worsening pollution levels restricts outdoor movement; even the railways and airways are not spared.

Main Causes of air pollution in Delhi
- Cropping patterns in Punjab and Haryana
  - The increase in pollution levels during winters is ascribed, without failure, to the stubble burning that follows the harvesting of rice crops in the states of Punjab and Haryana.
  - Farmers in both states use combine harvesters (an agricultural machine that reaps, threshes and cleans a cereal crop in one operation) to reap the rice plant. This machine is unable to cut the crop close to the ground and leaves plant stalks standing at a height of up to one foot. Since the harvesting of the rice crop is immediately followed by the sowing of wheat for the rabi season, farmers have little time to manually cut the stalk and therefore, resort to burning the stubble.
  - Second cause is problems of labour shortage that make the cutting process uneconomical.
  - Burning also eliminates the likelihood of crop diseases that may have originated during the kharif season being carried forward to the rabi season.
- The stubble is not preferred as cattle feed too because of its high silica content, which decreases its digestibility. In contrast, farmers use the post-harvest wheat husk to feed cattle.
- Diwali and Delhi’s Air Pollution
  - The stubble burning is compounded with the Diwali celebrations around the same time. Toxic smoke from bursting of firecrackers along with myriad pollutants emanating from various other sources, create a thick blanket of smog.
  - The Diwali celebrations on November 7, 2018, Delhi registered the worst air quality in the year despite the Supreme Court restraining the sale and usage of polluting firecrackers.
  - It was in October 2018 that the Supreme Court, considering the overall implications of a blanket ban on firecrackers right to livelihood of manufacturers and right to health of the country’s citizens—had ordered a partial ban on their sale and usage, stating that low-emission firecrackers could be burst between 8 and 10 pm and that vendors could only sell ‘green’ firecrackers—ones that cause 30-35 percent lower emission of particulate matter and 35-40 per cent lower emission of sulphur dioxide and nitrogen oxide.
- Climatic Factors abetting pollution
  - The onset of the winter enables a conducive atmospheric condition that helps the formation of smog. During summer, temperatures decrease with the increase in altitude; however, the opposite takes place during the winters, owing to extended periods of high pressure. The high pressure decreases the cloud cover and as a result, the ground loses heat rapidly, making the air in contact with the ground cooler. This cool air traps the pollutants close
to ground. During this period, if the winds are slow and anticyclonic conditions persist, the pollutants are not displaced resulting in a thick layer of smog.

Measures for abatement

- **Air Action Plan**
  - Countermeasures for the abatement of air pollution were taken by the Ministry of Environment, Forest and Climate Change in 2017 through the introduction of an Air Action Plan. A plan was set forth to establish a task force under the Chairmanship of the Principal Secretary to the Prime Minister. The task force was responsible for monitoring stubble burning, establishing an anti-pollution helpline and taking strict actions against polluting power plants and industries.

- **Graded Response Action Plan**
  - A Graded Response Action Plan was implemented for combating air pollution on a daily basis (Central Pollution Control Board, 2017). The plan entailed prohibition of certain activities, based on the AQI (ranging from good to severe to emergency) on a given day.
  - A few examples include wide-ranging measures: implementation of the odd-even license plate spread over a month in a year, shutting down of Badarpur power plant when pollution reached severe levels, etc.

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