





RAILWAY INFRASTRUCTURE

IASBABA'S

FRONTLINE

& IDSA

BI-MONTHLY

GIST

CAUVERY DISPUTE

NFHS-4

INDIAN DIASPORA IN GULF

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Railway Infrastructure

GS 3

- Infrastructure - Railways

Intro

- **Rs. 1.46 lakh crore for investment in the Railways** has been allocated, but this is **too little** given the scale of the government's plan for India's largest public undertaking.
- It **proposed** investments to the tune of **Rs.8.56 lakh crore over a five-year period, implying an average annual investment of Rs.1.71 lakh crore**. In the first four years of this plan, starting in 2015-16, the proposed cumulative outlay has been Rs.4.98 lakh crore, implying a shortfall of Rs.1.86 lakh crore. Even more outrageously, the actual outlays in each of the first three years was lower than what was initially "allocated" in the respective budgets.

Issues with funding

1. **Private investors not interested in PPP**
 - Passengers continue to suffer and the quality of the infrastructure continues to deteriorate simply because of the government's utterly misplaced faith in **private investment, which brought in only Rs.100 crore compared with the Rs.100,000 crore expected**.
 - For instance, **resources from public-private partnerships (PPPs), which were expected to account for 15 per cent of the investments, have failed** miserably to meet expectations in each year.
 - These investments, which **include the so-called "station development" programme** using private investment, have not materialised. Station development, which was to yield Rs.1 lakh crore over five years, appears to be failing spectacularly
 - Only Habibganj station in Bhopal, Madhya Pradesh, had been handed over to a private developer (in March 2017), which fetched an investment of Rs.100 crore. Tenders have been floated for only 23 of the 407 "A1" and "A" class stations planned for development. Of these, only one bid each came for the Jammu Tawi and Kozhikode stations.
 - Thus the tendering process had been postponed in most cases because of "lack of bidders' interest due to non-substantial groundwork by prospective bidders"

2. Budgetary support decreased

- The original investment plan **envisaged budgetary support to the extent of 30 per cent, that is, an average of Rs.51,200 crore a year** (a total of Rs.2.56 lakh crore over five years).
- In the first three years the average shortfall in allocation was 20 per cent; in 2017-18, for instance, he budgeted for Rs.55,000 crore but revised it to Rs.40,000 crore, a shortfall of more than 27 per cent. In the rest of the Budget, the government has projected a budgetary outlay of Rs.53,060 crore.

3. Institutional finance not picking up

- **Institutional finance, which was to provide 29 per cent of the Rs.8.56 lakh crore plan** over five years, has also not materialised.
- For instance, the **bond flotation programme of Indian Railway Finance Corporation (IRFC), which issues bonds in order to acquire rolling stock such as engines, coaches and wagons and then leases them to the Railways**, has failed to deliver.
- Bonds issued by the IRFC were to provide, on an average, Rs.20,000 crore annually over four years. But they could raise only a little over Rs.14,000 crore in 2015-16 and 2016-17. In 2017-18, bonds were projected to raise Rs.21,686 crore, but according to the IRFC, there would be a shortfall of about Rs.100 crore.
- It appears that the large shortfall in budgetary support is being met partly by higher mobilisation through the **costlier option of bonds**.
- The higher target of Rs.28,500 crore set for bond issuance must be seen in the context of the **recent volatility in the stock and bond markets**, which indicates a greater uncertainty about this source of capital receipts to finance the Railways.
- Similarly, although Life Insurance Corporation has agreed to provide finance to the tune of Rs.1.5 lakh crore to the Railways, it provided only Rs.9,887 crore in 2015-16 and Rs.11,465 crore in 2016-17.

4. Joint ventures with State government

- Added to this is the greater tendency in recent years to pass on the responsibility of funding to State governments in the name of joint ventures.
- Meanwhile, the joint venture route has also **not taken off because the priority of projects is determined entirely by the dispensation at the Centre, while the severely constrained States seek to maximise the benefit from such investments**.

Other infrastructure issues

1. Doubling of tracks

- **18,000 kilometres of track doubling, development of third and fourth lines in certain routes** is being announced for 2018-19
- However last year, 1,800 km of track length was stated to be doubled, which again was forced to be revised to 945 km on account of capital expenditure cuts.

2. Gauge conversion

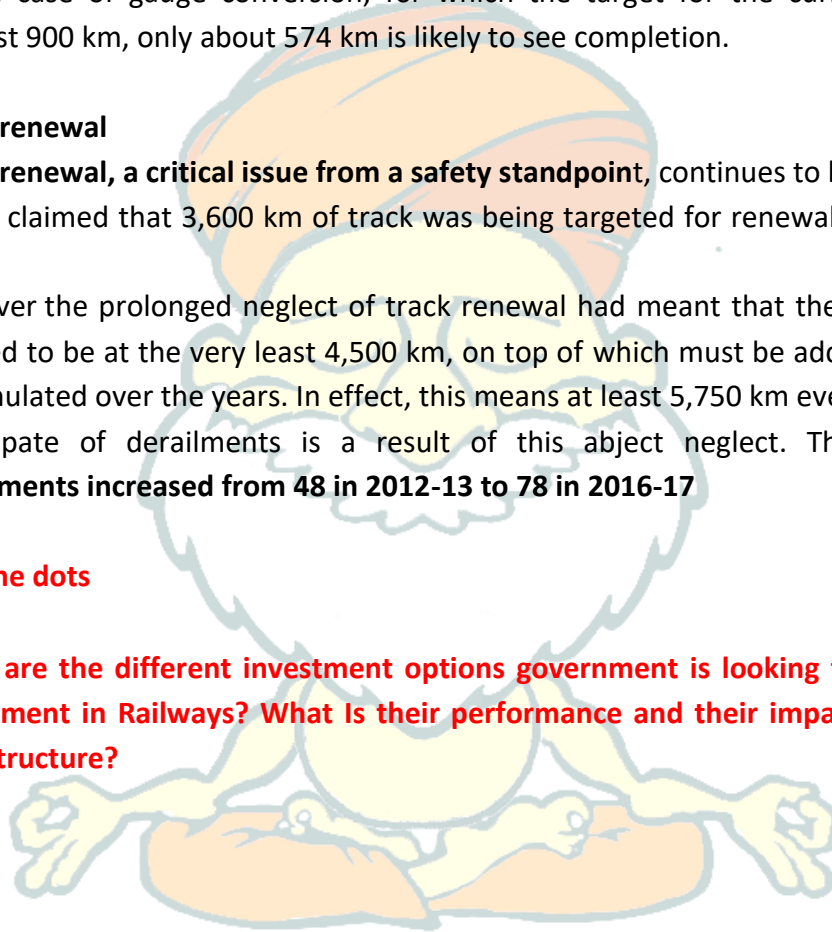
- **5,000 km** of gauge conversion has been proposed for 2018-19.
- In the case of gauge conversion, for which the target for the current fiscal is a modest 900 km, only about 574 km is likely to see completion.

3. Track renewal

- **Track renewal, a critical issue from a safety standpoint**, continues to be neglected
- It was claimed that 3,600 km of track was being targeted for renewal in the current year
- However the prolonged neglect of track renewal had meant that the annual target needed to be at the very least 4,500 km, on top of which must be added the arrears accumulated over the years. In effect, this means at least 5,750 km every year.
- The spate of derailments is a result of this abject neglect. The **number of derailments increased from 48 in 2012-13 to 78 in 2016-17**

Connecting the dots

- **What are the different investment options government is looking forward to for investment in Railways? What is their performance and their impact on railways infrastructure?**



Boron Nanosheets as thin as Grapheme Discovered

GS 3

- Achievements of India in Science
- Nanotechnology

Intro

- Indian Institute of Technology Gandhinagar have **produced one of thinnest materials** ever known to humankind.
- It **synthesised nanosheets—which are 100,000 times thinner than a sheet of paper—made up of boron.**
- Now the work is towards **utilising these nanosheets for developing the next generation batteries and nanocatalysts.**
- **At such a small thickness, matter starts behaving in unusual ways and results in properties which are at the extremes of all known materials.** For example, although graphene is only one atom thick, it is approximately 200 times stronger than steel.

Details

- The rich chemistry of boron is expected to make these nanosheets useful for not only storing energy but also for generating energy in a green way.
- There are **some boride compounds, commonly used as ceramics, that dissolve in water** just like sugar. But **when the solution was left by itself for a few hours, quite surprisingly, the crystals began to grow again.**
- What makes their discovery interesting is that **during this recrystallisation, the small clusters were not growing in a three-dimensional way; rather, these were growing in the form of extremely thin sheets.** What makes these nanosheets special is that the **boron atoms in these nanosheets were found to be arranged symmetrically in the form of a honeycomb.**
- This makes these nanosheets **similar to graphene, a honeycomb of carbon atoms which is the world's thinnest material, and the discovery of which led to the 2010 Nobel Prize in Physics.**

Conclusion

- Researchers across the world have been trying to make such boron cousins of graphene.

- The technique developed by the research team at IIT Gandhinagar is **not only inexpensive and simple in design, but also results in an aqueous colloid of these nanosheets, which means that a drop of water from this colloid would contain thousands of nanosheets swimming like micro-carpets.**

Connecting the dots

- **Explain the process of making of Boron nanosheets developed by India.**

Issues of Indian Diaspora in Gulf region

GS 2

- **Indian Diaspora**

Intro

- **Stagnating wages, rising costs of living, a growing trend of imposing restrictions on foreign workers and the declining fortunes of the Gulf itself have resulted in a decline in the number of emigrants from Kerala and a weakened remittance flow into the State**
- **Non-resident Indians remitted to India \$65 billion in 2017, says a World Bank estimate, topping China, whose residents sent back \$61 billion the same year. However, according to the Reserve Bank of India, in 2014-15, the remittances stood at Rs.4.38 lakh crore. In 2016-17, this dropped to Rs.3.66 lakh crore.**
- **In 2016, 5.07 lakh workers landed in countries in West Asia; in 2015 the number was almost 7.6 lakh took the emigration clearance required (ECR) route.**
- **The ECR stamp means that the labourer is legal, but thousands more end up on tourist visas and work in the 18 West Asian countries.**
- **The bulk of migration from India (as also Kerala) has so far been to the six GCC countries. In contrast, only 3.8 per cent were in the United States, 1.5 per cent in the United Kingdom, 1.2 per cent in Canada and 0.7 per cent in Australia.**

Reasons

- **The attractiveness of the Gulf countries for emigrants has come down because of a combination of factors, such as stagnating wages, rising costs of living, a growing**

trend of imposing restrictions on foreign workers and the declining fortunes of the Gulf itself.

- As a whole it is a result of **lower oil prices, fiscal tightening in the GCC countries, “nationalisation” policies aimed at lowering the unemployment rate of nationals** that slowed employment of foreign workers
- The **economic slowdown in Saudi Arabia and Kuwait has also adversely impacted** Indian migrant workers in those countries.
- **All the GCC countries, except the UAE, registered a fall in emigration during the 2011-16 period**

Problems

1. Poor working conditions

- Most labourers end up in harsh work environments, many land in jails, some die and others are tortured. Despite these distressing stories, many still flock to West Asia in search of a better future.
- **Nitaquat law in Saudi Arabia and increasing Emiratisation in the UAE as also the absence of justiciable workers’ rights, including the freedom of assembly,** raise serious questions about the human rights record of the Gulf countries
- There are about 30 lakh Indians in Saudi Arabia. Since July last year, the **Saudi government has imposed a massive hike in the expatriate dependent fee**, from 100 riyals (per family) to 1,200 riyals (per individual of the family) annually. This is forcing many Indians to send their families back home or reconsider their decision to work in Saudi Arabia.
- Cases of unpaid dues and wages have been reported from many countries, including Qatar, Saudi Arabia, Oman and Kuwait.

2. Insensitive legal structure

- In the last three years, the Government of India filed 182 mercy petitions across the world. The fact that just two countries—the United Arab Emirates (74) and Oman (57)—accounted for the lion’s share of these petitions tells a story that is unmistakable: one of intolerant regimes and barely human legal processes.
- Legal structures are weak for domestic workers, construction labour and fishermen in the GCC countries. As a result, it is common to come across instances of passports of workers being impounded and kept with the licence holder or contractor, poor pay for long hours of work, and near-zero access to legal services.
- Besides, the conduct of court proceedings is in Arabic, a language alien to most workers from outside the region.

3. Destabilisation of West Asia

- **One of the largest mass evacuation operations to date involving the Indian Foreign Office was in July 2014 in Libya.** This was done after Indians in Libya began sending panic messages requesting evacuation when the fighting between militias there intensified.
- As many as 6,000 Indians lived and worked in Libya—a country of over two million square kilometres. Surmounting many odds, the team evacuated over 3,000 Indians in a matter of few weeks. Between 2014 and 2016, as many as 3,775 Indians were evacuated.
- The recent GCC [Gulf Cooperation Council] crisis involving Qatar has created financial pressure on companies undertaking infrastructure projects and may have potential adverse consequences for Indian workers.

4. No support structures at home after evacuation

- A number of health workers who are from Kerala argue that they would have no jobs or income once they returned to Kerala and that the State government would not do much to help,” said an official who was part of the operation.
- More migrant labourers from the Gulf countries are coming back to India than ever before consequent to loss of jobs, and **government welfare measures exist barely, even on paper, for such returnees.**
- **Resettlement of returnees is a State subject, and the MEA can, at best, offer its advice on the issue.** Some State governments such as Kerala, Telangana and Andhra Pradesh have taken measures to address at least some of the issues facing the returnees, but most of the other States have no programme to ensure a smooth transition for these foreign-exchange earners.

5. Air fares

- Often, during the seasons that workers travel home, air fares are abnormally high. When this was brought to the notice of the MEA, it flagged the issue with the Ministry of Civil Aviation. But there has been no solution in sight.
- Indian carriers have not been able to utilise the full capacity allocated under Air Services Agreements for various reasons while Gulf carriers have been seeking permission for extra capacity on Indian routes. The Ministry of Civil Aviation is yet to take a favourable decision on this issue.

International efforts

- Although the **Abu Dhabi dialogue** was the first multilateral forum to broach the subject, this positive factor was largely undone by the mechanism it put in place: it **decided to have country-specific negotiations instead of specific and clear-cut goals for each of the worker-recipient countries to work towards.**

Steps taken by Indian government

1. MoUs with countries

- India has memoranda of understanding (**MoUs**) **in place on workers with many of these countries** but none of these addresses the burning issues that are constantly highlighted by the continuing abuse and exploitation of Indian migrant workers.

2. e-migrate

- The government endeavour is to see that all persons who are going abroad—broadly **in the ECR category**—come through **e-Migrate**
- There is a need to do more **to regulate the unscrupulous travel agents** who take people for a ride

3. Legal Counselling

- The **Indian Mission** provides **free legal counselling** at the **Indian Workers Resource Centre** to Indians in need. It also gets consular access from the local authorities to meet Indian inmates in Abu Dhabi jails.
- It has a provision for legal assistance **through the Indian Community Welfare Fund** to Indians in most deserving cases.

4. State Outreach Programme

- **Government had launched a State Outreach Programme (Videsh Sampark series) from May 2017 to generate awareness in the States, and during such conferences with the States the resettlement and rehabilitation would be taken up at the higher level.**

Connecting the dots

- **Indian diaspora in the Gulf region is facing several difficulties. Examine the factors behind the same. What steps have been taken by the government to resolve the issues?**

Genetics of Natural Colours

GS 3

- **Developments in Science and technology and their applications**
- **Biotechnology**

Intro

- The **distinctive colour patterns seen in natural things such as butterfly wings and peacock feathers** have **genetic code behind** some of the brightest and most vibrant colours in nature.
- In what could possibly be one of the first studies into the genetics of structural colour, the scientists showed how genes could be tweaked to change the hues and appearance of certain bright-coloured bacteria.

Experiment on bacteria

- **Flavobacterium is a type of bacteria that packs together in colonies that produce bright metallic colours that come not from pigments but from their internal structure, which reflects light at certain wavelengths.**
- **Scientists continue to wonder how these intricate structures are genetically engineered by nature.**
- The researchers compared the genetic information to the optical properties and anatomy of wild-type and mutated bacterial colonies to understand how genes regulate the colour of the colony.
- By genetically mutating the bacteria, the researchers changed their dimensions or their ability to move, which altered the geometry of the colonies.
- By changing the geometry, they changed the colour: they changed the original metallic green colour of the colony in the entire visible range from blue to red. They were also able to create duller colouration or make the colour disappear entirely.
- In the process, the scientists also mapped genes with previously unknown functions and correlated them to self-organisation capacity and colouration of these bacterial colonies.

Potential application

- The work **can open up new avenues of harnessing these bacteria for the large-scale manufacturing of biodegradable, non-toxic paints**, for instance.
- The scientists hope that this **bacterial system can be exploited to fabricate tuneable photonic nanostructures that can be reproduced in abundance**.
- This can potentially lead to the manufacture of biodegradable paints for automobiles or walls.

Connecting the dots

- **The natural colours of plants and animals are due to genetic reasons. Explain how this knowledge can help in manufacturing of biodegradable products.**

Findings of National Family Health Survey

GS 1

- **Poverty and development issues**

Intro

- Data from the **National Family Health Survey 2015-16 (NFHS-4)** on a wide range of topics such as school attendance, reproductive and child health, water and sanitation, nutrition, lifestyle and employment, **published recently** by the Ministry of Health and Family Welfare, provide a snapshot of the state of the country's health and the state of social progress.

Caste as determinant of socio-economic status

- Statistics pertaining to demographic distribution according to prosperity show that the **Scheduled Castes and the Scheduled Tribes continue to be largely impoverished**, with 26.6 per cent of the former and a whopping 45.9 per cent of the latter in the lowest wealth quintile, and only 10.9 per cent of the former and 5.5 per cent of the latter in the highest quintile.
- **Other Backward Classes are evenly distributed among the quintiles**, while some 57 per cent of all members of Other Classes are in the top two quintiles.

Digitisation

- A survey of household possessions showed that **96.1 per cent of urban and 87.3 per cent of rural households had at least one mobile phone**, testimony to the near-universal penetration of the cell phone.
- However, barely **20 per cent of urban and less than 6 per cent of rural households had Internet access**.

Health

- **Less than 30 per cent of all households had at least one member covered by some kind of health insurance.**

Education

- The report also contains insightful data on school attendance ratios and the reasons why children are dropping out in urban and rural areas.
- More than **60 per cent of the urban and rural male dropouts were due to either high cost or a lack of interest in studies**
- Among urban and rural girls, lack of interest was much lower but reasons such as being needed for domestic work or getting married were significant for school dropout

A biomarker for Alzheimer's

GS 3

- **Developments in Science and technology and their applications**
- **Achievements of India in Science**
- **Biotechnology**

Intro

- Alzheimer's disease (A.D.) is a **neurodegenerative disorder that has no cure at present**. But diagnosed early, its manifestations such as loss of short-term memory and decline in cognition can be delayed to a certain extent.

Fibrillar actin protein

- Now, a team of researchers from the **Centre for Neuroscience and the Centre for Brain Research at Indian Institute of Science (IISc)** in Bengaluru has identified a **biomarker whose degradation they observed several years before clinicians noticed symptoms associated with the disease**. The molecule in question is a **key protein in the brain called F-actin, or fibrillar actin**.
- F-actin, a filamentous protein **made of a large number of G-actins**, is responsible for **maintaining the shape of the mushroom-shaped projections called dendritic spines on the surface of a nerve cell**. These **protruding spines play a key role in communication between nerve cells**.
- The scientists found for the first time that **F-actin is broken down early on in A.D., affecting the shape and number of dendritic spines**.

Experiment

- IISc scientists **genetically tweaked mice in such a way that they developed hereditary A.D.** and looked for proteins that are involved in maintaining dendritic spine and their numbers.
- To their surprise, they **found that the balance between F-actin and G-actin got disrupted in A.D.-induced mice**, which were as **old as one month**. By contrast, the **formation of toxic protein clumps called amyloid plaques, which is one of the first clinical symptoms, was typically seen only at seven to eight months of age in A.D. mice**.
- To test whether F-actin loss had any effect on behaviour, the researchers designed experiments in which they trained the mice to fear a specific location or context by giving them a mild electric shock.
- When normal mice were placed in the same arena the next day, they froze, remembering and anticipating the shock. A.D. mice as young as two months old, however, did not freeze, indicating that they had forgotten the context.
- When the researchers chemically blocked F-actin from breaking down, they found that the mice were able to regain their normal fear response. Thus when **F-actin was stabilised**, there was **behaviour recovery**.

Conclusion

- **Because F-actin is a structural protein, it gives shape to all cells in the body and is present everywhere. It could potentially become a biomarker.**

Connecting the dots

- Indian scientists have found a biomarker for the Alzheimer disease. How this research can transform in finding the cure for the disease?

Status of SEZs

GS 3

- Changes in industrial policy
- Investment Models

Intro

- Comptroller and Auditor General of India (CAG) in 2014 on the performance of special economic zones (SEZs) since the enactment of the SEZ Act in 2005 quoted a Finance Ministry study pegging the loss to the exchequer at Rs.1,74,487 crore between 2004 and 2010.

Distribution of SEZs

- Maharashtra had the third highest number of notified SEZs: 50 as of December 1 last year. Karnataka had 51, while Telangana topped the list with 57.

Issues with SEZs

1. Domination of IT sector

- Explaining the reasons for this, the CAG observed that it was the **Information Technology and IT-Enabled Services (IT-ES) sectors that had benefited the most from the SEZ policy**. It said nearly 60 per cent of SEZs nationwide were IT/IT-ES SEZs (56.64 per cent approvals, 60 per cent “notified” and 60 per cent “operational”).
- The large number of IT/IT-ES SEZs **coincides with the expiry of the 10-year income tax break period allowed to the sector under the Software Technology Park Scheme (STPS)**.
- Several units closed and shifted to SEZs to avail themselves of the benefits offered in the SEZ areas. In other words, IT companies have not contributed to taxes for almost the entire time they have existed.

- States with highest notified SEZs have **big concentrations of IT/IT-ES SEZs, in Hyderabad, Bengaluru and Mumbai** respectively.

2. Few labour intensive SEZs

- **Multi-product SEZs, which are more labour- and capital-intensive, are few** (9.60 per cent approvals, 6.37 per cent notified and 8.55 per cent operational).

3. Idle land

- Giving the nationwide situation of lands lying idle with SEZs, the CAG reported that since the enactment of the Act, “576 formal approvals of SEZs covering 60,374.76 hectares was granted in the country out of which 392 SEZs covering **45,635.63 hectares have been notified** till date (March 2014).
- **Out of 392 notified zones only 152 have become operational (28,488.49 hectares).** The land allotted to the remaining 424 SEZs (31,886.27 hectares) was not put to use (52.81 per cent of total approved SEZs) although the approvals and notifications in 54 cases date back to 2006.
- The **number of notified SEZs came down to 329 from 392 by the end of January 2017, as States such as Maharashtra sought to cancel several of them with idle lands.** But within 10 months another 27 were notified nationwide, taking the number up again to 356 as on December 1, 2017.

Connecting the dots

- **Why has the SEZ model not succeeded in India as it was in China from where it was adopted? Critically examine.**



Cauvery Dispute

GS 2

- **Federalism**

Context

- **Cauvery Water Disputes Tribunal (CWDT) was set up in 1990 after Tamil Nadu requested the Centre in 1986** for the adjudication of the water dispute under the 1956 Act, as the Centre's attempts to settle it by negotiations since 1970 had failed
- The tribunal took 17 years to deliver its award and the order. Its order **superseded the previous agreements of 1892 and 1924 between the then Madras Presidency and the princely state of Mysore.**
- The Supreme Court's judgment on February 16 **disposed of the appeals by the States of Karnataka, Tamil Nadu and Kerala against the 2007 award of the Cauvery Water Disputes Tribunal (CWDT).** The award remained unimplemented all these years because of appeals filed in the Supreme Court by the parties before the tribunal challenging the award on various grounds.

Water allocation

- The bench determined the final allocation of the shares of the four parties before it, **out of the total of 740 tmc ft estimated to occur in 50 out of 100 years,** as follows:

Karnataka: 284.75 tmc ft (270 as allocated by the tribunal + 14.75)

Tamil Nadu: 404.25 tmc ft (419 as allocated by the tribunal – 14.75)

Kerala: 30 tmc ft (as allocated by the tribunal)

Union Territory of Puducherry: 7 tmc ft (as allocated by the tribunal)

Environmental protection: 10 tmc ft (as determined by the tribunal)

Inevitable escapages into the sea: 4 tmc ft (as determined by the tribunal)

Interests of Tamil Nadu

- **During the pendency of the appeals in the Supreme Court, Tamil Nadu filed an Interlocutory Application in 2016 alleging that Karnataka was not complying with the directions given by the tribunal to release water because of which the samba crops in Tamil Nadu were in danger** of being damaged
- Through its **interim orders, the court has been directing Karnataka to release specified quanta of water** to Tamil Nadu, Kerala and Puducherry to overcome the immediate crisis.

- The bench also relied on “exhaustive studies” by the Central Ground Water Board, the Union Ministry of Water Resources, the Irrigation Commission (1972), and the United Nations Development Programme confirming the **availability of replenishable groundwater in Tamil Nadu**.
- Considering Karnataka to be more deserving among the competing States of more water, the bench **deducted 14.75 tmc ft from Tamil Nadu’s quantum**, as allocated by the tribunal.
- There is general feeling that the constitution of the Cauvery Management Board (CMB) will benefit the lower riparian State. CMB will benefit Tamil Nadu in the longer run as a neutral mechanism on water sharing.
- The **reduced quantum, from 192 tmc ft to 177.25 tmc ft, it fears, will however render additional acreage of irrigated area in the delta fallow**, nearly one lakh acres (an acre is 0.4 hectare) would go unirrigated owing to the reduced share. The agrarian distress in the delta for the past three years has forced many, mostly medium and small landholders who could not repay loans, to take the extreme step—suicide.

Interests of Karnataka

- The **tribunal had drastically reduced the share of Karnataka** towards domestic and industrial purposes for the reason that only one-third of the city of Bengaluru fell within the river basin and also on the presumption that 50 per cent of the drinking water requirement would be met from groundwater supply.
- In its February 16 judgment, the **Supreme Court rejected the claims of Karnataka contending that the agreements to share water, reached during the colonial era, were not valid**. The court pointed out that Karnataka did not oppose those agreements even after Independence and the formation of the State.
- In its judgment, the bench found historical facts demonstrating the **constraints suffered by Karnataka, which resulted in its limited access and use of the surface flow of the Cauvery river in spite of being the upper riparian State**, compared with Tamil Nadu, formerly Madras Presidency, as well as the **drought conditions in Karnataka’s 28 districts/taluks**. Therefore, it **awarded an additional quantity of water to Karnataka—14.75 tmc ft** (thousand million cubic feet) in all, that is, 10 tmc ft (on account of the availability of groundwater in Tamil Nadu) + **4.75 tmc ft (for drinking and domestic purposes, including such need for the whole city of Bengaluru)**.

Issues

1. **Formation of Cauvery Management Board by the Centre**

- The Centre too did not comply with the tribunal's order to form a Cauvery Management Board to supervise the operation of reservoirs and the regulation of water releases therefrom with the assistance of a Cauvery Water Regulation Committee, which was to be constituted by the board.

2. Functions of Cauvery Management Board

- The board was required to submit a report to the party States before September 30 every year.
- The tribunal had dealt with the functional details of the board with regard to the allocated shares.

3. Effecting need based monthly release

- The tribunal has ordered that need-based monthly release has to be respected and that the board can relax the schedule of deliveries and get the reservoirs operated in an integrated manner through the States to minimise the harsh effect of a bad monsoon year in the event of two consecutive distress years.
- The tribunal's failure to specify the distress-sharing formula had come in for criticism from experts.
- The late Ramaswamy R. Iyer, former Secretary of the Union Ministry of Water Resources, who had contributed a lot to the discourse on the Cauvery dispute, said "The distress cannot be shared after it occurred. There should be a method to share distress; it must be shared as it is occurring. The responsibility cannot merely be left to the board to decide that." But he had agreed that it was a complex exercise, which could be done by experts alone, involving the participation of all the stakeholders.
- And the key to the success of the Supreme Court's judgment in ensuring a permanent solution to the Cauvery dispute may well lie in the yet-to-be-worked-out distress-sharing formula.
- In view of the reduction in the quantum of water now required to be released by Karnataka, there would be, logically, a proportionate decrease in the monthly releases as worked out by the tribunal, the bench held.
- The bench further held that the recommendations/directives of the tribunal, in terms of the February 16 judgment, with regard to the monthly releases would hold good for the next 15 years.

Principles on Interstate water disputes

1. Supreme Court has jurisdiction under Article 136 against tribunal

- Centre, despite its indifference in creating the requisite mechanisms to implement the tribunal's award, insisted **Section 6(2) of the Inter-State River Water Disputes Act, 1956, imposed an embargo on the jurisdiction of the Supreme Court to resolve the dispute once the tribunal had given its order.**
- Disagreeing with the Centre, the **Supreme Court held in December 2016 that Section 11 of the 1956 Act, read with Article 262 of the Constitution, did not confer the power on the Supreme Court** to entertain an original suit or complaint raising an inter-State water dispute. The court held that Section 6 of the 1956 Act, **however, did not exclude the jurisdiction of the Supreme Court, under Article 136 of the Constitution, to entertain appeals of the States against the tribunal's order.**
- While the Centre opposed the Supreme Court's jurisdiction to hear the matter, the other four litigants in the case, Karnataka, Tamil Nadu, Kerala and Puducherry, insisted that the court could go ahead and hear the matter to give a categorical ruling. "The current dispute is a unique one affecting the lives of millions of people and the stakes involved are unparalleled," the court was told.

2. Inter-state rivers are national assets

- Supreme Court held
"The **waters of an inter-State river passing through the corridors of the riparian States constitute national asset and cannot be said to be located in any one State.** Being in a state of flow, no State can claim exclusive ownership of such waters or assert a prescriptive right so as to deprive the other States of their equitable share."
"The right to flowing water is well-settled to be a right incident to property in the land and is a right *publici juris* of such character, that **while it is common and equal to all through whose land it runs, and no one can obstruct or divert it, yet as one of the beneficial gifts of Nature, each beneficiary has a right to just and reasonable use of it.**"

3. Equitable share but no arithmetical formula

- The bench **recognised that equality cannot be conceived of as resting on equal sharing of water within an arithmetical formula and that while satisfying the requirements of a basin State,** a co-basin State should not be subjected to any substantial injury. The bench did so on the grounds that the tribunal had committed a patent error by failing to reduce the amount of water allocated to Tamil Nadu despite recognising the availability of 20 tmc ft of groundwater in the State.
- Having said this, the bench endorsed the principle followed by the CWDT in its 2007 award that the distribution and allocation of waters between the riparian States should be on the basis of their equitable share.

4. **Helsinki Rules adopted signifying non-absolute agreements and subject to exigencies**

- In particular, the bench cited Article VIII of the Helsinki Rules on the use of waters of international rivers (adopted by the International Law Association in its conference held in Helsinki in August 1966), which says that an existing reasonable use may continue in operation unless the factors justifying its continuance are outweighed by other factors leading to the conclusion that it be modified or terminated so as to accommodate a competing incompatible use.
- The bench suggested that this provision clearly signified that an existing use was also not absolute in terms and was subject to exigency-based adjustments.

5. **Drinking water fundamental principle in allocation**

- According to the judgment, the drinking water requirement of the overall population of all the States has to be placed on a higher pedestal as it is a “hierarchically fundamental principle of equitable distribution”.
- This explains why the bench justified the reduction in Tamil Nadu’s quota to cater to the drinking water requirements of Bengaluru’s residents.

Connecting the dots

- **The lingering of inter-state water dispute of Cauvery reflects the limitation of Indian federalism. Critically examine.**

Best Wishes!

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