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Contents

November- 2018

Issue-1

Seven Important Issues

1-22

- Feasibility of Two Time Zones in India
- Internal Migration is Continued in India
- India-Afghanistan Relationship: Getting Stronger
- Railway Line through Aspirational Districts
- Artificial Moon: Could Light up the Night Sky
- Uterus Transplant: A Womb to Mother
- The Horror of Ghost Gear: Getting Bigger

Seven Subjective Questions with Model Answers

23-27

Seven Important National & International News

28-34

Seven Brain Boosters & Seven MCQ's Based on Them

35-43

Seven Important Facts For Prelims

44

Seven Important Military Exercises

45-46

Seven Practice Questions for Main Exam

47

SEVEN IMPORTANT ISSUES

1. FEASIBILITY OF TWO TIME ZONES IN INDIA

Why in News?

India's official timekeeper, the National Physical Laboratory, says it is feasible to implement two time zones, and will increase productivity in Northeastern states. This has been a long-running demand in the region, where sunset and sunrise are well ahead of 'office timings', which are according to India Standard Time (IST). Scientists at the Council of Scientific & Industrial Research's National Physical Laboratory (CSIR-NPL), which maintains Indian Standard Time, have published a research article describing the necessity of two time zones, with the new one an hour ahead of the existing time zone. Published in *Current Science*, the article adds new arguments to the debate. It identifies where the two time zones be demarcated from each other — at the "chicken neck" that connects the Northeast to the rest of India, an area that is spatially narrow and reduces the possibility of railway accidents, it says. The article also puts a figure to the country's potential savings in energy consumption — 20 million kWh a year — if it does follow two time zones.

Background

The Gauhati High Court had dismissed a public interest litigation in 2017, filed by Rita Mozumder seeking a direction from the Central government to notify a separate time zone for the Northeast. The court cites a high-level committee study, constituted by the Ministry of Science and Technology that recognised the difficulties faced by

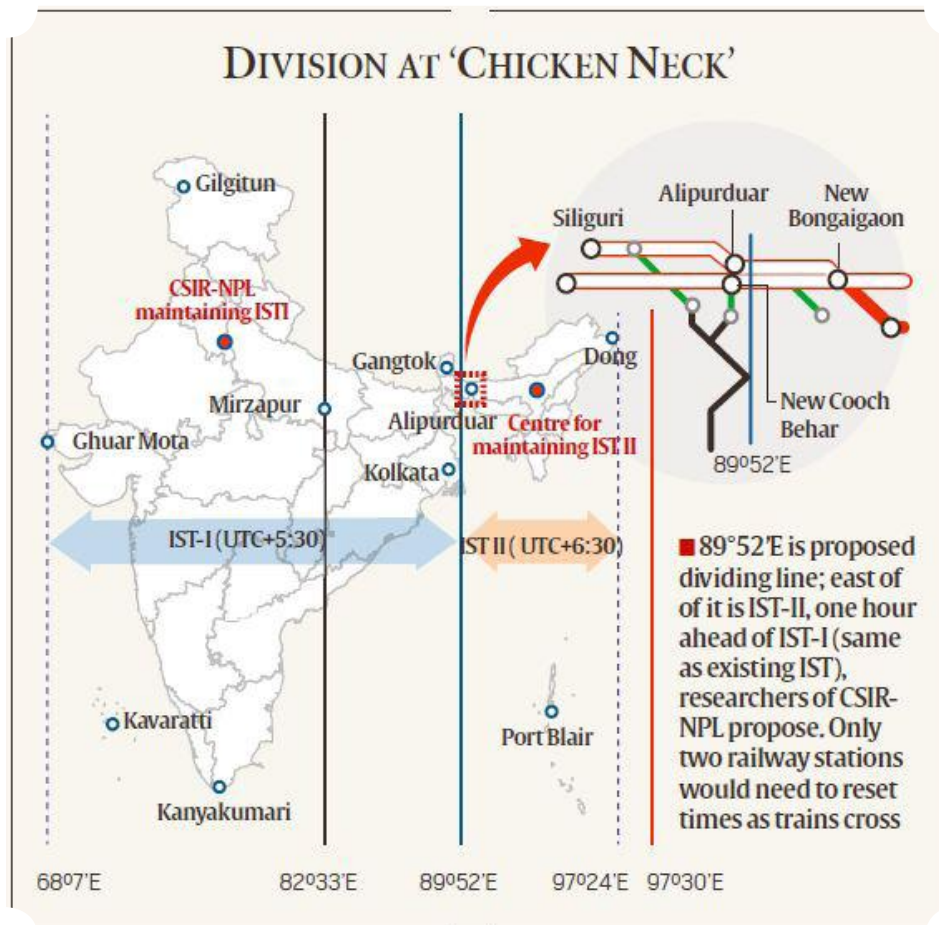
a single time zone in eastern India but concluded that Indian Standard Time (IST) should nonetheless be retained.

Prior to the establishment of the IST, there were two time zones established in 1884, namely, the Bombay time and Calcutta time. However, in 1906, the British in India adopted the IST in 1906—defined as being five and a half hours ahead of the (Greenwich Mean Time) GMT. Since then, there were few instances where the IST was changed, most notably between 1942 and 1945 when India had in place a "war time" (one hour ahead of IST).

Introduction

India extends from 68°7'E to 97°25'E, with the spread of 29° representing almost two hours from the geographic perspective. This has led to the argument that early sunrise in the easternmost parts — the Northeast — causes the loss of many daylight hours by the time offices or educational institutions open, and that early sunset, for its part, leads to higher consumption of electricity.

In the Northeast, the sun rises as early as four in the morning and in



winter it sets by four in the evening. By the time government offices or educational institutions open, many daylight hours are already lost. In winter this problem gets even more accentuated and the ecological costs are a disaster with much more electricity having to be consumed.

What is a Time Zone?

In a world of global travel, it is not convenient for every single place on Earth to keep its own unique time. Thus, to make keeping track of time easier, Standard Time Zones were established: the time is always the same throughout each time zone. Earth is divided into twenty-four time zones of approximately equal width. The time in each successive time zone is one hour different from the times in neighboring time zones.

To establish time zones, Earth's rotation rate of 360 degrees of longitude per day was divided by 24 hours. The result shows that Earth turns 15 degrees of longitude per hour. Adopting time zones that are exactly 15 degrees wide would result in 24 equally spaced time zones around the world. For convenience, however, time zone boundaries often follow political boundaries instead of longitude lines, resulting in the irregularly shaped time zones.

How Time is Maintained?

If lines of longitude are drawn exactly a degree apart, they will divide the Earth into 360 zones. Because the Earth spins 360° in 24 hours, a longitudinal distance of 15° represents a time separation of 1 hour, and 1° represents 4 minutes. Theoretically, the time zone followed by any place should relate to its longitudinal distance from any other place. Political boundaries, however, mean that time zones are often demarcated by bent lines rather than straight lines of longitude. This is "legal time", as defined by a country's law.

The geographic "zero line" runs through Greenwich, London. It identifies GMT, now known as Universal Coordinated Time (UTC), which is maintained by the Bureau of Weights and Measures (BIPM) in France. Indian Standard Time, maintained by CSIR-NPL, is based on a line of longitude that runs through Mirzapur in UP. At 82°33'E, the line is 82.5° east of Greenwich, or 5.5 hours (5 hours 30 minutes) ahead of UCT. While India follows one IST, the United States follows several time zones across its breadth.

Countries with different time zones

The world is divided into 24 time zones. The course of one day is broken down to the seconds and calculated to define the correct time of a particular place.

- France - 12
- USA - 11
- Russia - 11
- UK - 9
- Australia - 9

The New Findings

The research paper by Council of Scientific & Industrial Research's National Physical Laboratory (CSIR-NPL), proposes to call the two time zones IST-I (UTC + 5.30 h) and IST-II (UTC + 6.30 h). The proposed line of demarcation is at 89°52'E, the narrow border between Assam and West Bengal. States west of the line would continue to follow IST (to be called IST-I). States east of the line — Assam, Meghalaya, Nagaland, Arunachal Pradesh, Manipur, Mizoram, Tripura, Andaman & Nicobar Islands — would follow IST-II. The paper explains the choice of the line: "As the railway signals have not yet been fully automated in the country, the border between the two time zones should have a very narrow spatial-width with minimum number of train stations so that the train timings while crossing the border can be managed manually without any untoward incidents."

The researchers estimated energy savings at 20 million kWh a year based on a formula explained in the article. They also analysed the importance of synchronising office hours — as well as biological activities — to sunrise and sunset timings.

Why it's Important to have Two Time Zones?

According to supporters of this proposal, the difference in sunrise/sunset time between the eastern and western parts in India is about two hours.

Since day breaks earlier in the east than the rest of the country, a different time zone could allow people there to start working sooner. This could lead to energy saving and productivity gains, they add.

Daylight Saving Time (DST)

As the earth rotates 360 degrees every 24 hours, a longitudinal span of 15 degrees corresponds to a shift by an hour. India spans a longitudinal difference of 30 degrees from the western state of Gujarat to Arunachal Pradesh in the East. However, India has a single time zone, defined by mean longitude at 82.5 degrees east of the Greenwich Mean Time (GMT), passing through Mirzapur in Uttar Pradesh. This results in almost a two-hour difference in sunrise from east to west. Usually, for the "surplus" in daylight in the morning hours, countries often implement measures such as daylight saving time (DST) and multiple time zones.

The basic objective of introducing DST is to adjust the hours of human activity to make the best use of daylight. It follows from the assumption that human activity is driven by a standardised notion of time. If it were the case that individuals were following local time in a town or village, the need for introducing daylight savings would be futile. Since its conception, more than 70 countries have since used some form of DST, including the United States, Russia, and most of Europe.

Available Options

1. Three options have been examined by scientists over different time zones over the years creating two

times zones in India, introducing Daylight Saving Time (DST) from April to September, and advancing the Indian Standard Time (IST) for the entire country by half an hour.

2. The underlying objective in all three cases was energy saving. After considering all the options, a 2002 expert panel constituted by the ministry of Science & Technology rejected the idea of DST as well as a different time zone.
3. It felt that the seasonal difference in daylight hours is marginal in countries closer to the equator than those near the poles.

Benefits in Store

In India, the rationale for considering a change in the time is largely driven by (i) potential energy savings; (ii) its hypothesised effects on promoting physical activity; (iii) mainstreaming the Northeast region; and (iv) and meeting other social policy objectives such as reducing road accidents and improving women's safety.

Potential Energy Savings

As a result of an increase in daylight in the evenings, households are less likely to use artificial lighting during evenings. Arguments in favour show how an advancement of IST is likely to lead to energy savings of 2.7 billion units (0.3 per cent of the yearly electricity consumption totalling 700 billion units). Although the savings form a small proportion, substantial savings during peak hours are possible given the shift in the load curves. The savings resulting from such a shift can constitute up to 15% of the energy demand during evening peak hours. Also, the peak energy demands might be currently being met through costly, and sometimes polluting, methods of energy production. A reduction in this is likely to have several positive effects. Experts claim that the savings are likely to rise, given the increase in domestic consumption year-on-year.

Promoting Physical Activity

Another rationale for advancing IST is that it may encourage greater sports and recreation participation. Experts suggest that the early onset of dusk during non-DST limits accessibility to sports and recreation opportunities. Such a policy intervention may be used as a "broad-based mechanism" for promoting physical activity. However, there has been little empirical testing of this hypothesis. It is likely that the benefits of having an extra hour of sunlight in the evening are greater than the benefits of having the same hour of sunlight in the morning. There may not be a strong correlation to identify any effect of DST on promoting greater moderate to vigorous physical activity (MVPA), experts acknowledge that DST may play a role in shifting MVPA time from indoors to outdoors, or from morning to afternoon/evening. The effects of DST may vary across climates, latitudes, and seasonal months.

Mainstreaming the North-east

In the north-east state of Arunachal Pradesh, the sunrise during the summer solstice is almost an hour before that in the northern-most state of Jammu and Kashmir. Similarly, sunset during the winter month of December occurs at 16.26 during the winter solstice. At the same time, working hours in India are generally from 9 am till 5.30 pm throughout the year. Creating two time zones in India should help the north-eastern states to better align economic activities with the rest of the country.

Other Social Policy Objectives

It is suggested that longer daylight during evenings is likely to contribute towards women's safety and security, the reduction in stoppage for sporting events owing to better lighting conditions, and an increase in professional productivity. However, the armchair reasoning behind the hypothesised effects needs empirical confirmation.

Challenges

There are several options that are available to policymakers to make adjustments to the current time system in place. The options have trade-offs depending upon (i) whether the new system will be applicable pan-India or only regionally; (ii) will it be a permanent shift or daylight saving time; (iii) and what should the magnitude of the shift be.

Ensuring Schools and Offices do not Extend Working Hours

If the state has been following its own de facto time, sun time, or local time, then the policy will not yield the desired outcomes. Similarly, if businesses and schools decide to alter their operating hours, it may erode the intended benefits of additional leisure time in the daylight during evenings. For example, business hours in India usually start at 10 am, unlike most places where operating hours are from 8 am onwards. A relatively late start gives credence for advancing IST due to significant number of hours wasted. However, as time serves as a coordination mechanism, if businesses adjust to the change by shifting hours of operation, then the intended benefits will diminish.

Lack of Survey Data to Monitor Impact

Implementation of creating two time zones must be supported by the ability of the government to gather data and track changes in activity patterns in order to undertake rigorous evaluation of the impact of such measures. Such evaluations may include understanding the healthcare costs of the transition by using administrative data on hospital admissions, and estimating the impact on workplace productivity by collaborating with private companies. In addition, the policy intervention also presents an opportunity to assess the impact on subjective well-being, through novel techniques such as the day reconstruction method.

Lack of Peer-reviewed Journals and Potential Publication Selection Bias

A meta-analysis of the effects of DST on electricity consumption reveals that the current literature is largely restricted to reports from government agencies or electricity companies. As a result, the incentive structure in such institutions might lead to bias in results. In the case of India, there have been only two studies (by the same author) that have investigated the estimates of savings.

Centre-state Cooperation

The Constitution grants the autonomy to states to define and set local times for their respective industrial areas under the provisions in labour laws, such as the Plantations Labour Act, 1951. If requests by the states to consider DST or changes in the IST are repeatedly refused, it may lead to ad hoc measures by states.

Concerns over Two Time Zones

If there weren't concerns over the existence of two time zones, the issue would not have been unsolved even after so many years.

One reason is the possibility of human error in changing time when crossing the time zone, which may end in train accidents if railway employees make it.

Having two time zones may dispel some of the problems but may end up creating more, not to mention the sense of alienation of northeast region.

Offices, banks and other things as such that need to be constantly interconnected, would find it difficult to operate in the same sphere.

Having more than one time zone in a country is not a new or unheard of. Russia alone is divided into nine time zones.

Way Forward

To implement and generate IST-II, NPL will have to establish a Primary Time Scale (PTS), which is an ensemble of five caesium clocks and one hydrogen maser, in one of the north-eastern states, similar to the PTS for IST-I, which is located in Delhi. A caesium clock measures time on the basis of the resonance (or change of energy state of an isotope of caesium) and a hydrogen maser measures time on the basis of the resonance of hydrogen across energy states.

General Studies Paper- I

Topic: Salient features of world's physical geography.



2. INTERNAL MIGRATION IS CONTINUED IN INDIA

Why in News?

The recent attacks on migrant labour after an incident in Gujarat late last month, involving the sexual assault of a 14-month-old girl, allegedly by a migrant labourer from Bihar, appears to be have been a consequence of this resentment. Many migrant workers have now rushed out to their home States out of fear despite several local people having been taken into custody on the charge of inciting violence against migrant workers. There have been reports of an estimated 60,000 to more than a lakh workers leaving the State.

Introduction

"Migration is an expression of the human aspiration for dignity, safety and a better future. It is part of the social fabric, part of our very make-up as a human family."

Ban Ki-moon

Migrants overwhelmingly settle in cities once they arrive in their destination. Yet the statistics on the number of migrants in cities are limited, particularly those pertaining to developing economies where such information could feed into urban planning to better prepare cities to manage migration. Cities address the immediate needs of migrants and respond to some of the challenges of integration. With a high volume of migrants arriving in cities, city leaders are faced with the challenge of providing vital urban infrastructure and services to meet the needs of the migrant population. This includes affordable and social housing, quality education and health services, simple access to basic utilities (water, power, etc.), robust and congestion-free roads and transportation infrastructure as well as, finally, ensuring integration and social cohesion for the increased diversity.

Migration in India

Development and economic growth take place through the more efficient allocation of inputs into more productive uses. Labor is a key input since it is the main asset of the majority of the population, especially of the poor, in developing countries. The reallocation of labor can take place across sectors, occupations and, most importantly, geographic regions. Thus, it is no surprise that every successful development experience and growth episode is accompanied by large labor movements, especially from rural to urban areas, and from low to higher productivity employment. In this regard, India presents a paradox and daunting challenge.

Migration: Recent Data and Trend

According to the State of World Population report, more than half of the world's population lives in urban areas, and the number is steadily growing

every year. India, where the majority of the population is still dependent on agriculture, is no exception to this trend. As per the census, the level of urbanization in India has increased from 27.81% in 2001 to 31.16% in 2011. Urbanization in India is a consequence of demographic explosion and poverty-induced rural-urban migration.

The Economic Survey of India 2017 estimates that the magnitude of inter-state migration in India was close to 9 million annually between 2011 and 2016, while Census 2011 pegs the total number of internal migrants in the country (accounting for inter- and intra-state movement) at a staggering 139 million. Gujarat is one of the top States in India that receive migrant workers, largely temporary and seasonal, on a large scale. In Gujarat, they work in unskilled or semi-skilled jobs in a wide range of activities such as in agriculture, brick kilns and construction work, salt pans and domestic work, petty services and trades (food and street vending) as well as in textiles and garments, embroidery and diamond cutting and polishing, small engineering and electronics and also small and big factories.

These workers are from Rajasthan, Madhya Pradesh, Maharashtra and even from as far as Bihar, Uttar Pradesh, Andhra Pradesh, Odisha, Jharkhand, Chhattisgarh, Assam and Karnataka. Employers send contractors to distant unexplored places to gather labour at the lowest possible wage rate. For example, a new township in Gujarat being promoted by a large industrialist is to be built with workers from Assam. Surprisingly, the Gujarat government has no data on/estimates of

migrant workers coming to Gujarat. Informally, the figures are estimated to be between 40 lakh to one crore.

Types of Internal Migration in India

Labor migration flows include permanent, semi-permanent, and seasonal or circular migrants. Much of the available data polls migrants in the permanent and semi-permanent categories, and considerably less large-scale statistical data are available on the numbers and characteristics of circular migrants.

Semi-permanent migrants are those who are likely to have precarious jobs in their destination areas, or lack the resources to make a permanent move. While they may reside in their destination cities for years or decades, they likely have homes and families in their sending district.

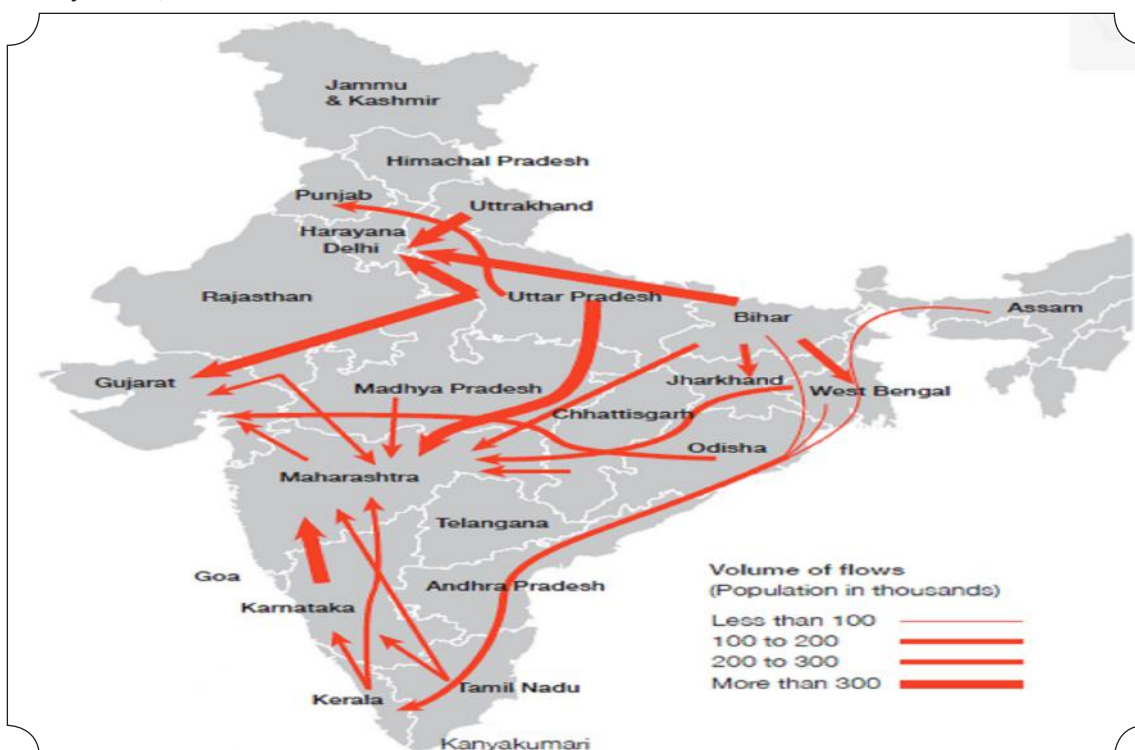
Seasonal or circular migrants, by contrast, are likely to move from place to place in search of employment, or to continue returning to the same place year after year. Such circular flows encompass migrants who may stay at their destination for six months or more at a time and hence need social services at their destination. Scholars

have long characterized this migration as a type in which the permanent residence of a person remains the same, but the location of his or her economic activity changes.

Many of the women who migrate for marriage are also participants in the labor market, even if their primary reason for migration is marriage. The domestic maid industry in urban areas, for example, is a rapidly growing sector that employs women, most of whom are rural-to-urban migrants.

Causes of Migration

A myriad of favourable, unfavourable or neutral factors cause migration. Factors that determine why a person migrates are related to the place of residence from where migration starts, also known as the origin, and the place of new settlement, or where migration ends either completely or temporarily, also known as the destination. Both the origin and destination are characterized by factors that support (enable), reject (deter) or are neutral (neither support nor oppose migration). The favourable attributes of a location are pull factors, which attract a person. The unfavourable attributes operating at a



location are the push factors, which force or compel a person to move away.

Both pull and push factors can apply simultaneously at the place of origin as well as at the destination. Typically, the causes are economic, sociopolitical and ecological:

- ◆ **Economic factors:** These relate to the labour market of a place, the employment situation and the overall state of the economy. Favourable economic conditions at the destination – the prospect of higher wages, better employment opportunities and prospects for wealth creation – and the desire to escape the domestic social and political situation of their home region can draw migrants to their destination. Likewise, if economic conditions are unfavourable at the place of origin, poor and unemployed individuals would be compelled to migrate to sustain their livelihood.
- ◆ **Socio-political factors:** These include family conflicts and unification; the quest for independence; ethnic, religious, racial and cultural parameters; warfare, or the threat of conflict, among other factors that contribute to migration.

- ◆ **Ecological factors:** These include environmental factors, such as climate change and the availability of natural resources, that cause individuals to migrate in search of more favourable ecological conditions.

Challenges of Migrant Worker

- ◆ Segmenting the labour market and creating a separate labour market for migrant workers who are easy to exploit has been a common strategy of employers across India. The pathetic conditions migrant workers face have been widely documented.
- ◆ They earn low wages, work very long hours without any overtime benefits, and are almost without any leave or social protection.
- ◆ Lakhs of unskilled and migrant workers live on worksites in makeshift huts (usually made of tin sheets) or on roads, slums and in illegal settlements not served by municipalities.
- ◆ They are neither able to save much to improve their conditions back in their home States nor save enough to live comfortably in Gujarat.

- ◆ Semi-skilled workers with some education and skills (such as those in diamond cutting and polishing units, power looms and factories) get slightly higher wages and earn some leave. However, these workers are also exploited in multiple ways and are mostly unprotected.
- ◆ Despite increasing research along these lines, urban development projects often seek to keep migrants out, local authorities continue to treat migration as a problem, and migrants are often harassed by the police because they are considered to be closer to illegal residents rather than legal migrants.
- ◆ Migrants are particularly susceptible to police harassment—including violence and exhortation for bribes—because of their precarious position in the receiving society. Their basic needs, such as their access to housing, can depend on the cooperation of local police.

Responses to Migration

The inflows of migrants from rural areas and small towns into big cities has contributed to urban congestion and housing shortages in cities across India. Mumbai, Delhi, and Kolkata

Causes of Migration		Impact on Area of Destination	
Push factors (Compel people to migrate)	Pull factors (Attract people to migrate)	Positive	Negative
– Economic – Unemployment – Rural poverty – Unsustainable livelihood – Sociopolitical – Political instability – Safety & security – Conflicts or threats – Slavery or bonded labour – Inadequate/limited urban services & infrastructure – Ecological – Climate change – Crop failure/food scarcity	– Economic – Job opportunities – Wealth prospects – Industrial innovation – Specialized education – Sociopolitical – Family reunification – Freedom – Integration & social cohesion – Food security – Affordable & accessible urban services – Ecological – Abundance of natural resources – Favourable climate	– Economic – Cheap & surplus labour – Closes gaps in skills – Social – Multi-ethnic society & increased tolerance – New services from country of origin – Political – Push for inclusive policy-making – Integrated development	– Economic – Increase in remittances leading to – – Native unemployment in case local consumption decreases – Increased capital and risk constraints on local production with reduced investments – Social – Urban services & social infrastructure under stress – Xenophobia – Cultural dilution – Political – Stricter immigration norms

in particular are all known for the proliferation of slums and pavement dwellings, and generally intense housing pressures. In addition, city residents often perceive that migrants increase the competition for jobs and compete for basic amenities and city services such as water and sanitation.

The Government of India's Inter-State Migrant Workmen (Regulation of Employment and Conditions of Service) Act of 1979 was passed in order to address the unjust working conditions of migrant workers, including the necessity of gaining employment through middlemen contractors or agents who promise a monthly settlement of wages but do not pay when the times comes. The act lists the responsibilities of employers and contractors and the rights of workers to wages that are equal to those of the local employees, the right to return home periodically without losing wages, and the right to medical care and housing at the employment site. In practice, however, this act is overwhelmingly ignored by state governments. As such, it articulates ideal working conditions for interstate migrants, but lacking provisions for enforcement, it has not been used to create a better policy environment in practice.

Labour Laws Only on Paper

Under the Inter-State Migrant Workmen Act and other labour laws (for unorganised workers), migrant workers in Gujarat are legally entitled to all their basic labour rights. These include minimum wages, regular wage payment, regular working hours and overtime payment, and decent working and living conditions which include taking care of the health and education of their children.

Under the same Act, the governments of the States from where migrant workforce originate are expected to issue licences to contractors

who take workers away, register such workers and also monitor their working and living conditions in other States. But most State governments remain indifferent to these laws. Gujarat has taken a few steps but these are far from adequate. In the political sphere, there has been hardly any mention about protecting the legal rights of migrant workers in India. The political impulse has been to maintain status quo — the continuation of the situation where migrant workers are exploited.

The Gujarat government passed a rule in the 1990s making it mandatory for industries and employers in Gujarat to give 85% of jobs to local people. This rule was never really implemented in reality, but watered down by the State government in its subsequent industrial policies, as new and large investors coming to the State did not like any such restrictions. Now there is a move in the State to introduce a law for industries and investors in Gujarat which reserves 80% of labour jobs for State domiciles and at least 25% for local workers. But those behind the idea are perhaps fully aware of the futility of such a move. As long as there are huge surpluses from the labour of migrant workers, employers will have no incentive in hiring local workers.

Civil-Society Interventions

In a scenario where the responses from the state and market have not contributed much to the welfare of migrant workers, civil-society organizations have been able to come up with solutions that have helped enhance returns from migration. Recent thinking and innovations in migration practice have helped transform work opportunities for migrants into more stable livelihood options.

- ◆ Welfare Services and Social protection for Migrants.
- ◆ Education for Children of Migrants.
- ◆ Organizing Workers for Demanding Entitlements.

- ◆ Institutional Linkages with the Urban Labor Market.
- ◆ Access to Food Entitlements at Destination.

Conclusion

The Constitution of India (Article 19) gives the right to all citizens to “to move freely throughout the territory of India; to reside and settle in any part of the territory of India”. The magnitude and variety of internal migration flows in India, as well as the distresses associated with them, are enormous. A basic overview of this complex phenomenon makes clear that in spite of the vast contributions of migrants to India's economy, the social protections available to them still remain sparse.

While the state and market have failed in providing protections to these millions of internal migrants, civil-society interventions across various high migration pockets in India offer a number of successful, context-specific solutions that the government can adapt and build upon in order to protect this marginalized segment of workers. A concerted national strategy that ensures access to entitlements and basic work conditions will be essential in building a sustainable and equitable pathway to progress.

In the end, the real solution to this issue would be to enforce all relevant labour laws for migrant workers so that segmentation of the labour market becomes weak, and workers (local and migrant) get a fair and equal deal in the labour market. State and Central governments should genuinely take interest in improving the conditions of workers in the economy.

General Studies Paper- II

Topic: Issues relating to development and management of Social Sector/ Services relating to Health, Education, Human Resources.



3. INDIA-AFGHANISTAN RELATIONSHIP: GETTING STRONGER

Why in News?

Afghanistan has voted in long-delayed parliamentary elections for the third time since the fall of the Taliban in 2001. The polls, which were originally scheduled for early 2015, were last pushed to October 2018. More than 4 million people cast their ballots in Afghanistan's parliamentary election amid spates of violence and logistical issues. At least 27 civilians and 10 members of the security forces were killed and over 100 were injured during the two-day voting period as the Taliban launched over 250 separate attacks in a bid to stop people from voting. This election, the first parliamentary polls in eight years, came after three years of delays due to security issues and political infighting over electoral reform measures. The polls, which marked the introduction of biometric devices at voting centers, is also the first election since the 2014 presidential election, which was plagued by accusations of widespread fraud and dragged on for several months.

Background

The Afghan parliament comprises the Mesherano Jirga (upper house) and the Wolesi Jirga (lower house). Recent election was for the Wolesi Jirga, whose elected parliamentarians serve five-year terms. There are 250 seats in the Wolesi Jirga, including 10 seats that are reserved for Kuchis (nomads) and one jointly for the Sikh and Hindu communities. There must be 68 female representatives, with each province having at least one. The Meshrano Jirga consists of parliamentarians chosen from local councils and those appointed by the President, as well as members elected in district elections.

All Afghan citizens who are 18 years of age or older with a valid voter identification card have the right to

vote. This year, in order to get a valid card, Afghans registered themselves on a new biometric system that was put in place to prevent voter fraud. All previously issued registration cards have been cancelled. The Independent Election Commission (IEC) announced that 8,918,107 people have registered to vote in the elections, of which 3,067,918 are women and 5,681,592 are men. The IEC said that more 600,000 registrations were cancelled as they were invalid for various reasons.

Why Afghanistan is important for India?

- Strategic location of Afghanistan is very important. Afghanistan is situated at crossroads between South Asia and Central Asia and South Asia and the Middle East.
- Stable government in Kabul will not give safe heaven for terrorist activity that might reduce insurgency in Kashmir.
- Afghanistan is a major partner in the TAPI (Turkmenistan-Afghanistan-Pakistan-India) pipeline project which will fulfill India's energy need.
- Afghanistan is a gateway to the oil and mineral rich Central Asian republics.
- The massive reconstruction plans for the country offer a lot of opportunities for Indian companies.
- Afghanistan also has significant oil and gas reserves.
- Afghanistan has rich source of rare earth materials.

Importance of India – Afghanistan Relation

India and Afghanistan have close technical, economic, cultural and political relations. In the recent past, Indo-Afghan relations have been further strengthened by the Strategic Partnership Agreement signed between the two countries in 2011. For India, Afghanistan has immense strategic potential. Geo-strategically India-Afghanistan partnership has considerable value as a counter to the Pakistan threat. Strengthening the

security dimension of India-Afghanistan ties is extremely important for India as it is in New Delhi's interest to help Kabul preserve its strategic autonomy at a time when Pakistan has made it clear that it would like the Haqqani network and the Taliban to be at the centre of the post-American political dispensation in Kabul. India is keenly interested in cultivating a significant partnership with Afghanistan. Due to strategic and security concerns the Indo-Afghanistan cordial relations are in favour of both the nations.

India has given economic and material help for the well-being of Afghanistan. India has made huge investments in Afghanistan ranging from infrastructure to human resource development. Strategically Afghanistan is important for India's dream of accessing the Central Asian market, for which it is developing the Chabahar port in Iran. It is a gateway to the energy-rich Central Asian states such as Turkmenistan and Kazakhstan. India, a member in the Shanghai Cooperation Organisation (SCO), has been pursuing better relations with the Central Asian states for energy cooperation.

India has enormous security stakes in the stability of Afghanistan. As an emerging power it cannot remain confined to South Asia. Afghanistan's internal conditions affect the stability of the region. India's presence in Afghanistan is to address its security concerns and help construct the regional security architecture. The rise of the IS in the Middle East and its close contacts with the Taliban raise issues of internal security for India. Since the American invasion, the Taliban and its affiliates have shifted their base towards the Southern regions and Pakistan. This has increased implications for the security and safety for both Pakistan and the Indian territory.

A peaceful Afghanistan is good for Indian trade and energy security. India has a fundamental interest in ensuring that Afghanistan emerges as a stable and economically integrated state in the region. Though Afghanistan's economy has recovered significantly since the fall of the Taliban, it remains highly dependent on foreign aid and trade with neighbouring countries. The only way in which the Afghanistan government can retain and enhance its legitimacy is by bringing the Afghan economy back on track. To do so largely depends on other states and India is playing an important role in this regard.

The preferential trade agreement signed by India and Afghanistan gives substantial duty concessions to certain categories of Afghan dry fruits when entering India, with Afghanistan allowing reciprocal concessions to Indian products such as sugar, tea, and pharmaceuticals. A consortium of Indian steel companies, led by the National Mineral Development Corporation (NMDC), India's SAIL led consortium has acquired some parts of Afghanistan's 1.8 billion-tonne Hajigak iron ore mines. But, at the same time, Indian companies are worried about the safety of their investment because of the Taliban threat and so are afraid to venture solo.

Bilateral trade between India and Afghanistan has been on the rise. India hopes its investment in the Iranian port at Chabahar will allow it to gain trading access to Afghanistan, bypassing Pakistan. Pakistan currently allows Afghanistan transit rights for its exports to India, but does not allow goods to move from India to Afghanistan. With the opening of the Chabahar port after the Iran nuclear deal, the trade with Central Asia through Afghanistan seems more probable, given the maintenance of peace in Afghanistan.

As a responsible and democratic regional entity, India has also reanimated the commitment towards

its regional role as a benign power investing in social and economic development of its immediate neighbourhood, reminiscent of the 'Gujral Doctrine' of the mid-1990s.

India always wants a peaceful Afghanistan. India has considerable stakes in a peaceful and developing Afghanistan and must have a say in charting a path for resolution of issues, the outcome of which will have considerable regional impact. India has over the last two decades spent considerable diplomatic energy and made investments in developing a healthy relationship while helping in Afghanistan's reconstruction. Increasing economic growth, providing humanitarian assistance, improving capacity-building measures are all part of India's soft power strategy of "reviving the traditional role of Afghanistan as a land bridge, connecting South Asia with Central Asia and West Asia". India has lot to offer for the betterment of the region considering the TAPI project, the MVA (motor vehicle agreement), if extended, NSTC (North-South transport corridor), SAARC satellite and many more—all of which are beneficial for the participating countries but these benefits have to be foreseen by the respective leaders of states; else the region will not get rid of poverty, malnutrition, economic disparity, gender imbalance etc.

From the strategic and security perspectives, India's Afghanistan focus is aimed at curbing terrorism, containing and decreasing Pakistan's influence, pursuing a policy of aid, development and economic integration with the goal of being recognised as a major power globally, one that will generate general goodwill locally, within the Afghan population. In addition, it is also keen on exploiting the energy sources in Afghanistan and developing it into a hub for accessing Central Asian resources.

As an important member of SAARC, India's active involvement in the region is valuable to counter the growing clout of China. Both India and Afghanistan being SAARC members committed to regional cooperation, the talks could impact future strategies of the member-nations towards promoting regional cooperation. It wants to retain Afghanistan as a friendly state from which it has the capacity to monitor Pakistan and even, wherever possible, cultivate assets to influence activities in Pakistan. India is keenly interested in developing a significant partnership with Afghanistan. So due to strategic and security concerns the India-Afghanistan cordial relations promote the interests of both the nations.

Afghanistan: A failed Democracy?

Every time elections are held in Afghanistan, whether parliamentary or presidential, there follows a moment of cheer for upholding democracy. The ballot box is regarded as equivalent to democracy, as if by default. Yet, this election, like all previous parliamentary or presidential polls since 2001, were marred by allegations of corruption, vote rigging, multiple voting, ballot box stuffing and the intimidation of voters. Dysfunctional political processes and systems have often rendered the elections near-meaningless and disregarded people's votes. Daily terrorist attacks, high levels of poverty and unemployment and rampant corruption across the country have made it hard for democracy to take root in Afghanistan.

It is true that the main requirements of democracy are defined as participation and opposition. In other words freedom of expression, the right to vote, the right of the political leaders to compete and the freedom to form and join political organisations. It is also true that most of these elements exist in some form in Afghanistan today. But

it can be said that democracy has not deepened in Afghanistan. Thus it was pertinent to ask what is causing such a failure of democracy?

First of all, drastic inequality can seriously affect both participation and opposition. Extreme inequality in the distribution of key elements such as income, wealth, status, knowledge and military power are equivalent to extreme inequalities in political resources. Poverty in Afghanistan has significantly increased over the past decade according to the World Bank and a staggering 55 percent of the population are now living below the national poverty line. Just over 54 percent of young Afghans (in the 15-24 age group) are literate while 42 percent are neither in employment, education, or training.

Secondly, continuing conflict and lack of good governance is making the situation in Afghanistan worse. The continued conflict has an internal and an external angle. Externally, Pakistan's Inter Services Intelligence (ISI) is accused of providing direct military and intelligence aid to both the Taliban and the vicious Haqqani network, giving its leaders a safe haven. Internally, the security and intelligence apparatus in Afghanistan has been dysfunctional, unable to deal effectively with the ensuing conflict. It is riddled with corruption and division. It lacks a comprehensive strategy and capable leadership.

Further lack of good governance and ensuing corruption are blocking development and political progress. Transparency International ranks Afghanistan near-bottom of its Corruption Perceptions Index for 2017.

The third reason for the failure of democracy in Afghanistan is that the process of political transformation has been part of a US plan. It has not developed from within Afghan society.

Democracy, a highly contested term and a very complex political structure, does not end at the ballot

box. A key characteristic of democracy is the continuing responsiveness of the government to the preferences and demands of all its citizens; an element that is sadly missing in Afghanistan. Afghan politicians and the international community are equally responsible for failing the people of Afghanistan.

Importance of this Election

The Afghan government aims to send a message to the Taliban with this election: that despite the ongoing violent campaigns by the armed group, the government is functioning and that the Taliban will have to come to the negotiating table through a political process acceptable to all Afghans.

In addition, most Afghans are desperate for a better life, jobs, education and an end to the war with the Taliban. For the country's foreign partners, seeing a flourishing democracy would be the return they're seeking after many years of investment, billions of dollars spent and thousands of lives lost in more than a decade of fighting. Further, many candidates are young and well-educated. They are promising to help deliver change in the conflict-torn country.

The polls should have been held when the current assembly's five-year term ended in 2015. But the standoff after the disputed 2014 presidential election changed all that, bringing the country to the brink of civil war.

However, although parliament reviews and ratifies laws, real power lies with the presidency and this election will be seen as a key test ahead of the all-important presidential elections due in April 2019.

Way Forward

From India point of view, New Delhi would not want the Taliban



to monopolise Afghan power at the behest of Pakistan, to revive the Islamic Emirate that they established in Afghanistan in the 1990s and to allow safe havens for radical Islamist groups such as al-Qaeda and Lashkar-e-Taiba. Thus, from strategic angle, any government that emerges from the Afghan election cannot be allowed to replicate the Islamic Emirate.

Further, private sector development is critical for the development of Afghanistan. This would help generate revenues for the government which would in the long run; help Afghanistan to reduce its dependence on international aid and this would give much needed thrust to job creation and income growth. Regional cooperation and regional integration are the important elements to the economic and social future of Afghanistan and its neighbours. Strategic implementation of the trade, commerce and investment opportunities would act as a catalyst in this transformation process and has the potential to serve as a "game changers" and to create a new dynamic for peace and socio economic progress across the region.

General Studies Paper- II

Topic: India and its neighborhood-relations.



4. RAILWAY LINE THROUGH ASPIRATIONAL DISTRICTS

Why in News?

The CCEA (Cabinet Committee on Economic Affairs) approved a new railway line between Bahraich and Khalilabad in Uttar Pradesh. The new line will serve five districts of Uttar Pradesh including four aspirational districts i.e. Bahraich, Balrampur, Shravasti and Siddharth Nagar and Sant Kabirnagar.

Introduction

The Indian Railways is among the world's largest rail networks. The Indian Railways route length network is spread over 115,000 km, with 12,617 passenger trains and 7,421 freight trains each day from 7,349 stations plying 23 million travellers and 3 million tonnes (MT) of freight daily. India's railway network is recognised as one of the largest railway systems in the world under single management. The railway network is also ideal for long-distance travel and movement of bulk commodities, apart from being an energy efficient and economic mode of conveyance and transport. Indian Railways was the preferred carrier of automobiles in the country with loading from automobiles traffic growing 16 per cent in 2017-18.

The Government of India has focused on investing on railway infrastructure by making investor-friendly policies. It has moved quickly to enable Foreign Direct Investment (FDI) in railways to improve infrastructure for freight and high-speed trains. At present, several domestic and foreign companies are also looking to invest in Indian rail projects. Indian Railways' revenues increased at a CAGR of 9.66 per cent during FY07-FY18 to US\$ 27.71 billion in FY18. Earnings from the

passenger business grew at a CAGR of 9.90 per cent during FY07-FY18 to reach US\$ 7.55 billion in 2017-18P. Freight revenue rose at a CAGR of 9.83 per cent during FY07-FY18 to reach US\$ 18.16 billion in 2017-18.

The Indian Railways, as one of the pillars of India's infrastructure, has a symbiotic relationship with the country's industry and economy. The Railways play a crucial role in the transport of coal, iron ore and raw materials for the manufacturing industry, fertilizers, cement and steel products and food-grain, and in the movement to and from the major ports, as well as the transportation of people. Transport being a derived demand, any growth in the economy fuels the demand for transport.

Bahraich to Khalilabad Project

The demand for this railway line, connecting Bahraich to Khalilabad had been pending for decades. The railway line from Bahraich to Khalilabad, which will be fully electrified will pass through Balrampur and Sarawasti. The new line serves 5 districts of Uttar Pradesh including 4 aspirational districts (Bahraich, Balrampur, Shravasti and Siddharth Nagar) and Sant Kabirnagar. The aspirational districts have been identified by NITI Aayog to grow small-scale industries. Hence, this project is needed for better socio-economic development of the hinterland of this area with the help of rail network. This project will generate direct employment during construction for about 57.67 lakh man-days. The total estimated cost of this project is Rs. 4939.78 crore and it is likely to be completed by 2024-25 and will lie in the North Eastern Zonal Railway.

The new Indian Railways line will boost the pilgrimage-related tourism in the region as it will provide connectivity to three crucial temples including a Jain and a Buddhist place of worship in this eastern part of Uttar Pradesh. The railway line project would be fast tracked and it would be constructed within the time line. The big infrastructure project would also push employment opportunities when the long railway line will be built.

Highlight of Bahraich and Khalilabad Project

The line will promote tourism in the region.

- ◆ The new rail line will pass through Bhinga, Shravasti, Balrampur, Utraula, Domariyaganj, Mehdawal, and Bansi.
- ◆ This line is significant for tourism as it passes through Shravasti district which is an important tourist place and is closely associated with the life of Gautam Buddha.
- ◆ Shravasti is also an important tourist centre for Jains as the Sobhanath temple is believed to be the birthplace of the Tirthankara Sambhavanath.
- ◆ The Devi Patan temple in Tulsipur, which is close to Balrampur town, is one of the famous 51 Shakti Peethas of Maa Durga.
- ◆ Forming part of India's North Eastern Railway, the Bahraich-Khalilabad line is expected to generate employment during construction.
- ◆ The line will provide basic infrastructure support for industrial development with socio-economic outputs, offer an alternative route to Bahraich-Khalilabad and connect border districts.

Buddhist Circuit in India

The holy places of Buddhism, where Lord Buddha was born and taught, preached, and attained 'Enlightenment' and 'Nirvana', are termed as Buddhist Circuit. These are the spiritual homes of Buddhism, housing temples and monasteries of high religious significances, where followers of Buddhism associate themselves with the teachings of Lord Buddha. Buddhist Circuit has evolved as tourist centres for not only the followers of Buddhism but also others. In India, Buddhist Circuit is in Bodhgaya, Vaishali and Rajgir in Bihar, Sarnath in Varanasi, Shravasti and Kushinagar in Uttar Pradesh. All these are the main pilgrimage centres for Buddhism in India.

Evolution Indian Railways

The first railway on Indian sub-continent ran over a stretch of 21 miles from Bombay to Thane. The idea of a railway to connect Bombay with Thane, Kalyan and with the Thal and Bhore Ghats inclines first occurred to Mr. George Clark, the Chief Engineer of the Bombay Government, during a visit to Bhandup in 1843.

The formal inauguration ceremony was performed on 16th April 1853, when 14 railway carriages carrying about 400 guests left Bori Bunder at 3.30 pm "amidst the loud applause of a vast multitude and to the salute of 21 guns." The first passenger train steamed out of Howrah station destined for Hooghly, a distance of 24 miles, on 15th August, 1854. Thus the first section of the East Indian Railway was opened to public traffic, inaugurating the beginning of railway transport on the Eastern side of the sub-continent.

In south the first line was opened on 1st July, 1856 by the Madras Railway Company. It ran between Vyasarpadi Jeeva Nilayam (Veyasarpandy) and Walajah Road (Arcot), a distance of 63 miles. In the North a length of 119 miles of line was laid from Allahabad to Kanpur on 3rd March 1859. The first section from Hathras Road to Mathura Cantonment was opened to traffic on 19th October, 1875.

Track Kilometers	Broad Gauge (1676 mm)	Meter Gauge (1000 mm)	Narrow Gauge (762/610 mm)	Total
	86,526	18,529	3,651	108,706
Route Kilometers	Electrified	Total		
	16,001	63,028		

These were the small beginnings which is due course developed into a network of railway lines all over the country. By 1880 the Indian Railway system had a route mileage of about 9000 miles. Indian Railways, the premier transport organization of the country is the largest rail network in Asia and the world's second largest under one management.

Aspirational Districts Programme

The 'Transformation of Aspirational Districts' Programme aims to expeditiously improve the socio-economic status of 115 districts from across 28 states. The three core principles of the programme are - Convergence (of Central & State Schemes), Collaboration (among citizens and functionaries of Central & State Governments including district teams), and Competition among districts. Driven primarily by the States, this initiative focuses on the strengths of each district, and prioritizes the attainable outcomes for immediate improvement.

The 117 districts were identified from 28 states, at least one from each state, in a transparent manner by a committee of Senior Officers to the Government of India, in consultation with State Officials using a composite index of key data sets that included deprivation enumerated under the Socio-Economic Caste Census, key health and education sector performance and state of basic infrastructure.

To enable optimum utilization of their potential, this program focusses closely on improving people's ability to participate fully in the burgeoning economy. Health & Nutrition, Education, Agriculture & Water Resources, Financial Inclusion & Skill Development, and Basic Infrastructure are this programme's core areas of focus. Districts are prodded and encouraged to first catch-up with the best district within their state, and subsequently aspire to become one of the best in the country, by competing with, and learning from others in the spirit of competitive & cooperative federalism.

Railways And Tourism

India, the seventh largest country of the world is known for its varied and rich cultural and historical heritage around the globe. The huge and varied geography of the country is unique in itself and gives a chance not only to the international tourists but also to the domestic tourists to explore the true beauty of the country. It is rightly said that if one wants to see the real India, one must explore the country by rail. The Indian Railways serves as the true kaleidoscope to witness the lives, culture, philosophy, religion and lifestyle of Indian people. The Indian Railways with a network of 66,687 kilometres, 7,349 stations and running around 22,525 trains offers tourists one of the most convenient and popular modes of transport for travelling in India. The Indian Railways helps one to explore the length and breadth of India with its lively markets, crowded places, geographical variations, cuisines, dress styles, languages and so many other facets of India. From the Great Indian Plains, the Thar Desert, the Deccan

UNESCO World Heritage Sites of Indian Railways

Indian Railways is the proud owner of four UNESCO accorded World Heritage Sites namely Darjeeling Himalayan Railway (1999), Nilgiri Mountain Railway (2005), Kalka Shimla Railway (2008) and Chhatrapati Shivaji Terminus, Mumbai (2004). There are two more in waiting or in the tentative list namely Matheran Light Railway and Kangra Valley Railway.

Today, Indian Railways maintain 34 Museums, Heritage Parks and Heritage galleries, spread all over India, for creating unique and rich experience to visitors about Railway heritage in India. The National Rail Museum in New Delhi and Regional Rail Museums at Chennai, Mysore, Howrah and Nagpur, are iconic tourist destinations in their region.

Plateau, the coastal plains to the North Eastern states, a train tour of India provides the real glimpse of the Indian culture and lifestyle.

Problems faced by Indian Railways

- ◆ **Old technology:** The existing technology of both, electric and diesel locomotive is old.
- ◆ **Small network:** The railway network is inadequate when compared to the requirements of the economy.
- ◆ **Financial crunch:** The conventional methods of increasing net revenue, like raising of tariffs and expenditure control, are inadequate.
- ◆ **Losses:** Due to operation of a number of non- remunerative lines, it suffers heavy losses.
- ◆ **Poor passenger service:** It also suffers from poor passenger service and overcrowding.

Rational price policy, increased wagon load, faster turnaround time, public-private partnerships (PPPs) are some of the steps taken to improve the performance of the railways. During 12th FYP, the railways focus would be on construction of six dedicated freight corridors, segregation of freight and passengers lines, providing improved connectivity to industry cluster and ports, etc.

Government Initiatives

National Rail Vikas Yojna

Government of India has conceived a massive investment plan for rail sector to eliminate capacity bottlenecks on Golden Quadrilateral and Diagonals to provide strategic rail communication links to ports, construction of mega-bridges for improving communication to the hinterland and development of multi-modal transport corridors.

This initiative has been given the name of National Rail Vikas Yojana. Hon'ble Prime Minister announced the Yojana in his speech delivered on the Independence Day in 2002 and formally launched it on 26th December, 2002. National Rail Vikas Yojana comprises the following investment planning components:

- ◆ Strengthening of Golden Quadrilateral and Diagonals connecting the 4 metro cities i.e. Delhi, Mumbai, Chennai and Kolkata.
- ◆ Providing Rail based port-connectivity and development of corridors to hinterland including multi-modal corridors for movement of containers.
- ◆ Construction of 4 mega bridges at Patna and Munger on river Ganga, at Bogibeel on river Brahmaputra and at Nirmali on river Kosi.

SRESTHA

New R&D organisation to be headed by a Scientist to serve the future technology needs of Railways

SUTRA

World class data analytics, simulation softwares, network optimisation and decision support systems

Indian Railways Vision 2020

The Vision 2020 also envisages the implementation of , one in each of the regions of the nation and planning for at least 8 more corridors connecting commercial, tourist and pilgrimage hubs. Six corridors have already been identified for technical studies on setting up of High Speed Rail Corridors. These are:

- i. Delhi-Chandigarh-Amritsar;
- ii. Pune-Mumbai-Ahmedabad;
- iii. Hyderabad-Dornakal-Vijayawada-Chennai;

- iv. Howrah-Haldia;
- v. Chennai-Bangalore-Coimbatore-Ernakulam;
- vi. Delhi-Agra-Lucknow-Varanasi-Patna

These could be built as elevated corridors in keeping with the pattern of habitation and the constraint of land in our country. The Railways will use the PPP mode for investment and execution, and draw on frontier technologies incorporating the highest standards of safety and service quality.

Way Ahead

Indian Railways play a pivotal role for the entire lower and upper middle class sectoral travel segment. It serves as the most economical mode of transport among the prevailing travel modes in India. The Indian Railway network is growing at a healthy rate. In the next five years, the Indian railway market will be the third largest, accounting for 10 per cent of the global market. Indian Railways, which is one of the country's biggest employers, can generate one million jobs.

But there remains the problem of the quality of India's network. It is beset by the problems of under-investment: India's trains are unsafe, poorly maintained and under-developed. Thousands die on rail crossings, in train crashes and in rail accidents every year. Privatizing parts of the network and inviting foreign investment are now being suggested to address these pressing infrastructural needs. Until then these fare hikes represent a necessary, but short-term, palliative.

General Studies Paper- III

Topic: Infrastructure: Energy, Ports, Roads, Airports, Railways etc.

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5. ARTIFICIAL MOON: COULD LIGHT UP THE NIGHT SKY

Why in News?

Chengdu, a city in Southwestern Sichuan province, is developing "illumination satellites" which will shine in tandem with the real moon, but are eight times brighter and bathe the city of Chengdu in a "dusk-like glow." The imitation celestial body — essentially an illuminated satellite — will bear a reflective coating to cast sunlight back to Earth, where it will supplement streetlights at night. The objective of the mission is to provide an alternative means of street lighting and save on electricity. The idea has not only received wide coverage but also been viewed with some skepticism.

Background

The idea of the "artificial moon" came from a French artist, who imagined hanging a necklace made of mirrors above the earth, which could reflect sunshine through the streets of Paris all year round. Previous attempts to harness the Sun's rays from space to reflect sunlight back to Earth have been hampered by mechanical and manufacturing difficulties.

- ◆ In the Norwegian town of Rjukan, which is so deep in a valley it gets no sunlight in the winter months, three computer-controlled mirrors sit on top of a nearby mountain to reflect the Sun's rays on to the town. Of course pulling off the same trick in space requires a lot more technical expertise and a lot more money – unless the plan proves to be suitably cost-effective, it's unlikely to ever get off the ground (quite literally).
- ◆ In January, American firm Rocket Lab launched an artificial star into space. But scientists criticized the "Humanity Star," as the reflective mini-satellite was dubbed, for contributing to artificial light pollution and cluttering in Earth's orbit.

- ◆ In 1993, Russia sent up Znamya 2, a plastic mirror with a diameter of 65 ft. It managed to reflect a narrow beam of light. The two-and-a-half-mile-wide beam traveled for about eight minutes across part of the Atlantic Ocean and then across Europe, including Russia. Six years later, Russia launched Znamya 2.5, which was meant to be a larger mirror, but it did not deploy properly. The idea of sending up a giant mirror in the sky died with it.

The Project

The project was introduced by Wu Chunfeng, chairman of Chengdu Aerospace Science and Technology Microelectronics System Research Institute Co., Ltd. The venture was on 10th October at a national mass innovation and entrepreneurship activity held in Chengdu.

The first man-made moon will launch from Xichang Satellite Launch Center in Sichuan, with three more to follow in 2022 if the first test goes well.

The artificial moon would illuminate an area of diameter between 10-80 km. If the illuminated area is 50 sq km, it would save an estimated 1.2 billion yuan (\$170 million) a year in electricity costs for Chengdu. The satellite will orbit about 300 miles (500 kilometers) above the city and use its mirror-like coating to reflect sunlight down to Earth. Rather than using up energy here on Earth, the satellite would reflect the Sun's rays from the other side of the planet back on to Chengdu. Its expected brightness, in the eyes of humans, is around one-fifth of normal streetlights.

Despite shining light in a similar way, the satellite boasts one advantage that the moon doesn't — human control. Both the location and brightness of the human-made moon can be changed,

and that it can be completely shut off if necessary. And since the satellite is mobile, it can assist in disaster relief by beaming light on areas that lost power. The extraterrestrial source of light could also help rescue efforts in disaster zones during blackouts.

Fake Moon and Light Pollution

Stargazers already avoid a Full Moon because its light pollution makes stars much harder to see, but fake moons will cause much more light pollution. For purposes of comparison, the sky brightness over central Chengdu due to skyglow is predicted to be 5.43 mcd/m², or about 18.25 magnitudes per square arcsecond, using satellite data obtained in 2015. Assuming that light is radiated uniformly across the night sky, that represents an illuminance of about 0.00543 cd/m² * 2π steradians = 0.034 lux. Therefore, the 'artificial moon' would increase the illumination level at the ground by a factor of about 47.

The artificial moon will be up to eight times as luminous as its natural, rock-laden counterpart. Critics worry about the extra light pollution this may cause. The manmade moons frustrate astronomers by blocking out the view of the stars in certain areas and they will affect animals like birds and sea turtles whose movements are guided by natural moonlight.

The Challenges

At an altitude as low as 500 km, and considering a diameter small enough to be economically viable, accuracy is key. Missing the angle of reflection by even a few degrees would miss Chengdu by miles. If you want to light up an area with an error of say 10 km, even if you miss by one 100th of a degree you'll have the light pointing at another place.

Again, there must be sufficient glow, but if this glow covers a large area, it could potentially affect the daily cycle of animals and plants, and even affect the human circadian system — the body clock. Many people are in a circadian fog where our physiology is confused. However scientists assured that the light of the Satellite will have a dusk-like glow which is not any likely to affect the daily routines of the stray animals.

India and China into Space

The Indian Space Research Organisation (ISRO) may officially maintain that it is not in race with China so far as its space endeavours go, but the space programmes of the two leading economies cannot be viewed in isolation given that both are trying to make their mark.

As India prepares to land on the Moon in the first three months of 2019 — preparations for Chandrayaan-2 have gathered steam in the past few weeks. China is also planning to put man-made moons in space by 2022. Beijing has already conceived a man-made moon, which is expected to be realised in 2022.

The present government has been promoting the domestic space programme as a demonstration of India's low-cost technology and reliable launches. Last February, ISRO launched 104 satellites in a single mission, most of them for foreign customers - setting a record when it launched these satellites on a single rocket. With lower costs for launches, India can thus get ahead of competition from the US and China. And it's not just the lower costs; India is preferred for another reason as well. Owing to security concerns, China is often a less attractive option for private companies than India. In this backdrop, the government is ramping up the country's space programme, which has a budget of around \$4 billion, hoping it will improve the country's prospects of

winning a larger share of the more than \$300 billion global space industry.

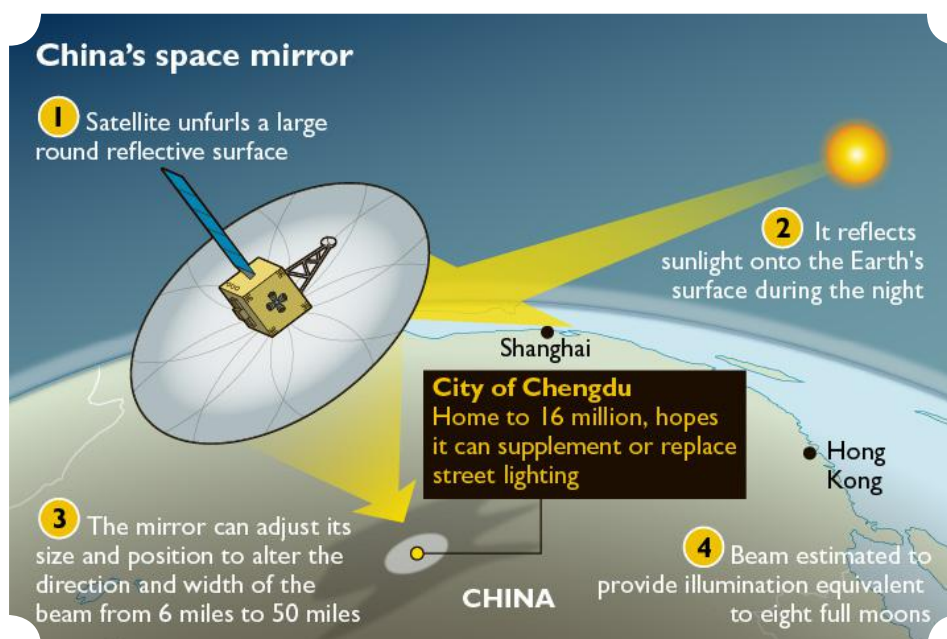
India and China are challenging US and Russian dominance in exploration, the commercial space sector and in the use of space for military purposes. While ISRO is powering on with its upcoming launches, Beijing is continuing with ambitious plans for its space programme. The country has come a long way in its race to catch up with the United States and Russia, which have lost spacecraft, astronauts and cosmonauts over the decades. China's "taikonauts" have fared better and Beijing sees its military-run space programme as a marker of its rising global stature and growing technological might.

China, for its part, is surely not thrilled to see another Asian power emerge as a serious competitor in space. Although Chinese capabilities remain superior, the competing technologies derived from the Indian and Chinese space programs are already factoring into their geopolitical rivalry. China, for example, is hoping to kick start its ambitious "One Belt, One Road" (OBOR) infrastructure plan by offering its global satellite-navigation services to the countries in that framework. India, which is developing its own such satellite

system, has been skeptical about OBOR and does not want China to take the lead in controlling communications infrastructure throughout Asia.

Traditional Space Advancement vs New Horizons

As far as launching of "Artificial Moons" is concerned, the idea may not be the first initiative but is surely different from traditional space advancement. Reaching the moon, space shuttles, manned mission and missions on heavenly bodies seems a written script to space superiority. But recently JAXA betrayed the traditional script and landed two rovers from Hayabusa2 on an asteroid called Ryugu. China is attempting to launch an artificial moon. The significance of artificial moon project lies in the fact that as communication satellites relay TV soap operas into our house, the artificial moons will light up our streets. Its not the first time that the sophisticated space technology is used by the masses. The cellular networks, TV, GPRS etc. are now used by common man on daily basis. The direct involvement of people at large and lighting up of streets is surely a new way of firing an imaginative and ambitious public sentiment. India



on the other hand though follows the traditional approach, but is the only Asian nation to stand up and challenge the Chinese space progress. The frugal economics of space launch and the giant in commercial launches has placed India on a far greater pedestal when it comes to collaboration with the world.

Although India has made great strides in the field of space technology, but is limited by its budget and other economic constraints. The need for space technology in India is driven by independence of communications and self-reliance. India focuses on the utility for its masses and even for the neighbours (case in point is the SAARC Satellite). Though “Artificial Moon” could be a good project but India’s wisdom refrains from a cosmetic and ornamental space projects and is not blindly wasting money for space driven ego. Though China has advanced more on the technological front when it

comes to space technology, but both nations are driven by their own agenda and interests. The Asian Space Race is more about who advance to the next level first while keeping the benefits of masses as top priority rather than making superfluous display of needless technologies.

Conclusion

This new attempt by and large is one of the welcome steps in the field of technology. Though, its merits and demerits are still being the subject of the debate. But reflection the light of the celestial body to lighten up a dark part of the planet is surely a novel idea. It is for the humanity to use this as a boon or to convert it as a bane. But as far as technological capability is concerned, it is surely a step towards harnessing the natural resources for meeting our daily needs. Upon its implementation, the good and bad effects could be known. China has been ambitious on the technological

front and has been already working on the complex subjects of Artificial Intelligence, Reverse Engineering, Chip Designing and Manufacturing and sharp and effective assembly lines. This new project of “Artificial Moon” is surely an experiment which is a new step towards renewable energy. Though many potential benefits are seen with the project like the use in disaster management, catering larger geographical area, reducing environmental emissions, minimizing electricity budgets etc. But challenges are also glaring like the mastering of technology, pricing of the satellite, its expert handling, light pollution, circadian rhythms etc. While China leads to the experiment, it’s the wait and watch for the whole world.

General Studies Paper- III

Topic: Science and Technology-developments and their applications and effects in everyday life.



6. UTERUS TRANSPLANT: A WOMB TO MOTHER

Why in News?

A woman, named Meenakshi Valand (27), who had undergone a uterine transplant delivered a child in Pune, the first such birth in India and the 12th in the world, all since 2014. The womb was donated by the recipient’s 45-year-old mother. India’s first uterine transplant baby, weighing 1.45 kg, was delivered through a Caesarean section. The baby girl was born 17 months after Ms.Valand underwent an uterine transplant.

Previously, Ms.Valand, who was suffering from Asherman’s Syndrome (scar tissue in the uterus), there was no option, other than surrogacy or adoption, for her to have a child.

While Sweden and the US had already performed womb transplants, India’s uniqueness was that both

the womb or uterus donations and transplants were done laparoscopically. In the earliest cases, doctors took almost 13 hours to retrieve the uterus, because they performed open surgery. With laparoscopic intervention, the time has now come down to about six hours.

Introduction

While having children is not a goal for every single woman, there are many women who would like to conceive and give birth to a child at some point in their lifetime. Unfortunately, sometimes there are challenges experienced when trying to conceive a child. Making it difficult and in some cases not possible, for a woman to give birth to children naturally. Thankfully, there has been vast amount of advances in

medical technology allowing for people who experience infertility to become pregnant.

One of the most recent and highly technical medical procedures infertility experts have attempted is the uterus transplant.

Evolution of Uterus Transplant Technique

Up to 15% of the reproductive population is infertile and 3 to 5% of all cases of infertility are caused by uterine dysfunction. This abnormality generally leads women to consider surrogacy or adoption. However, in many countries, such as Japan and Sweden, surrogacy is heavily restricted or even prohibited. Uterine transplantation, although still experimental, may be an option in these cases.

The first pelvic organ transplantation, which was performed in the 1960s, involved fallopian tube transplantation for the treatment of tube-peritoneal infertility, although this technique was only successful in an animal model. The first experiments in uterine transplantation were based on the premise that vascularization is improved if the uterus is transplanted in combination with the fallopian tubes.

The first experimental model of uterine transplantation, published in 1973, was established in dogs, although the immune suppressive drugs available at the time (cortisone and azathioprine) were inadequate to prevent rejection. The development of in vitro fertilization then diminished interest in fallopian tube transplantation, although infertility caused by uterine factors remained an issue. In this context, several animal models were studied, such as mice, rats, rabbits, sheep and primates, predominantly in the early 1970s.

The first human uterine transplantation was performed in 2002 in Saudi Arabia but resulted in graft loss and hysterectomy 3 months after transplantation. The second attempt at uterine transplantation occurred in Turkey in 2011 and resulted in two pregnancies, both ending in miscarriage. Both were cadaveric transplants as the uterus was taken from a brain dead patient. Both transplants failed due to rejection of the organ by the recipient's immune system. If the uterus is taken from a dead woman, the risk of organ rejection increases. This is because often, it would be the last organ harvested — life-supporting organs like heart and liver are retrieved first — and a decreased blood supply increases the chances of rejection of the uterus.

The first case with successful childbirth was reported in September 2014 among nine transplant patients in Gothenburg, Sweden. The 35-year-old patient had uterine agenesis, only

one kidney and vaginal aplasia (a type of Rokitansky syndrome) and had received a uterus from a 61-year-old living donor 7 years past menopause.

Uterus Transplant

Uterine transplantation is defined as a surgical procedure where a healthy uterus is transplanted into an organism in which the uterus is absent or diseased.

During an uterine transplant, nerves are not transplanted and women do not experience labour pain. The procedure is a temporary solid organ transfer. After pregnancy, the uterus is removed so that the women do not have to be on immunosuppressant drugs.

Uterine transplantation may be recommended for women who wish to conceive who have uterine malformation or who have undergone previous hysterectomy due to neoplasm, post-partum haemorrhage, increased uterine bleeding or intrauterine adhesions (Asherman syndrome). Uterine malformation affects up to 5% of the infertile population, with uterine agenesis and uterine hypoplasia being the most frequent causes. In particular, uterine agenesis affects 1 in every 4,500 women.

The procedure is still very new, however and there have been a total of only around 30 women globally, including in Brazil, China, the Czech Republic, Germany, Sweden, India, Saudi Arabia, Turkey and at two clinics in the United States, who have undergone the surgery. The first Indian women successfully gave birth with a uterus transplant in October 2018.

The birth has offered hope to many women born either without a uterus or a dysfunctional one. In past, such women were told they would never be able to have their own biological child. Uterine transplant is the answer for women who are keen to have babies

in their womb. The new technique has potential in paving the way for embracing motherhood amongst female with Uterine Factor Infertility (UFI).

Challenges

Pregnancies among womb transplant patients can be a tricky affair as the women are on immunosuppressant medications that could interfere with blood sugar levels. This happened in case of Ms. Valand also. In Valand's case, her blood pressure began to rise suddenly. As the baby's growth was constantly monitored, it was found that the fluid around the baby had started reducing. This meant that the baby's further growth would not take place in the womb. Thus the decision was taken to perform a C-section. The baby was delivered prematurely, but she is doing fine.

Some other risks involved are:

- ◆ The process is complicated and has considerable risks for both recipients and donors.
- ◆ Some dangerous factors include potential organ rejection and surgery risks.
- ◆ The pregnancies that have been successful were high risk.
- ◆ The transplants are still in the experimental stage. Current transplants have been covered by research funding.
- ◆ If the surgery becomes part of medical practice, it will probably cost several lakhs of rupee.

These risks pose a question that does the experience of gestating a foetus offer a significant enough therapeutic benefit over surrogacy to allow for the risks?

Uterine transplants are still extremely rare procedures, complicated and expensive. The cost of Uterus transplant approximately ranges between USD 18000-20,000 in India whereas the cost in the U.S.

is close to USD 70,000. The duration of the entire procedure is close to 12 hours. The cost of surrogacy in India is USD 5000 to 6000 and the cost of undergoing in-vitro fertilisation (IVF) in India is USD 4000 to 5000 whereas in the U.S. is USD 15000.

In the case of Valand, the entire process (up to the birth of Valand's child) was made free because this was among the first such case in India. Further, a uterus transplant, like that for other organs, requires clearances at several levels.

The prospect of uterus transplantation sounds more exciting than promising against the backdrop of options like adoption and surrogacy, the practicality and cost-effectiveness of such procedures needs to be studied.

Further, it has been argued that the uterus transplant allows women to be included in an experience that is, for some, central to and defining of femaleness. That's part of the problem: the uterus transplant supports the social norm of pregnancy as fundamental to being a woman and offers tremendous financial resources to that end.

Legal Perspective

Under the Transplantation of Human Organs Act, 1994, a state government committee evaluates and grants permission for kidney, liver and heart transplants from donors not related to the recipient. If the donor and recipient are related, a committee at the hospital where the transplant is supposed to take place evaluates the case to ensure that the organ donation is taking place free of pressure or coercion.

The Directorate of Medical Education has compiled a list of organs and tissues that can be transplanted that does not mention the uterus. It is unclear if the Medical Council of India does have any guidelines on new and experimental procedures. In addition to it, the Indian Council of Medical

Research itself has no clear guidelines for the procedure of uterine transplant.

At present, doctors all over the globe classify uterine transplant as an experimental procedure. Many developed countries where transplantation is much more advanced have actually done a few & stopped. It would be educative to analyse why they did so.

One reason was that of the ethics of such of procedure, which was cloudy. In the Indian scenario where regulation and the ethics discourse as in any case weak and a woman's free choice is a mirage, this procedure is a huge slippery slope.

Comparison of Surrogacy and Uterus Transplantation

Surrogacy is the practice by which a woman (called a surrogate mother) becomes pregnant and gives birth to a baby in order to give it to someone who cannot have children.

Surrogacy is a far more established and less risky procedure compared to uterus transplants, which involves three major surgeries – harvesting the uterus from the donor, transplantation into the recipient followed by childbirth and a hysterectomy to remove the transplanted uterus so that the patient can be brought off immunosuppressant drugs that might be harmful in the long term.

Both surrogacy and uterus transplants privilege biological and genetic motherhood through the use of other women's bodies; surrogacy in particular often uses poorer women to satisfy the needs of wealthier ones. In the same way, uterus transplants do not protect vulnerable women from using their bodies as a financial resource. Instead, like surrogacy, the procedure involves commodification – of experience and of reproductive organs.

Ethical Concern

Bioethicists remain split on the ethics of uterus transplants: those who favour consensual surrogacy are often against transplants on the grounds of cost and safety to the donor, the recipient and, possibly, the foetus. Those opposed to surrogacy as fundamentally exploitative insist that uterus transplants are the only possible ethical choice between the two.

Uterus transplantation with living donors is ethically just as problematic as altruistic surrogacy. Being able to transfer a uterus from one woman to another, so that an infant is born, can be seen as a success in a medical sense.

Many of the arguments against altruistic surrogacy can be applied to uterus transplantation as a treatment for involuntary childlessness. Some of these include:

1. That the intervention can threaten the autonomy of the donor and subject her to pressure.

The question here is whether the surrogate mother is actually participating of her own free will and not as a result of pressure. The donated uteruses come from a relative, in most cases the mother of the woman who is involuntarily childless. Consequently, some close relatives of involuntarily childless people can feel forced to donate, or be actively subject to external pressure.

2. That the intervention can lead to exploitation of women's bodies.

The surrogacy has identified risks such as the exploitation of women's bodies and that there may be secret compensation agreements. Similarly, there is a risk that with time, uteruses can become yet another organ, such as kidneys, on the black market.

3. That the research on the physical and psychological risks facing the child is inadequate.

As in surrogacy contexts, little is known of the consequences of uterus transplantation for the child, because so few children have been born as a result of such transplantation.

Thus, uterus transplantation is not necessarily less ethically complicated than altruistic surrogacy.

There are other ways to become a mother. By prioritising this one, the uterus transplant potentially devalues the lives of women with uterine factor infertility. It also potentially devalues the lives of women who cannot carry children, tempting them to undergo considerable risks for the sake of a supposedly fundamental female experience. In so doing, it prioritises pregnancy over life itself.

Other Fertility Options

Fertility Drugs: Clomiphene and gonadotropins, the most commonly used fertility drugs, regulate reproductive hormones and trigger the release of one or more eggs in each ovulation cycle. Most women use them for three to six months before conceiving or trying a different kind of treatment.

Surgery: Surgery can help fix genetic defects, open blocked fallopian tubes, remove fibroids, remove the tissue of endometriosis and treat PCOS (polycystic ovarian syndrome).

Intrauterine Insemination (IUI): IUI involves depositing a concentrated amount of sperm directly into the uterus, using a catheter that passes through the cervix.

In Vitro Fertilisation (IVF): For in vitro fertilization (IVF), eggs are removed from ovaries and then combined in a laboratory with sperm. If fertilization is successful, the resulting embryo or embryos are transferred to uterus.

Intracytoplasmic Sperm Injection (ICSI): ICSI is often added to an IVF

treatment to overcome male fertility problems or to help the fertilization process along when it might be a challenge. During ICSI, a single sperm is injected into a single egg and the resulting embryo is transferred to uterus.

Gamete Intrafallopian Transfer (GIFT): During gamete intrafallopian transfer (GIFT), eggs are mixed with sperm in a lab. Laparoscopic surgery is then used to inject the mixture into the fallopian tubes so fertilization can occur naturally inside body. GIFT is rarely used now, since the development of IVF with ICSI.

Zygote Intrafallopian Transfer (ZIFT): Like GIFT, zygote intrafallopian transfer (ZIFT) involves eggs and sperm being mixed together in a lab. But during ZIFT, the eggs are fertilized and become one-celled embryos called zygotes before using laparoscopic surgery to place them in your fallopian tubes.

Donor Eggs and Embryos: Using IVF techniques, an egg donated by another woman is mixed with partner's sperm and transferred to uterus. If a donor embryo has been used, medications can be taken to prepare your uterine lining for pregnancy before the embryo or embryos are transferred to uterus.

Gestational Surrogacy: A gestational carrier carries embryo, or a donor's embryo, to term and then signs away all her parental rights.

Here, it should be noted that the end goal of these technologies is a baby; whereas the end goal of the uterus transplant is a pregnancy.

Way Forward

Uterus transplant was unheard of in India until a few years ago. The first uterus transplant in the world was done in 2002. Since then, there have been around 30 such transplants, with only 12 women going on to have successful deliveries. In India, there are about 4

lakh women with congenital absence of the uterus. The uterus transplant offers hope to women born without a uterus and those with a non-functional uterus.

But, guidelines need to be framed for regulating uterine transplants to avoid potential exploitation of donors, as has been documented in cases of in vitro fertilisation and surrogacy. Doctors should be cautious while undertaking the surgery for which protocols are still being established. It's for the doctors to underline the many potential complications of this experimental surgery for both the donor and recipient and determine the pressures that are driving women to take such risks. There is need for informed consent from patients who are opting to try the procedure.

Further, proper informed consent for a uterus transplant might involve informing the patient that there is a small but definite risk of dying and also mentioning other options to have children like surrogacy and adoption. However, even if women consent, women are often doing this out of societal and family pressures and not necessarily out of her own volition. And therefore the informed consent may also actually not be an independent decision.

At last, since womb transplantation is not lifesaving, the onus is on the surgeons to ensure the benefits to the women's mental health outweigh the physical risks. If they don't, they will have to bear the albatross of surgical complications and failure for life.

General Studies Paper- III

Topic: Achievements of Indians in Science & Technology; indigenization of technology and developing new technology.



7. THE HORROR OF GHOST GEAR: GETTING BIGGER

Why in News?

According to 2018 report by London-based World Animal Protection highlights how the accumulation of ghost gear in global waters is having a catastrophic impact. Each year, more than 705,000 tons of it builds up in the oceans. The problem of ghost gear (any fishing equipment that has been lost, discarded or abandoned in water bodies) has grown from a fishing fallout that people had not heard of to one that is now difficult to ignore.

Introduction

The saying that "there are plenty more fish in the sea" is no longer ringing true. Unsustainable fishing, climate change and most concerningly, marine debris, is contributing to the disappearance of aquatic life at an alarming rate. Within the last 40 years, half of the world's marine life has disappeared.

As the quantity of debris increases in the marine environment, so does the likelihood of impacts to marine animals. Plastic production rates are intensifying and the volume of rubbish humans release into marine systems is growing at an exponential rate. Since the world has begun to prioritise cleaning up ocean plastic, many alternatives to single-use consumer products have emerged: reusable shopping bags, metal coffee mugs and bottles, and biodegradable forms of packaging. While these options are welcome, a major component of the problem of ocean plastic has proved more challenging to address—that of lost and abandoned fishing gear.

Lost fishing nets, known as "ghost gear", have received less attention than other forms of plastic pollution, despite accounting for an estimated 10 per cent of plastic entering the ocean each year, according to the UN Food

and Agriculture Organization. This is equivalent to 640,000 metric tonnes per year; and is expected to reach 800,000 metric tonnes in 2018.

In March 2018, fishermen hauled 400 kg of fishing nets out of the sea in a few locations off Kerala's south coast. There are many such reports of divers regularly making underwater trips just to extract nets that have sunk to the ocean floor off India's coasts, ranging from Tamil Nadu to Maharashtra.

What is Marine Debris ?

Marine debris/ Marine Litter is defined as any persistent solid material that is manufactured or processed and directly or indirectly, intentionally or unintentionally, disposed of or abandoned into the marine environment. Marine debris is any man-made, solid material that enters waterways directly through littering or indirectly via rivers, streams and storm drains. Marine debris can be simple items such as a discarded soda can, cigarette butt, plastic bag and derelict fishing gear that ends up in the ocean potentially harming marine life. Nearly 80 percent of marine debris originates from land-based sources.

Marine debris injures and kills marine life, interferes with navigation safety and poses a threat to human health.

Gravity of the Situation

Plastic pollution has already affected at least 267 species worldwide, with some estimates suggesting that at least one million marine animals are killed each year from plastic pollution. These fatalities are a result of ingestion, starvation, suffocation, infection, drowning and entanglement. By 2050 there will be more plastic in the ocean than fish.

Further research estimates that one garbage truck full of rubbish enters our oceans every single minute. This proves disastrous for aquatic species such as sea turtles, sharks and sea birds, which often confuse floating plastic bags for fish and commonly feed the "treat" to their young, unknowingly killing off their own offspring.

Fishing gear, balloons and plastic bags were considered the biggest entanglement threat to marine fauna. Referred to as ghost nets (ghost gear), 6.4 million tonnes of fishing gear are lost in oceans each year. This gear is predominantly comprised of plastic material and, whether accidentally or deliberately discarded, threatens marine wildlife through indiscriminate entanglement. Seals, turtles, whales, dolphins and dugongs are just some of the many animals harmed due to this practice.

Between 2011 and 2018 alone, the Olive Ridley Project, a U.K. registered charity that removes ghost nets and protects sea turtles, recorded 601 sea turtles being entangled in ghost gear near the Maldives, of which 528 were Olive Ridges — the same species that come in thousands to Odisha's coasts to nest. Other casualties worldwide include whales, dolphins, sharks and even pelagic birds.

Ghost gear isn't just a problem for animal lovers, it's a problem for the fishing industry too as it kills marketable produce, poses a threat to fishermen and divers and clogs up harbours. Entire fishing communities are affected by these actions, especially in developing countries like India where the demand for fish keeps rising.

The impact of ghost gear on fish stocks bears a tremendous impact on food security, particularly for populations that live close to the sea

and rely on it for their income. Forty per cent of the world's population lives within 100 kilometres of the coast, and 10 per cent depend on fisheries for their livelihoods. Poor populations are hit the hardest, as smaller harvests mean increased prices that they cannot afford.

In addition to the economic losses to fishermen and destabilised food supplies, ghost gear poses a significant threat to wider ocean wildlife. An estimated 136,000 whales, dolphins, seals and sea lions die from ghost gear every year; many enduring prolonged suffering before death.

Ghost Gear: Other Killer Plastic

Colossal numbers of plastic bottles and bags float around the earth but there is another, less well-known, man-made killer plastic lurking in our oceans. Every year more than one hundred thousand whales, dolphins, seals and turtles are caught in 'ghost gear' - abandoned, lost and discarded fishing nets, lines and traps which can take up to 600 years to decompose. Plastics do not biodegrade quickly. Ironically, some new biodegradable plastics might not break down in oceans at all.

As plastics get smaller and smaller, they release chemicals. One of those chemicals can be Bisphenol A (BPA). Bisphenol A can interfere with animals' reproductive systems. Fish are especially at risk when exposed to Bisphenol A. Exposed fish produce fewer healthy offspring. Bisphenol A and other chemicals build up in the fish's body through a process called bioaccumulation. Plants or algae may absorb Bisphenol A through the water. A fish, already exposed to the chemical, ingests more Bisphenol A when it eats the algae. Thus, the ghost gear can have a lasting effect on marine life for many years.

Human being is not immune to this new hazard - more than a quarter of

fish sold globally now contain plastic from different sources - including ghost gear - and this plastic is consumed by people who eat the fish for dinner.

The Widening Gyre

Marine debris tends to collect in areas called ocean gyres. A gyre is a circular ocean current formed by the Earth's wind patterns and the forces created by the rotation of the planet. The area in the center of a gyre tends to be very calm and stable. The circular motion of the gyre draws in debris. The garbage makes its way into the center of the gyre, where it becomes trapped and builds up.

Trash build-ups in the middle of gyres are known as garbage patches. For example, the Great Pacific Garbage Patch exists in the North Pacific Ocean between the U.S. states of California and Hawaii. There is a similar patch in the North Atlantic Ocean.

Ghost nets are often 'ghost fishers'. Ocean currents carry them for thousands of km across the ocean floor, ensnaring, injuring and drowning marine life and damaging live corals along the way.

Global Initiatives

- ◆ To tackle the ghost gear issue, World Animal Protection Founded the Global Ghost Initiative (GGGI) in 2015. It is a cross-sectoral alliance committed to driving solutions to the problem of lost and abandoned fishing gear worldwide. It is an established platform under which the global community can unite to improve the health and productivity of marine ecosystems, protect marine animals from harm and safeguard human health and livelihoods. The work of the GGGI is focused on ghost gear, but also directly impacts on the issue of marine plastics and micro plastics and provides tools for effective action against illegal, unreported and unregulated fishing.
- ◆ The Global Ghost Gear Initiative has grown into a robust and well-established multi-stakeholder partner- ship. It is the only alliance

of its kind working across the three Rs - Reduce, Remove, Recycle - to tackle the problem of lost and abandoned fishing gear.

The GGGI has three key aims:

- To improve the health of marine ecosystems.
- To safeguard human health and livelihoods.
- To protect marine animals from harm.
- ◆ The National Oceanic and Atmospheric Administration (NOAA) Marine Debris Program is the U.S. Federal government's lead for addressing marine debris. Also, EPA works with several different international forums on marine litter prevention.
- ◆ The North American Marine Environment Protection Association (NAMEPA) has developed educational programs and materials to help seafarers and port communicates to cultivate a more responsible culture for the marine environment.
- ◆ International Maritime Organisation (IMO) in consultation with relevant organizations and bodies, has reviewed MARPOL Annex V in addressing sea-based sources of marine debris, providing a ban on discharging or dumping plastics from ships. The organization has noted that in addition to the environmental and health problem posed by marine litter, garbage and plastics is a costly and dangerous problem for shipping, as a navigational hazard and from entanglement in propellers, rudders etc. So far, IMO has done considerable work on marine debris, plastics and microplastics and continues to address the issue.
- ◆ The Global Partnership on Marine Litter, a UN initiative, brings together governments, NGOs, academia and the private sector to find solutions for marine debris.

- ◆ The Clean Seas campaign launched by UN Environment at the World Ocean Summit in Bali, Indonesia. It aims to eliminate major sources of marine litter by 2022 focusing on single-use plastic and micro-plastics in cosmetics.
- ◆ The Ocean Cleanup, a Dutch foundation by Boyan Slat, announced in 2017 a design breakthrough allowing for the cleanup of half the Great Pacific Garbage Patch in just 5 years. Also, the Seabin Project aims to fight against marine pollution. The Seabin is a floating rubbish bin that moves up and down with the range of tide collecting all floating rubbish, located in the water at marinas, docks, yacht clubs and commercial ports.

Using the Ghost

Some companies are using ghost gears as a raw material for something else.

- ◆ Net-Works, a collaboration between Interface, the Zoological Society of London and Aquafil, turns discarded fishing nets into carpet tiles and has long been cited as an example of the circular economy in action. But new examples are emerging.
- ◆ The US Fishing for Energy partnership has collected 2.8m pounds of fishing gear from bins placed in 42 communities across the US since 2008 and turned this into enough electricity to power 182 homes for one year.
- ◆ Sustainable skateboard retailer Bureo has set up a net collection programme with support from the Chilean government.
- ◆ In India, ghost nets hauled from



Kerala's Kollam have been used to pave roads. This shows that transformation is possible, though more efforts to make the process more organised across the over 7,500 km of India's coasts, as well as inland water bodies, are the need of the hour. Scientists at Kochi's Indian Council of Agricultural Research-Central Institute of Fisheries Technology studied ghost nets in Gujarat, Andhra Pradesh, Kerala and Tamil Nadu. However, the results of the report, which were submitted to the Food and Agricultural Organisation of the UN in April, have not been released yet. According to the scientists, the government is also currently preparing a national ghost net management policy.

Way Forward

The amount of ghost gear entering the ocean has increased in recent years and is likely to grow further as fishing efforts intensify, creating wide-ranging problems for the marine environment

and costing governments millions of dollars in clean-up expenses. Effective solutions are being found locally and nationally, yet a global approach is needed for the problem of ghost gear to be monitored and solved at scale.

Perhaps the most accessible means of preventing ghost gear is by supporting the recycling industry. Hundreds of products featuring recycled ocean plastic are already commercially available and have found an eager consumer base. Developing the logistics required to boost this sector will turn ghost gear from debris into a valuable commodity, inspiring recovering efforts. Once it becomes a commodity worth having it becomes a business opportunity, and that changes the whole agenda.

General Studies Paper- III

Topic: Conservation, environmental pollution and degradation, environmental impact assessment.

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SEVEN SUBJECTIVE QUESTIONS WITH MODEL ANSWERS

Feasibility of Two Time Zones in India

Q1. National Physical laboratory in its report has supported the need and feasibility of two time zones. In the light of this report discuss the need and challenges of having two time zones if implemented in India.

Hints:

- ◆ Scientists at the Council of Scientific & Industrial Research's National Physical Laboratory (CSIR-NPL), which maintains Indian Standard Time, have published a research article describing the necessity of two time zones, with the new one an hour ahead of the existing time zone.
- ◆ India extends from 68°7'E to 97°25'E, with the spread of 29° representing almost two hours from the geographic perspective. This has led to the argument that early sunrise in the easternmost parts — the Northeast — causes the loss of many daylight hours by the time offices or educational institutions open and that early sunset, for its part, leads to higher consumption of electricity.
- ◆ In the Northeast, the sun rises as early as four in the morning and in winter it sets by four in the evening. By the time government offices or educational institutions open, many daylight hours are already lost. In winter this problem gets even more accentuated and the ecological costs are a disaster with much more electricity having to be consumed.
- ◆ The research paper by Council of Scientific & Industrial Research's National Physical Laboratory (CSIR-NPL), proposes to call the two time zones IST-I (UTC + 5.30 h) and IST-II (UTC + 6.30 h). The proposed line of demarcation is at 89°52'E, the narrow border between Assam and West Bengal. States west of the line would continue to follow IST (to be called IST-I). States east of the line — Assam, Meghalaya, Nagaland, Arunachal Pradesh, Manipur, Mizoram, Tripura, Andaman & Nicobar Islands — would follow IST-II.
- ◆ The researchers estimated energy savings at 20 million kWh a year. They also analysed the importance of

synchronising office hours — as well as biological activities — to sunrise and sunset timings.

- ◆ If we were to introduce DST in India, the inconvenience of time adjustment during summer and winter months would involve the whole country, happening twice a year, with marginal benefits. The possibilities of rail accidents would still be high. Even in the U.S. and Canada, road accidents increase discernibly in the days immediately following the change.
- ◆ To make the idea possible, CSIR-NPL would need a second laboratory in the new time zone. This would consist of 'Primary Time Ensemble-II', traceable to the UTC at BIPM in France. While the article asserts that CSIR-NPL already has the technical expertise to duplicate its existing facility, it also acknowledges that the move would require legislative sanction.

Internal Migration is Continued in India

Q2. Recent event in Gujarat, shows that the utter indifference of states to the well-being of migrant workers and their rights. Critically examine the central and state governments interested in improving the conditions of workers in the economy?

Hints:

- ◆ Seasonal migration for work is a pervasive reality in rural India. An overwhelming 120 million people or more are estimated to migrate from rural areas to urban labour markets, industries and farms. Migration has become essential for people from regions that face frequent shortages of rainfall or suffer floods, or where population densities are high in relation to land. Areas facing unresolved social or political conflicts also become prone to high out migration. Poverty, lack of local options and the availability of work elsewhere become the trigger and the pull for rural migration respectively.
- ◆ Migrants form the largest part of India's vast unorganized work sector. Their entry into the labour markets is marked with several endemic disadvantages. Devoid of critical skills, information and bargaining power,

migrant workers often get caught in exploitative labour arrangements that forces them to work in low-end, low-value, hazardous work. Lack of identity and legal protection accentuates this problem. The hardships of migrant workers are especially magnified when state boundaries are crossed and the distance between the "source" and "destination" increases. Migrants can also become easy victims of identity politics and parochialism.

- ◆ Despite the vast numbers of migrant workers, the policies of the Indian state have largely failed in providing any form of legal or social protection to this vulnerable group. In a continuous state of drift, migrants are left out of the scope of state provisions at both ends - the "source" and the "destination". The urban labour markets treat them with opportunistic indifference extracting hard labour but denying basic entitlements such as decent shelter, fair priced food, subsidized healthcare facilities or training and education. They are also usually out of bounds of government and civil society initiatives, both because of being "invisible" and for their inability to carry entitlements along as they move.
- ◆ There is legislation known as Inter-State Migrant Workers Act, 1979 which aims to safeguard migrants. However, it is obsolete and is hardly enforced anywhere. A serious constraint in framing an effective policy is the lack of credible data on incidence of seasonal migration. Census as a significant impact on policy making are unable to capture seasonal and circular migration. Migrants may also be missed out in below poverty line (BPL) Surveys. Above all, they are unable to participate in the formal electoral system and are denied a fundamental citizenship right - their right to vote.
- ◆ Economic growth in India today hinges on mobility of labour. The contribution of migrant workers to national income is enormous but there is little done in return for their security and well-being. There is an imminent need for solutions to transform migration into a more dignified and rewarding opportunity. Without this, making growth inclusive or the very least, sustainable, will remain a very distant dream.

India-Afghanistan Relationship: Getting Stronger

Q3. Apart from effective regional security architecture, a peaceful and stable Afghanistan is key to India's outreach to Central Asian countries. Analyse.

Hints:

- ◆ India and Afghanistan have close technical, economic, cultural and political relations. India is keenly interested in cultivating a significant partnership with Afghanistan. Due to strategic and security concerns the Indo-Afghanistan cordial relations are in favour of both the nations.
- ◆ Geo-strategically India-Afghanistan partnership has considerable value as a counter to the Pakistan threat. Strengthening the security dimension of India-Afghanistan ties is extremely important for India as it is in New Delhi's interest to help Kabul preserve its strategic autonomy at a time when Pakistan has made it clear that it would like the Haqqani network and the Taliban to be at the centre of the post-American political dispensation in Kabul.
- ◆ Afghanistan's internal conditions affect the stability of the region. The rise of the IS in the Middle East and its close contacts with the Taliban raise issues of internal security for India. Since the American invasion, the Taliban and its affiliates have shifted their base towards the southern regions and Pakistan. This has increased implications for the security and safety for both Pakistan and the Indian territory.
- ◆ Afghanistan is not only relevant from the security perspective, but also as an essential gateway to the hydrocarbon-rich Central Asia. This region, if made accessible, could improve the resource portfolio of an energy-thirsty economy, while reducing the dependency on supplies from the Middle East. Further, India is keen on exploiting the energy sources in Afghanistan and developing it into a hub for accessing Central Asian resources.
- ◆ Increasing economic growth, providing humanitarian assistance, improving capacity-building measures are all part of India's soft power strategy of "reviving the traditional role of Afghanistan as a land bridge, connecting South Asia with Central Asia and West Asia".
- ◆ India has lot to offer for the betterment of the region considering the TAPI project, the MVA (motor vehicle agreement), if extended, NSTC (North- South transport corridor), SAARC satellite and many more—all of which are beneficial for the participating countries but these benefits have to be foreseen by the respective leaders of states; else the region will not get rid of poverty, malnutrition, economic disparity, gender imbalance etc.
- ◆ Both India and Afghanistan being SAARC members committed to regional cooperation, the talks could impact future strategies of the member- nations

towards promoting regional cooperation. It wants to retain Afghanistan as a friendly state from which it has the capacity to monitor Pakistan and even, wherever possible, cultivate assets to influence activities in Pakistan.

Railway Line through Aspirational Districts

Q4. The Indian railway's expansion plan giving a huge boost to customer experience, promoting tourism, making Indian Railways financially self-sustainable and also have a strategic dimension, particularly in India's bordering state. Discuss.

Hints:

- ◆ India boasts the world's largest rail network, with over 25 million people traveling on some 11,000 trains every day. The railways that snake across India, a colonial inheritance first built to transport troops across the country, are the crucial economic lifeblood of the country, enabling the movement of goods and people.
- ◆ The Indian Railways, as one of the pillars of India's infrastructure, has a symbiotic relationship with the country's industry and economy. The Railways play a crucial role in the transport of coal, iron ore and raw materials for the manufacturing industry, fertilizers, cement and steel products and food-grain and in the movement to and from the major ports, as well as the transportation of people. Transport being a derived demand, any growth in the economy fuels the demand for transport.
- ◆ The railway line from Bahraich to Khalilabad, which will be fully electrified, will pass through Balrampur and Sarawasti. The new line serves 5 districts of Uttar Pradesh including 4 aspirational districts (Bahraich, Balrampur, Shravasti and Siddharth Nagar) and Sant Kabirnagar. The aspirational districts have been identified by NITI Aayog to grow small-scale industries. Hence, this project is needed for better socio-economic development of the hinterland of this area with the help of rail network. This project will generate direct employment during construction for about 57.67 lakh man-days. The total estimated cost of this project is Rs. 4939.78 crore and it is likely to be completed by 2024-25 and will lie in the North Eastern Zonal Railway. The new Indian Railways line will boost the pilgrimage-related tourism in the region as it will provide connectivity to three crucial temples including a Jain and a Buddhist place of worship in this eastern part of Uttar Pradesh.
- ◆ Indian Railways play a pivotal role for the entire lower and upper middle class sectoral travel segment. But

there remains the problem of the quality of India's network. It is beset by the problems of under-investment: India's trains are unsafe, poorly maintained and under-developed. Thousands die on rail crossings, in train crashes and in rail accidents every year. Privatizing parts of the network and inviting foreign investment are now being suggested to address these pressing infrastructural needs. Until then these fare hikes represent a necessary, but short-term, palliative.

Artificial Moon: Could Light up the Night Sky

Q5. 'Artificial Moon Project' of China is an ambitious project which can enhance urban infrastructure efficiently and a new step towards harnessing the renewable energy but also comes with its own merits and demerits. Comment.

Hints:

- ◆ Chengdu, a city in southwestern Sichuan province, is developing "illumination satellites" which will shine in tandem with the real moon, but are eight times brighter and bathe the city of Chengdu in a "dusk-like glow." The imitation celestial body — essentially an illuminated satellite — will bear a reflective coating to cast sunlight back to Earth, where it will supplement streetlights at night. The objective of the mission is to provide an alternative means of street lighting and save on electricity. The idea has not only received wide coverage but also been viewed with some skepticism.
- ◆ The artificial moon would illuminate an area of diameter between 10-80 km. If the illuminated area is 50 sq km, it would save an estimated 1.2 billion yuan (\$170 million) a year in electricity costs for Chengdu. The satellite will orbit about 300 miles (500 kilometers) above the city and use its mirror-like coating to reflect sunlight down to Earth. Rather than using up energy here on Earth, the satellite would reflect the Sun's rays from the other side of the planet back on to Chengdu. Its expected brightness, in the eyes of humans, is around one-fifth of normal streetlights.
- ◆ Despite shining light in a similar way, the satellite boasts one advantage that the moon doesn't — human control. Both the location and brightness of the human-made moon can be changed and that it can be completely shut off if necessary. And since the satellite is mobile, it can assist in disaster relief by beaming light on areas that lost power. The extraterrestrial source of light could also help rescue efforts in disaster zones during blackouts.

- ◆ The artificial moon will be up to eight times as luminous as its natural, rock-laden counterpart. Critics worry about the extra light pollution this may cause. The manmade moons frustrate astronomers by blocking out the view of the stars in certain areas and they will affect animals like birds and sea turtles whose movements are guided by natural moonlight.
- ◆ At an altitude as low as 500 km and considering a diameter small enough to be economically viable, accuracy is key. Missing the angle of reflection by even a few degrees would miss Chengdu by miles. If you want to light up an area with an error of say 10 km, even if you miss by one 100th of a degree you'll have the light pointing at another place.
- ◆ This new project of "Artificial Moon" is surely an experiment which is a new step towards harnessing the renewable energy. Though many potential benefits are seen with the project like the use in disaster management, catering larger geographical area, reducing environmental emissions, minimizing electricity budgets etc. But challenges are also glaring like the mastering of technology, pricing of the satellite, its expert handling, light pollution, circadian rhythms etc. While China leads to the experiment, it's the wait and watch for the whole world.
- ◆ The pregnancies that have been successful were high risk.
- ◆ The transplants are still in the experimental stage. Current transplants have been covered by research funding.
- ◆ If the surgery becomes part of medical practice, it will probably cost several lakhs of rupee.
- ◆ Under the Transplantation of Human Organs Act, 1994, a state government committee evaluates and grants permission for kidney, liver and heart transplants from donors not related to the recipient.
- ◆ The Directorate of Medical Education has compiled a list of organs and tissues that can be transplanted that does not mention the uterus. It is unclear if the Medical Council of India does have any guidelines on new and experimental procedures. In addition to it, the Indian Council of Medical Research itself has no clear guidelines for the procedure of uterine transplant.
- ◆ Many of the arguments against altruistic surrogacy can be applied to uterus transplantation as a treatment for involuntary childlessness. Some of these include:
 - ◆ That the intervention can threaten the autonomy of the donor and subject her to pressure.
 - ◆ That the intervention can lead to exploitation of women's bodies.
 - ◆ That the research on the physical and psychological risks facing the child is inadequate.
 - ◆ There are other ways to become a mother. By prioritising this one, the uterus transplant potentially devalues the lives of women with uterine factor infertility.
- ◆ Since womb transplantation is not lifesaving, the onus is on the surgeons to ensure the benefits to the women's mental health outweigh the physical risks. If they don't, they will have to bear the albatross of surgical complications and failure for life.

Uterus Transplant: A Womb to Mother

Q6. Though uterus transplantation has been successfully introduced as a treatment option for women with absolute uterine factor infertility, but it raises several legal and ethical concerns apart from risk involved in the process. Comment.

Hints:

- ◆ Uterine transplantation is defined as a surgical procedure where a healthy uterus is transplanted into an organism in which the uterus is absent or diseased.
- ◆ Uterine transplantation may be recommended for women who wish to conceive who have uterine malformation or who have undergone previous hysterectomy due to neoplasm, post-partum haemorrhage, increased uterine bleeding or intrauterine adhesions (Asherman syndrome).
- ◆ Some other risks involved are:
 - ◆ The process is complicated and has considerable risks for both recipients and donors.
 - ◆ Some dangerous factors include potential organ rejection and surgery risks.

The Horror of Ghost Gear: Getting Bigger

Q7. What do you understand by 'ghost gear'? The problem of ghost gear in Indian oceans is getting to be a serious concern. Discuss why India should emulate innovative solutions from across the world to tackle the problem of ghost gear.

Hints:

- ◆ According to 2018 report by London-based World Animal Protection highlights how the accumulation

of ghost gear in global waters is having a catastrophic impact. Each year, more than 705,000 tons of it builds up in the oceans. The problem of ghost gear (any fishing equipment that has been lost, discarded or abandoned in water bodies) has grown from fishing fallout that people had not heard of to one that is now difficult to ignore.

- ◆ Lost fishing nets, known as “ghost gear”, have received less attention than other forms of plastic pollution, despite accounting for an estimated 10 per cent of plastic entering the ocean each year, according to the UN Food and Agriculture Organization. This is equivalent to 640,000 metric tonnes per year; and is expected to reach 800,000 metric tonnes in 2018.
- ◆ In March 2018, fishermen hauled 400 kg of fishing nets out of the sea in a few locations off Kerala’s south coast. There are many such reports of divers regularly making underwater trips just to extract nets that have sunk to the ocean floor off India’s coasts, ranging from Tamil Nadu to Maharashtra.
- ◆ The impact of ghost gear on fish stocks bears a tremendous impact on food security, particularly for populations that live close to the sea and rely on it for

their income. Forty per cent of the world’s population lives within 100 kilometres of the coast and 10 per cent depend on fisheries for their livelihoods. Poor populations are hit the hardest, as smaller harvests mean increased prices that they cannot afford.

- ◆ The amount of ghost gear entering the ocean has increased in recent years and is likely to grow further as fishing efforts intensify, creating wide-ranging problems for the marine environment and costing governments millions of dollars in clean-up expenses. Effective solutions are being found locally and nationally, yet a global approach is needed for the problem of ghost gear to be monitored and solved at scale.
- ◆ Perhaps the most accessible means of preventing ghost gear is by supporting the recycling industry. Hundreds of products featuring recycled ocean plastic are already commercially available and have found an eager consumer base. Developing the logistics required to boost this sector will turn ghost gear from debris into a valuable commodity, inspiring recovering efforts. Once it becomes a commodity worth having it becomes a business opportunity, and that changes the whole agenda.



SEVEN IMPORTANT NATIONAL & INTERNATIONAL NEWS

NATIONAL

1. Sixth Tranche of Electoral Bonds

The sixth tranche of electoral bonds sale has started from November 1-10. Electoral bonds are being pitched as an alternative to cash donations made to political parties as part of efforts to bring transparency in political funding. State Bank of India (SBI), in the sixth phase of sale, has been authorised to issue and encash electoral bonds through its 29 authorised branches.

The electoral bond sale comes at a time when assembly election process in five states including Rajasthan and Madhya Pradesh has started. The Model Code of Conduct is in force in these states. The government notified

the 'Electoral Bond Scheme' in January this year.

About Electoral Bonds

As per provisions of the scheme, electoral bonds may be purchased by a person, who is a citizen of India or incorporated or established in India. A person being an individual can buy electoral bonds, either singly or jointly with other individuals. Only the political parties registered under Section 29A of the Representation of the People Act, 1951 and which secured not less than one per cent of the votes polled in the last general election to the House of the People or

the Legislative Assembly of the state, shall be eligible to receive the electoral bonds. The electoral bonds shall be encashed by an eligible political party only through a bank account with the authorized bank.

An electoral bond will be valid for 15 days from the date of issue. No payment would be made to any payee political party if the bond is deposited after expiry of the validity period. The bond deposited by any eligible political party into its account would be credited on the same day.

2. India will become Third Largest Aviation Market by 2024

According to the International Air Transport Association (IATA), India will be the third largest aviation market globally a year sooner than was earlier predicted. It is now expected to be among the top three countries by 2024 from its current seventh position.

Key Points

- ◆ In its latest 20-year forecast for the aviation industry, IATA has predicted that air passenger numbers worldwide could double to 8.2 billion in 2037. The biggest contribution in this growth will come from the Asia-Pacific region, which will account for half the total

number of new passengers over the next 20 years.

- ◆ By 2037, India is expected to add 414 million passengers to its existing 572 million passengers.
- ◆ China will climb up one spot to displace US as the world's largest aviation market in the mid-2020s, India will take the third place by surpassing the U.K. around 2024.
- ◆ The Asia-Pacific region is expected to see the fastest growth at the rate of 4.8%, followed by Africa (4.6%) and West Asia (4.4%).
- ◆ The other South-east Asian countries predicted to grow rapidly include Indonesia, likely to be

the fourth largest by 2030 from its current ranking of 10th largest aviation market. Thailand, too, is expected to enter the top 10 markets in 2030.

About IATA

It is the trade association for the world's airlines, representing some 290 airlines or 82% of total air traffic. It support many areas of aviation activity and help formulate industry policy on critical aviation issues. IATA is led by Alexandre de Juniac, Director General & CEO since September 2016. IATA's mission is to represent, lead and serve the airline industry.

3. Fisheries and Aquaculture Infrastructure Development Fund

The Cabinet Committee on Economic Affairs has approved Rs. 7,522-crore Fisheries and Aquaculture Infrastructure Development Fund (FIDF) from which entrepreneurs, fishermen and cooperatives will get loans at subsidised interest rate and two years moratorium on repayment of principal amount. National Bank for Agriculture and Rural Development (NABARD), National Cooperatives Development Corporation (NCDC) and all scheduled Banks (herein after referred as banks) shall be the nodal loaning entities.

Benefits

- ◆ Creation of fisheries infrastructure facilities both in marine and inland fisheries sectors.
- ◆ To augment fish production to achieve its target of 15 million tonne by 2020 set under the 'Blue Revolution'; and to achieve a sustainable growth of 8%-9% thereafter to reach the fish production to the level of about 20 MMT by 2022-23.
- ◆ Employment opportunities to over 9.40 lakh fishers/fishermen/fisherfolk and other entrepreneurs in fishing and allied activities.

- ◆ To attract private investment in creation and management of fisheries infrastructure facilities.
- ◆ Adoption of new technologies.

FIDF would provide concessional finance to state governments/UTs and state entities, cooperatives, individuals and entrepreneurs etc, for taking up of the identified investment activities of fisheries development. Under FIDF, loan lending will be over a period of five years from 2018-19 to 2022-23 and maximum repayment will be over a period of 12 years inclusive of moratorium of two years on repayment of principal. ■

4. Train 18

India's first engine-less semi-high speed train—'Train 18'—was rolled out on October 29 by the Integral Coach Factory (ICF) and will eventually replace the Shatabdi Express for inter-city travel. The 16-coach semi-high speed trainset built at a cost of Rs. 100 crore per rake with 80 percent Indian component has been designed for a maximum operating speed of 160 kmph.

Key Features

- ◆ The fully air-conditioned train, driven by a self-propulsion module, has the potential to become the country's fastest train provided the infrastructure was improved. Five
- ◆ more units of the train would be produced by the ICF by the end of 2019-20 production year.
- ◆ Train-18 has two driving trailer coaches with aerodynamic driver's cab (nose cone) on both the ends which will enable quicker turn-around time at destinations. Every alternative coach is motorized, to ensure even distribution of power and faster acceleration/deceleration.
- ◆ The footsteps in the coaches of the doorways are designed in such a way that it would slide outward when the train stopped at a station

enabling passengers to alight safely with comfort in view of the variation in height between a train's floor and the platform.

- ◆ All the equipment are below the chassis of the coaches leaving the complete onboard space for passenger movement. All the coaches are connected by fully sealed gangways with integrated bridge plates, where a passenger can walk across freely.
- ◆ Fitted with CCTV cameras, Train-18 would have two executive compartments in the middle with 52 seats each, whereas trailer coaches would have 78 seats each. It has diffused lighting, automatic doors and footsteps beside GPS-based passenger information system.
- ◆ Indian railways will now turn its focus on another project—Train 20—the next generation aluminium-bodied sleeper class trains that will replace the Rajdhani Express trains on the network and is expected to be rolled out by 2020. ■

COMING OF AGE OF INDIAN RAILWAYS

➤ Train-18 is an engineless train; has driving cabs at both ends and 16 modern coaches ➤ Coaches have traction, like in EMU trains, that allows greater acceleration ➤ It has 14 AC chair cars and 2 Executive Class coaches ➤ Plush seats	- can be swivelled in direction of movement ➤ In Executive Class, seats can be swivelled to face continuous windows ➤ Doors are sliding and toilets vacuum-controlled ➤ On-board infotainment, non-stop wi-fi likely
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5. Global Agriculture Leadership Summit and Leadership Awards-2018

The National Awards Committee of Agriculture Leadership Awards has announced the Global Agriculture Leadership Awards for 2018, under various categories. The Awards Committee is chaired by Prof S Swaminathan, the architect of green revolution and has 24 members of global eminence as its members.

Global Leadership Summit and Awards are being organised by Indian Council of Food and Agriculture with support of Ministry of Agriculture and Farmers' Welfare; Ministry of Food Processing Industries and Ministry of Commerce.

Key Points

- ◆ The International Leadership Award was given to Prof Rudy Rabbinge,

Special Envoy — Food Security, government of Netherlands for his immeasurable contributions in the field of food security and rural development.

- ◆ National Research Development Corporation has bagged the Research Leadership Award for their commitment towards promoting, developing, nurturing and commercialising innovative, reliable and competitive technologies from R&D institutes through value addition and partnership.
- ◆ Andhra Pradesh Chief Minister N Chandrababu Naidu was awarded the 'Policy Leadership Award' for his proactive policies for uplifting the farming community by focusing

on irrigation, investment, global partnerships, marketing initiatives and zero budget natural farming.

- ◆ The best 'Fisheries State Award' was presented to Jharkhand Chief Minister Raghubar Das in recognition of the state's efforts in augmenting the production potential of the state in fisheries segment and realising record production in the process.
- ◆ For its innovation and technological advancement in farming, the Gujarat state received 'Best Agriculture Award'. Gujarat has adopted several initiatives towards better farming practices and spreading awareness for the same.

6. Joint Working Group on FinTech between India and Singapore

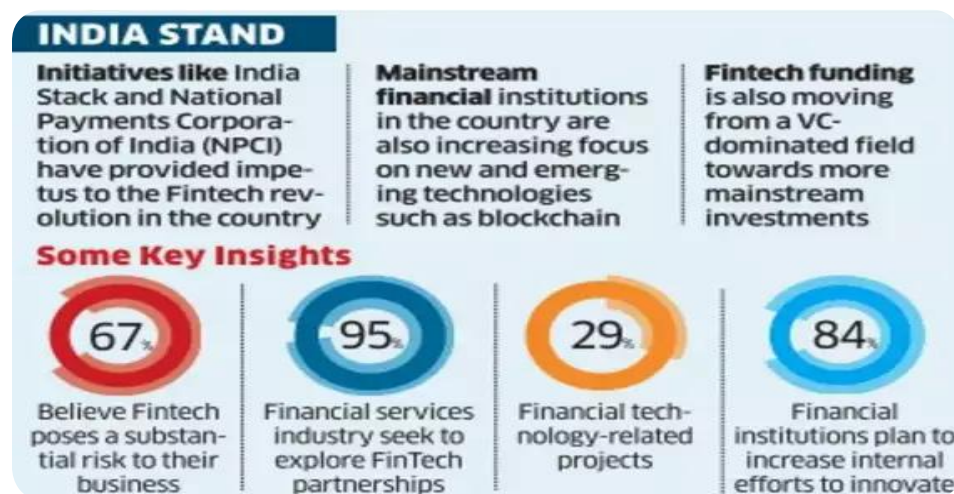
The Union Cabinet has approved a memorandum of understanding (MoU) signed between India and Singapore to establish a joint working group to strengthen bilateral cooperation in financial technologies (FinTech). The MoU was signed between India's Department of Economic Affairs and the Monetary Authority of Singapore during Prime Minister Narendra Modi's

visit to Singapore in June this year. This partnership is aimed at boosting trade, tourism and remittances through real-time fund transfers between bank accounts in the respective countries.

- ◆ Collaboration of India with Singapore will benefit both India and Singapore to excel in the fields of Development of Application Programming Interfaces (APIs),

Regulatory Sandbox, Security in payment and digital cash flow, integration of RuPay - Network for Electronic Transfers (NETS), UPI-FAST payment link, AADHAR Stack and e-KYC in ASEAN region and cooperation on regulations, solutions for financial markets and insurance sector and sand box models.

- ◆ Standards will be created for use of data in non-discriminatory manner by fintech and related entities and capacity building of relevant officials in regulatory institutions in the wake of new threats around cyber security and financial frauds.
- ◆ It will also encourage cooperation between India and Singapore on digital governance, financial inclusion and partnership in the ASEAN Financial Innovation Network (AFIN) agenda.



7. TECH- 2018

UNESCO for Mahatma Gandhi Institute of Education for Peace and Sustainable Development (MGIEP) in association with government of Andhra Pradesh has announced 'TECH-2018', an international conference which aims to showcase the role of games and digital learning in enabling a shift from "transmissive pedagogies" to "transformative pedagogies" to create peaceful and sustainable societies. It will be held from 15-17 November, 2018 at Vizag City, Andhra Pradesh, India.

- ◆ 'TECH-2018' aims at drawing a blueprint for harnessing

pedagogical possibilities opened up by digital technologies, in order to contribute to enabling a revolutionary shift in education from individual content acquisition to collaborative intelligence.

- ◆ 'TECH-2018' will be a global platform amalgamating experts and practitioners from the field of education technology and education for peace, sustainable development and global citizenship.
- ◆ The event will be open for experts and practitioners in the field of education technology and

education for peace, sustainable development and global citizenship. It aims to create a holistic platform for the ministers of education, senior policy makers, education technology specialists, educators and teachers, curriculum designers, researchers, learners, students, game designers and ed-tech exhibitors.

About UNESCO MGIEP

The Mahatma Gandhi Institute of Education for Peace and Sustainable Development (MGIEP), in New Delhi, India was established with the support of the government of India and is an integral part of UNESCO. It is the first and only category 1 Research institute in Asia Pacific and focuses on achieving the Sustainable Development Goal (SDG) 4.7 towards education to foster peaceful and sustainable societies. In this, the Institute is guided by its vision of 'transforming education for humanity'.

Building on the success of 'TECH-2017', the UNESCO MGIEP will organize TECH annually for the next four years.



INTERNATIONAL

1. Commonwealth Association for Public Administration and Management Award-2018

India has won Commonwealth Association for Public Administration and Management (CAPAM) Award-2018. The CAPAM Awards celebrate the spirit of innovation in the public service by recognizing organizations that have made significant contributions to improve governance and services in the public sector.

Winners

◆ The initiative entitled “Unnayan Banka- Reinventing Education Using Technology of Banka District, state of Bihar has been awarded under the Category “Innovation Incubation”. “Unnayan Banka” is an initiative which envisages

‘Quality education for all’ especially for those at the bottom of the pyramid, using latest technologies. It’s a holistic model of overall development of youths from education to employability. One of the most important Sustainable Development Goals, “Education” is the great social mobiliser & must be everyone’s birthright and it is government of India’s endeavour to provide this to all its children.

◆ Another initiative entitled “Unified Agriculture Markets” of Co-operation Department of government of Karnataka has also been selected under the Category ‘Innovation in Public Service

Management’. This initiative has also been awarded the overall Gold Award for CAPAM Awards, 2018.

About CAPAM

CAPAM provides a forum for the active exchange of innovations, knowledge and practice in citizen-centred service delivery, leadership development and growth and public service management and renewal. The mission of CAPAM enables public service professionals to effectively solve challenges and pursue interests by exchanging knowledge, networking and engaging in shared learning about leading practices.

2. India and Bangladesh: Enhancing Inland and Coastal Waterways Connectivity

India and Bangladesh has signed several milestone agreements for enhancing inland and coastal waterways connectivity between the two countries for trade and cruise movements. Both countries have signed an agreement to use chittagong and Mongla ports in Bangladesh for movement of goods to and from India. A Standard Operating Procedure (SOP) has also been signed for movement

of passenger and cruise services. In addition to this, an addendum to ‘Protocol on Inland Water Transit and Trade’ (PIWTT) between India and Bangladesh has been signed for inclusion of Dhubri in India and Pangaon in Bangladesh as new Ports of Call.

The two sides agreed to consider inclusion of Rupnarayan river (National Waterway-86) from Geonkhali to Kolaghat in the protocol route and to declare Kolaghat in West Bengal as new Port of Call. Further, both sides agreed to declare Badarpur on river Barak (NW 16) as an Extended Port of Call of Karimganj in Assam and Ghorasal of Ashuganj in Bangladesh on reciprocal basis.

Significance

Currently 3.5 MMT cargos are

transported on protocol routes through inland waterways which is expected to increase substantially after the declaration of additional Ports of Call and extension of protocol routes. The North Eastern states would get connected to directly to the ports of Kolkata and Haldia in India and Mongla in Bangladesh through waterways which would facilitate movement EXIM cargo and would also reduce the logistic costs.

The reconstruction and opening up of Jangipur navigational lock on river Bhagirathi subject to the provisions of the Treaty between India and Bangladesh on Sharing of Ganga Waters at Farakka, 1996. This move has the potential to reduce the distance to Assam by more than 450 kms on the protocol routes.



3. India - Israel Aerospace Deal

Israel has signed a USD 777 million contract with India for the supply of Barak 8 long-range surface-to-air defence missiles and missile defence systems for the Indian Navy. The new contract announced by Israel Aerospace Industries (IAI) was entered with Indian state-owned company Bharat Electronics Limited which serves as the main contractor in the project.

- ◆ The Long-Range Surface-to-Air Missile (LR-SAM) system is an operational Air and Missile Defence (AMD) system used by Israel's navy as well as by India's navy, air and land forces.
- ◆ The system provides broad aerial

and point defence against a wide range of threats to the marine arena from the air, sea or land.

- ◆ The system integrates several advanced systems as digital radar, command and control, launchers, interceptors with modern radio frequency seekers, data link and system-wide connectivity.
- ◆ It is designed to defend against a variety of short-to-long-range airborne threats including fixed-wing aircraft, helicopters, drones and projectiles, Barak-8 incorporates a state-of-the-art phased array multi-mission radar, two-way data link and a flexible command and control system,

enabling users to simultaneously engage multiple targets day and night and in all weather conditions.

- ◆ The missile system has been jointly developed by IAI, India's DRDO, Israel's Administration for the Development of Weapons and Technological Infrastructure, Elta Systems, Rafael and some other Indian defence companies.

About Barak 8

Barak 8 is an operational system that provides a full response to a range of threats, built to cooperate with other systems; it provides customers with operational flexibility for maximum effectiveness on the battlefield. ■

4. Trident Juncture-2018

NATO's biggest military manoeuvre since the Cold War has been kicked off on October 25th in Norway, with a hypothetical scenario that involved restoring the Scandinavian country's sovereignty after an attack by a "fictitious aggressor." The drill, named Trident Juncture-2018, includes military forces from 31 countries and stretches from the Baltic Sea to Iceland. The exercise is to mean to

ensure NATO forces are trained, able to operate together and ready to respond to any threat from any direction.

Russia, which shares a border with Norway, was briefed by the North Atlantic Treaty Organization on the Trident Juncture drill. They were invited to monitor, but Moscow is upset with the exercise, warning that Russia could be forced to respond to increased NATO activity close to its

western border. Russia last month held its biggest manoeuvre since 1981, called Vostok 2018 (translated to East 2018), moving 300,000 troops in a show of force close to China's border.

It involved 50,000 military and support personnel from 31 NATO and partner countries, 250 aircraft, 65 naval vessels and up to 10,000 military vehicles.

Background

After Russia annexed Crimea, NATO held a summit in Wales where it decided to enhance its military readiness and capabilities and as the alliance said in its rationale for Trident Juncture-18, "to operate together to defend our populations and territories and deter potential adversaries." The first version of Trident Juncture, NATO's capstone exercise, took place in Spain and Portugal in 2015, but this year's iteration dramatically shifts the geographical focus. ■



5. Mahinda Rajapaksa: New Prime Minister of Sri Lanka

Former Sri Lanka President Mahinda Rajapaksa has assumed charge as Sri Lanka's new Prime Minister after the surprise sacking of his predecessor Ranil Wickremesinghe by President Maithripala Sirisena, which took Sri Lanka into an unprecedented political crisis.

President Sirisena sacked Wickremesinghe and appointed Rajapaksa as the new prime minister in a surprise move that is being debated as a constitutional coup. He also

suspended parliament till November 16 after Wickremesinghe sought an emergency session to prove his majority.

- ◆ The sudden change of guard could impact policy-making and business confidence at a time of economic trouble, pushing the cash-strapped South Asian country even closer to Beijing.
- ◆ With Wickremesinghe refusing to leave office and Rajapaksa officially in power, the country is poised to

enter a period of policy paralysis. There are now “two competing power centers” that could see Sri Lanka enter a constitutional crisis.

- ◆ Sri Lanka's economy is already under duress — foreign exchange reserves have been sliding, pressuring the local currency — amid broader problems in global emerging markets. The latest political turmoil could further weaken international investor confidence.

■

6. WETEX-2018

The 20th Water, Energy, Technology and Environment Exhibition (WETEX-2018) and the 3rd Dubai Solar Show was held on 23-25 October at the Dubai International Convention and Exhibition Centre (DICEC).

WETEX focused on a variety of events related to energy and water conservation, environment protection, waste management, green building, carbon reduction, highlighting the latest technology and the most successful innovations in conserving natural resources, enhancing environmental security and stimulating innovation and

scientific creativity in energy. WETEX also provides a unique opportunity for investors to build business relationships and enhance business opportunities by networking with representatives of major companies and decision-makers from around the world under one roof. Meanwhile, the Dubai Solar Show spurs international efforts to develop the solar power sector, which is a cornerstone of sustainability. The event highlighted the most important energy initiatives in Dubai that are main pillars in implementing the Dubai Clean Energy Strategy 2050.

Green Week Promotes Sustainability in Society

Green Week was based on a clear vision of spreading a culture of sustainability among all groups and communities, especially school and university students. The focus of Green Week was on educating students as the mainstay of development and as future builders, through a series of workshops and educational events, to instill a culture of creativity and innovation in the next generation.

■

7. Facebook has been fined for Failing to Protect User Data

Facebook has been fined £500,000 by the UK in the wake of the Cambridge Analytica scandal, after allowing third party developers to access user information without sufficient consent. The fine, which represents a drop in the ocean for a company that brought in \$40.7bn (£31.5bn) in global revenue in 2017, was the maximum available to the regulator under old data protection legislation.

The investigation found that between 2007 and 2014, Facebook processed the personal information of

users unfairly by allowing application developers access to their information without sufficiently clear and informed consent and allowing access even if users had not downloaded the app, but were simply ‘friends’ with people who had. Facebook also failed to keep the personal information secure because it failed to make suitable checks on apps and developers using its platform.

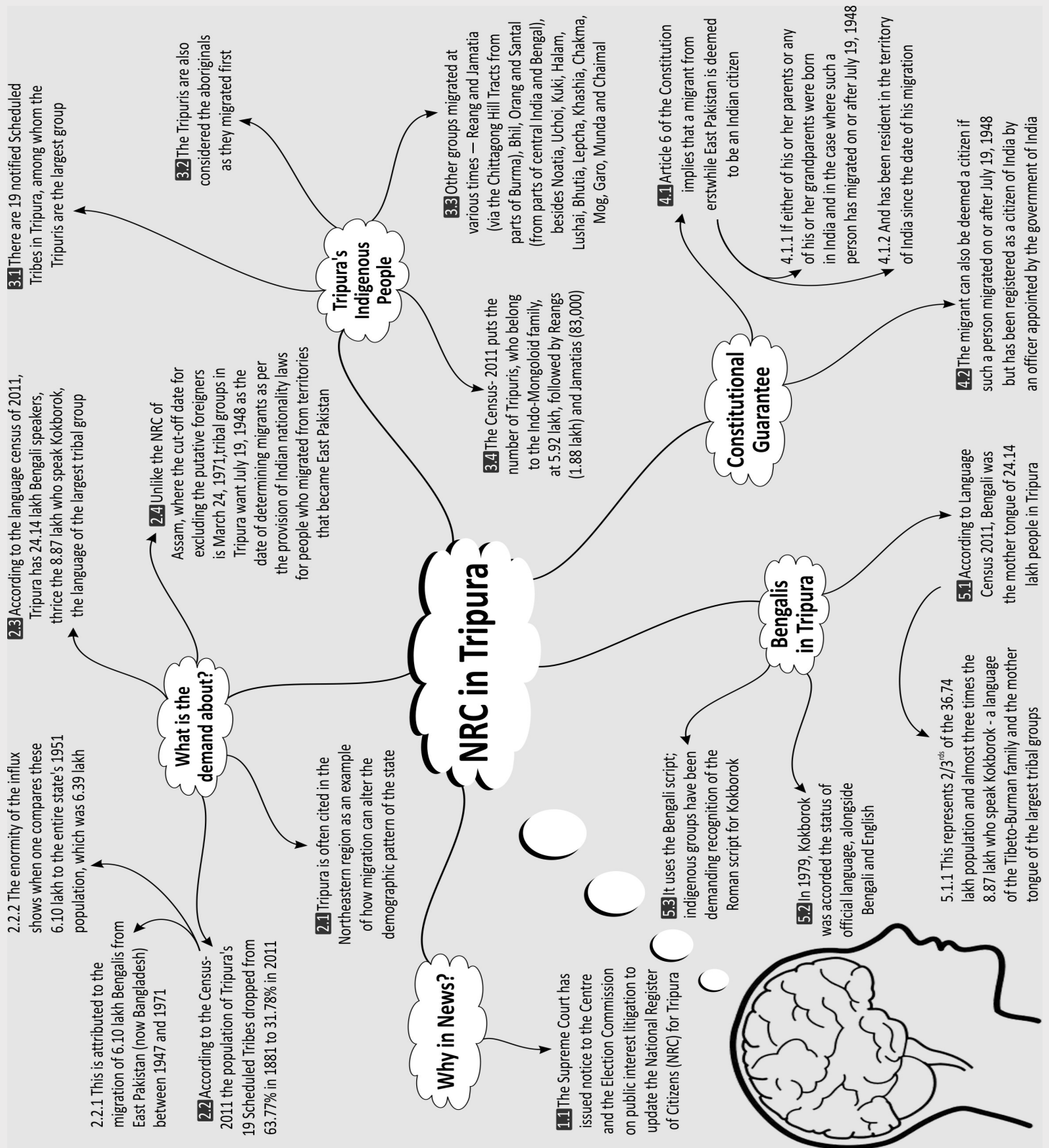
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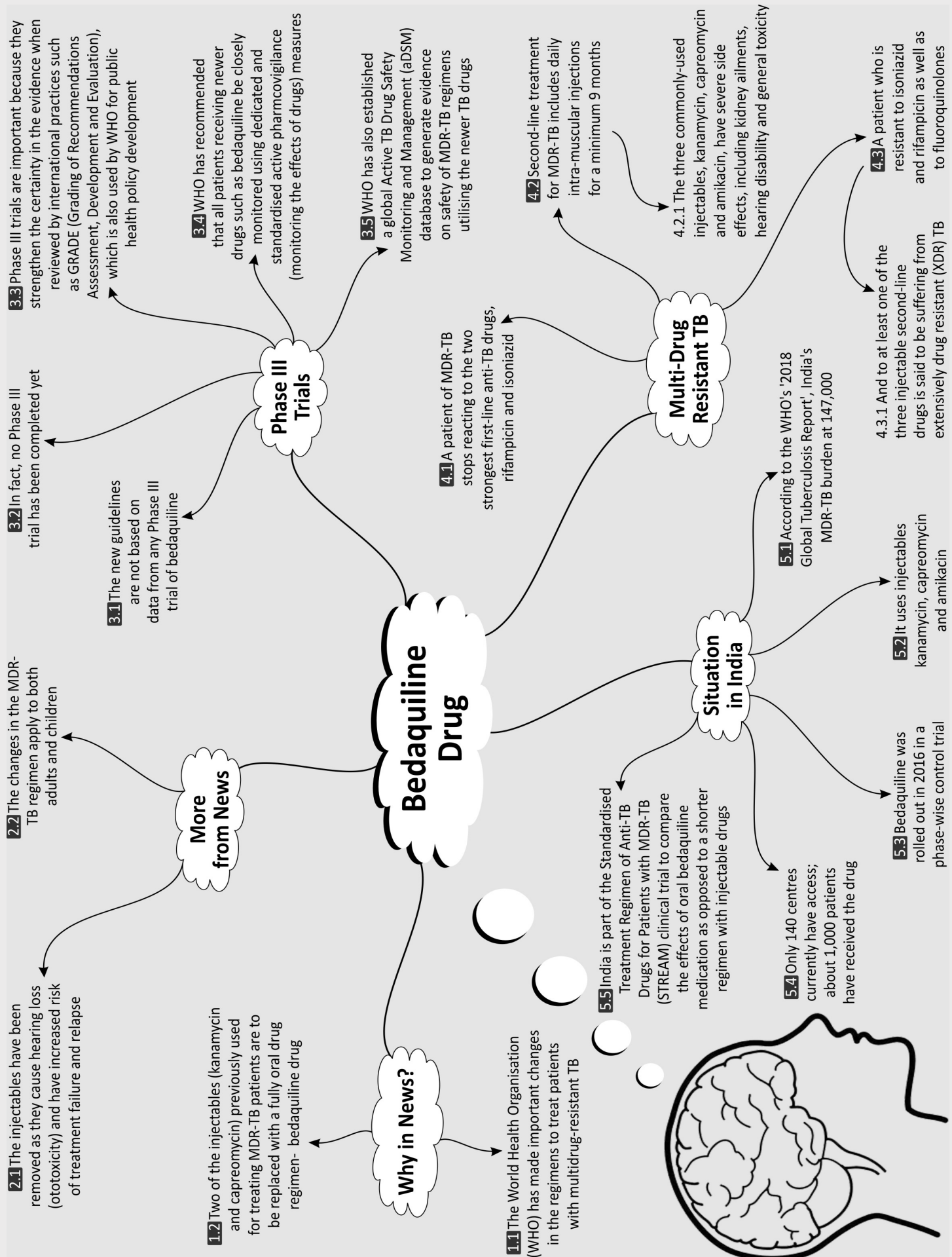
Aleksandr Kogan was able to convince 300,000 people to install a personality

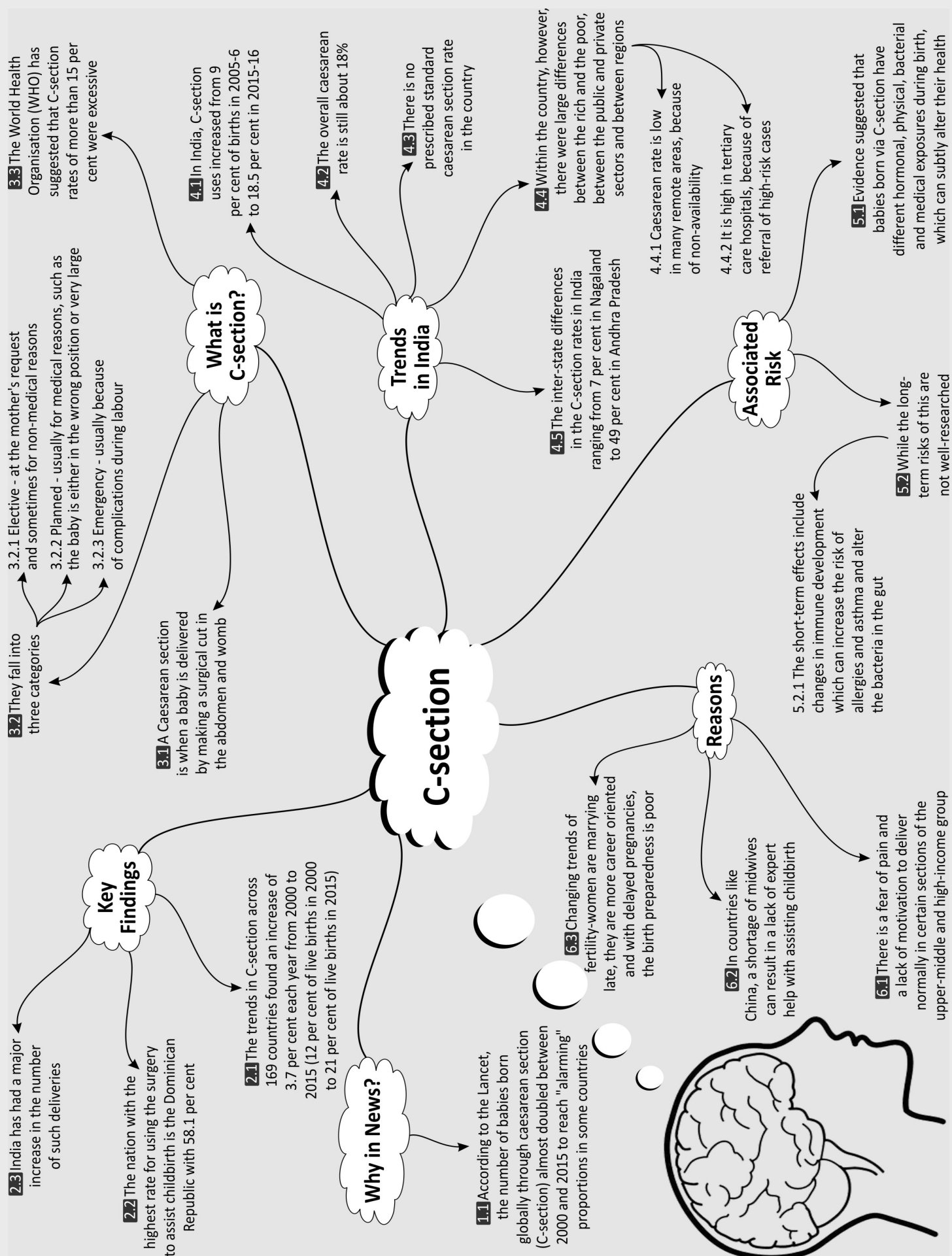
testing application that fed back the Facebook data of both users and their friends, enabling him to harvest the profiles of up to 87 million people worldwide without their knowledge. A subset of the data was later shared with other organisations, including SCL Group, the parent company of Cambridge Analytica, which was involved in running targeted Facebook adverts in US political contests, only to collapse earlier this year following a series of reports by the Observer.

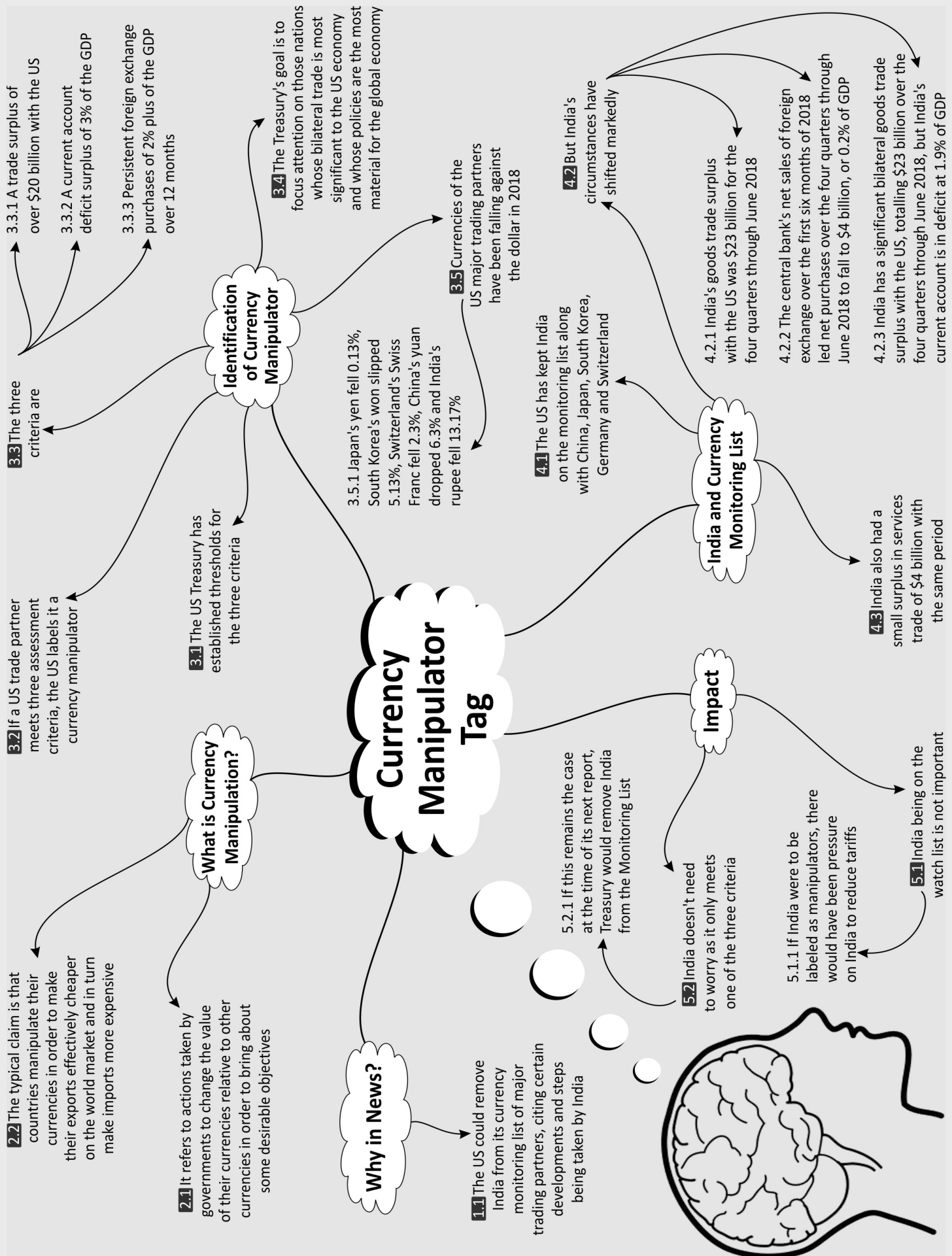
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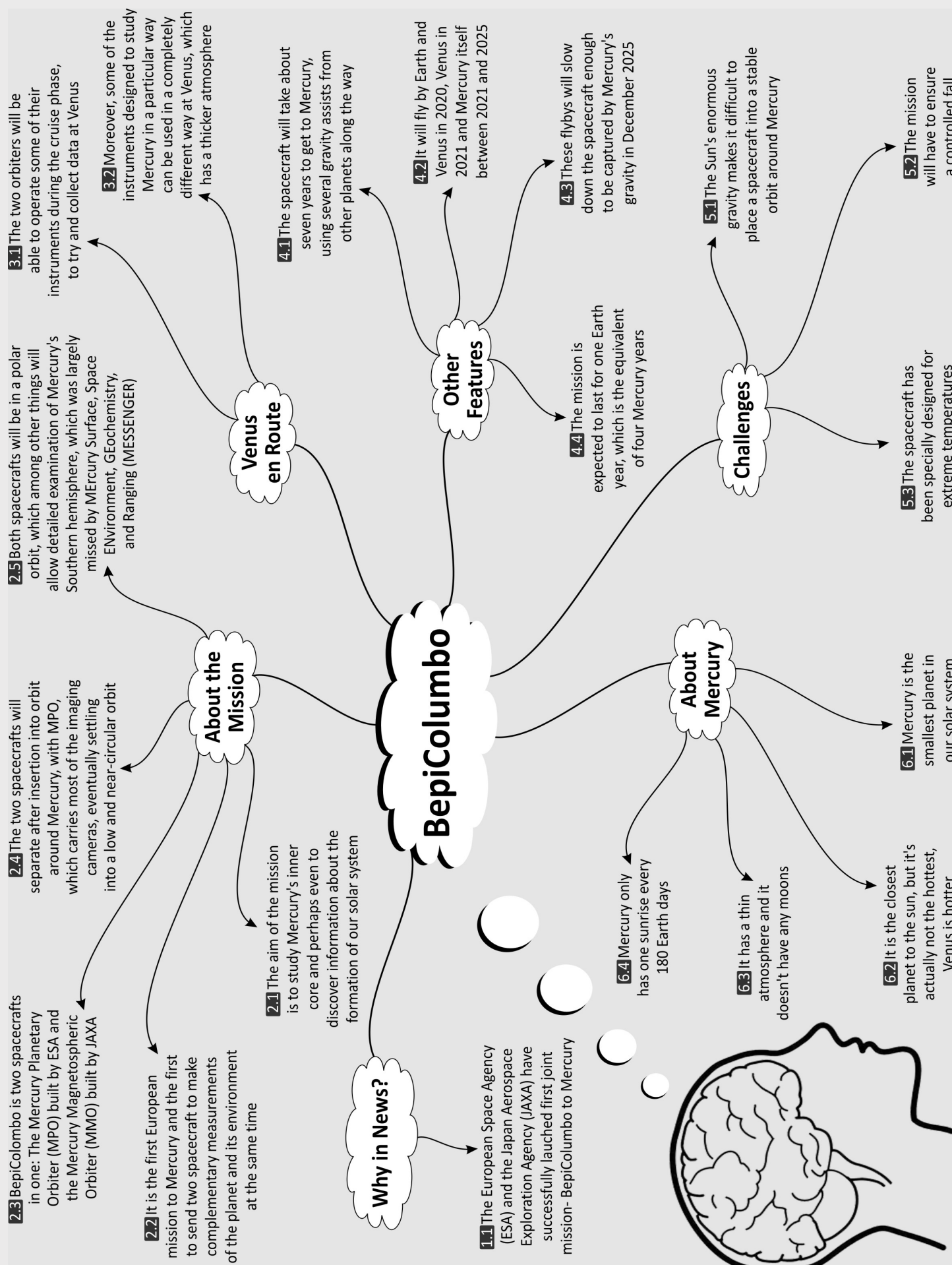
SEVEN BRAIN BOOSTERS

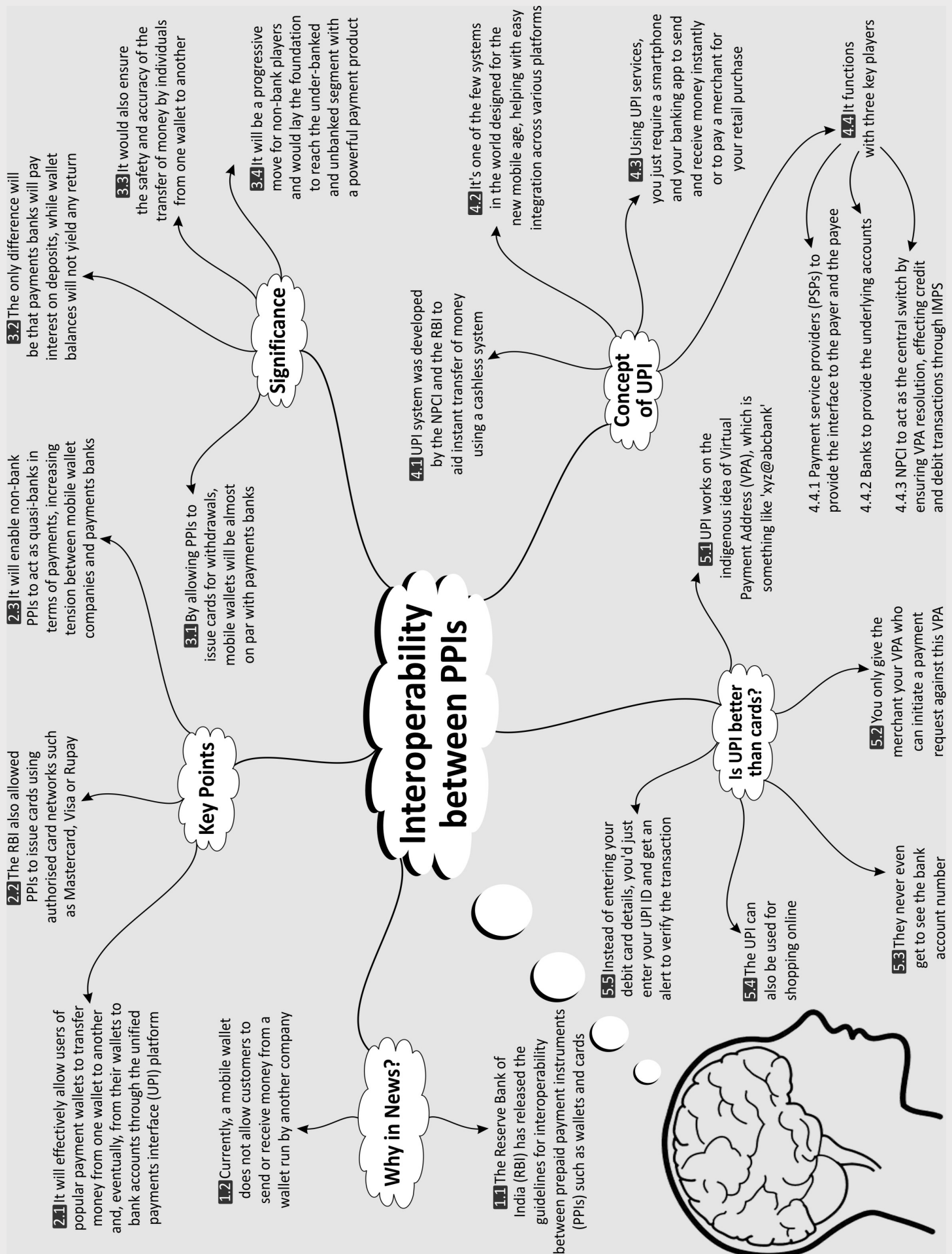


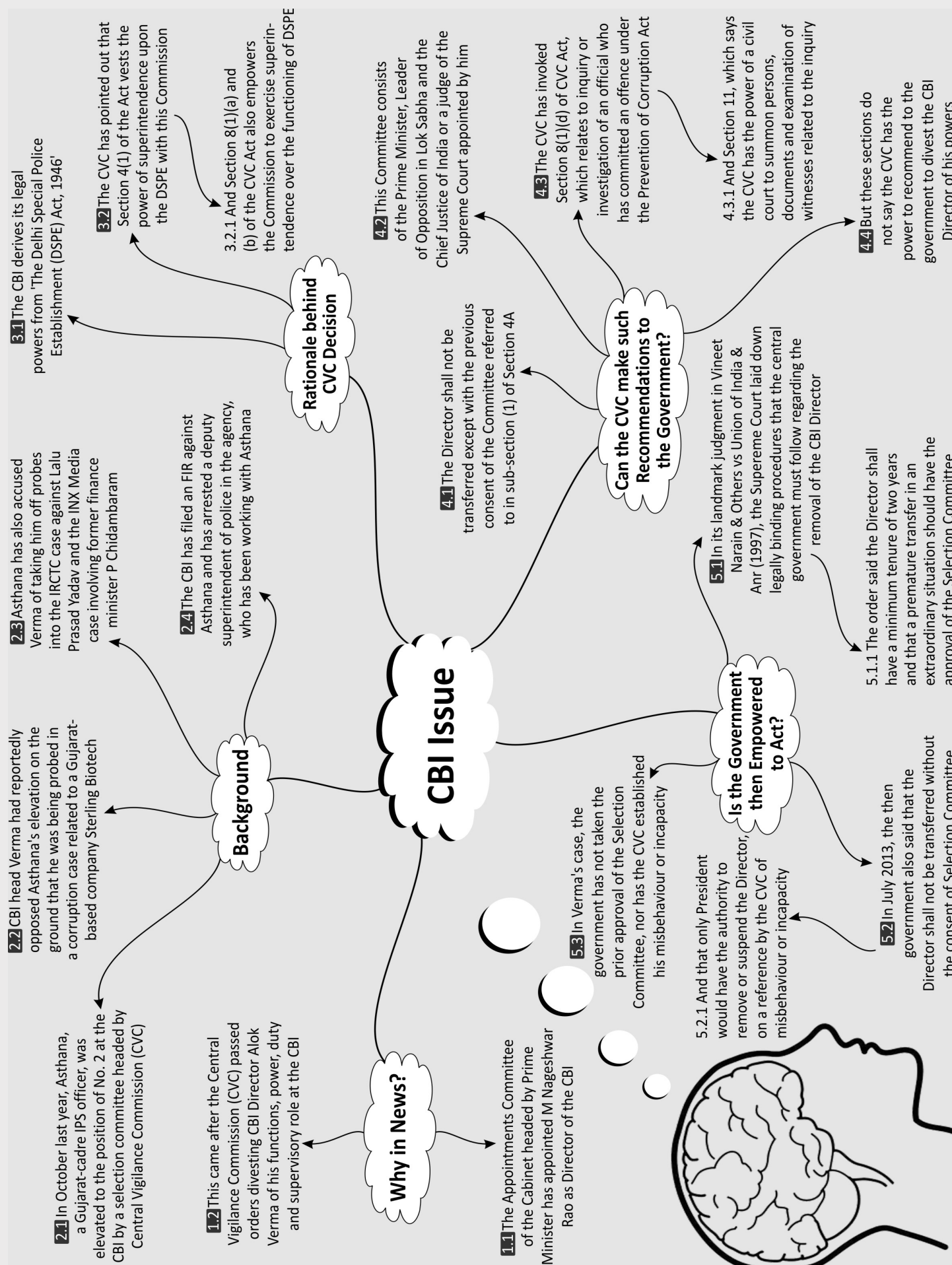












SEVEN MCQ's WITH EXPLANATORY ANSWERS

(Based on Brain Boosters)

NRC in Tripura

Q1. Consider the following statements in respect of National Register of Citizens exercise in Tripura:

1. Tribal groups in Tripura want July 19, 1948 as the date of determining migrants in accordance with Article 5 of the Constitution.
2. Kokborok is a language of the Tibeto-Burman family and the mother tongue of the largest tribal groups in Tripura.

Which of the statements given above is/are correct?

- a) 1 only b) 2 only
c) Both 1 and 2 d) Neither 1 nor 2

Answer: (b)

Explanation: Statement 1 is not correct. Tribal groups in Tripura want July 19, 1948 as the date of determining migrants in accordance with Article 6 of the Constitution. Unlike the NRC of Assam, where the cut-off date for excluding the putative foreigners is March 24, 1971, tribal groups in Tripura want July 19, 1948 as the date of determining migrants.

Statement 2 is correct. There are 19 notified Scheduled Tribes in Tripura, among whom the Tripuris are the largest group. According to Language Census 2011, Bengali was the mother tongue of 24.14 lakh people in Tripura. This represents 2/3rds of the 36.74 lakh population and almost three times the 8.87 lakh who speak Kokborok — a language of the Tibeto-Burman family and the mother tongue of the largest tribal groups.

Bedaquiline Drug

Q2. With reference to the 'Bedaquiline Drug' for the multidrug-resistant (MDR-TB), consider the following statements:

1. It will replace two of the injectables (kanamycin and capreomycin) previously used for treating MDR-TB patients.
2. Multidrug-resistant TB (MDR-TB) is TB that does not respond to two strongest first-line anti-TB drugs isoniazid and rifampicin only.

Which of the statements given above is/are correct?

- a) 1 only b) 2 only
c) Both 1 and 2 d) Neither 1 nor 2

Answer: (a)

Explanation: Statement 1 is correct. The World Health Organisation (WHO) has made important changes in the regimens to treat patients with multidrug-resistant TB (resistant to isoniazid and rifampicin). Two of the injectables (kanamycin and capreomycin) previously used for treating MDR-TB patients are to be replaced with a fully oral drug regimen- bedaquiline drug.

Statement 2 is not correct. A patient who is resistant to isoniazid and rifampicin as well as to fluoroquinolones and to at least one of the three injectable second-line drugs is said to be suffering from extensively drug resistant (XDR) TB.

C-section

Q3. Consider the following statements in respect of caesarean section (C-section):

1. The government of India has prescribed 15%- a standard caesarean section rate in the country.
2. Caesarean rate is low in certain sections of the upper-middle and high-income group.

Which of the statements given above is/are correct?

- a) 1 only b) 2 only
c) Both 1 and 2 d) Neither 1 nor 2

Answer: (d)

Explanation: Both statements are incorrect. In India there is no prescribed standard caesarean section rate. Until recently, the World Health Organisation (WHO) suggested that Caesarean section - (C-section) - rates of more than 15 per cent were excessive.

There is generally a fear of pain and a lack of motivation to deliver normally in certain sections of the upper-middle and high-income group. However, in rural or semi-urban areas, there is a non-availability of doctors, anaesthetists and paediatricians and infrastructure is also lacking.

Currency Manipulator Tag

Q4. Consider the following statements in respect of currency manipulator tag:

1. The US has kept India on the monitoring list along with China, Japan, South Korea, Germany, Switzerland and Australia.

2. Currency manipulation refers to actions taken by governments to change the value of their currencies relative to other currencies.

Which of the statements given above is/are correct?

- a) 1 only b) 2 only
c) Both 1 and 2 d) Neither 1 nor 2

Answer: (b)

Explanation: Statement 1 is not correct. India was for the first time, in April, placed by the US in its currency monitoring list of countries with potentially questionable foreign exchange policies along with five other countries — China, Germany, Japan, South Korea and Switzerland.

Statement 2 is correct. Currency manipulations refer to actions taken by governments to change the value of their currencies relative to other currencies in order to bring about some desirable objectives.

BepiColombo

Q5. With reference to the 'BepiColombo', consider the following statements:

1. It is a joint mission of the European Space Agency (ESA) and the National Aeronautics and Space Administration to Mercury.
2. The craft will follow a low earth orbit path to study Mercury's inner core.

Which of the statements given above is/are correct?

- b) 1 only c) 2 only
d) Both 1 and 2 e) Neither 1 nor 2

Answer: (d)

Explanation: Both statements are incorrect. The European Space Agency (ESA) and the Japan Aerospace Exploration Agency (JAXA) have successfully launched first joint mission- BepiColumbo to Mercury.

Both spacecrafts will be in a polar orbit, which among other things will allow detailed examination of Mercury's southern hemisphere, which was largely missed by MErcury Surface, Space ENvironment, GEOchemistry, and Ranging (MESSENGER).

Interoperability between PPIs

Q6. Recently, RBI has issued guidelines to allow payments among mobile wallets, consider the following statements in this regard:

1. It will also allow mobile wallets to issue UPI handles and cards.

2. It will also allow mobile wallet users to transfer funds from one wallet to another and from their wallets to bank accounts through the unified payments interface (UPI) platform.

Which of the statements given above is/are correct?

- a) 1 only b) 2 only
c) Both 1 and 2 d) Neither 1 nor 2

Answer: (c)

Explanation: Both statements are correct. The Reserve Bank of India (RBI) has released operational guidelines on interoperability of prepaid payment instruments (PPIs). It will allow mobile wallet users to transfer funds from one wallet to another and from their wallets to bank accounts through the unified payments interface (UPI) platform.

It will also allow mobile wallets to issue UPI handles and cards, using authorised card networks such as Mastercard, Visa or Rupay. By allowing PPIs to issue cards for withdrawals, mobile wallets will be almost on par with payments banks.

CBI Issue

Q7. Consider the following statements:

1. The CBI derives its legal powers from 'The Delhi Special Police Establishment (DSPE) Act, 1946'.
2. The CBI director shall have a minimum tenure of two years and that a premature transfer in an extraordinary situation should have the approval of the Selection Committee.

Which of the statements given above is/are correct?

- a) 1 only b) 2 only
c) Both 1 and 2 d) Neither 1 nor 2

Answer: (c)

Explanation: Both statements are correct. The CBI derives its legal powers from 'The Delhi Special Police Establishment (DSPE) Act, 1946'. Section 4B of the DSPE Act lays down the "terms and conditions of service of (the CBI) Director". The Director "shall, notwithstanding anything to the contrary contained in the rules relating to his conditions of service, continue to hold office for a period of not less than two years from the date on which he assumes office" and "shall not be transferred except with the previous consent of the Committee referred to in sub-section (1) of Section 4A". This Committee consists of the Prime Minister, Leader of Opposition in Lok Sabha and the Chief Justice of India or a judge of the Supreme Court appointed by him.



SEVEN IMPORTANT FACTS FOR PRELIMS

1. Who won the 2018 Presidential elections held in Brazil?

–Jair Bolsonaro

2. Which Indian personality was chosen for the '2018 Seoul Peace Prize'?

–Narendra Modi

3. Sahle-Work Zewde has been appointed as the first female President of which nation?

–Ethiopia

4. Which Union Minister was honoured with the 2018 Carnot Prize of Kleinman Center for Energy Policy?

–Piyush Goyal

5. India's first cruise service was launched for which route?

–Mumbai to Goa

6. Recently inaugurated National Police Memorial (NPM) is located in which city?

–New Delhi

7. The first National Sports Stadium for differently-abled is set to come up in which state?

–Meghalaya

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SEVEN IMPORTANT MILITARY EXERCISES

1. RIMPAC Exercise-2018

- ◆ The world's largest international maritime warfare exercise Rim of the Pacific (RIMPAC-2018) was held from June 27 to August 2, 2018 in and around Hawaiian Islands and Southern California.
- ◆ The theme of RIMPAC 2018 was "Capable, Adaptive, Partners."
- ◆ Four countries Brazil, Israel, Sri Lanka and Vietnam had participated for first time.
- ◆ US had withdrawn invitation of Chinese navy in response to China's continued illegal militarisation of islands in disputed South China Sea.
- ◆ Twenty-five nations, 46 surface ships, five submarines, 17 land forces and more than 200 aircraft and 25,000 personnel participated in Rim of the Pacific exercise-2018.
- ◆ This year's exercise included forces from Australia, Brunei, Canada, Chile, Colombia, France, Germany, India, Indonesia, Israel, Japan, Malaysia, Mexico, Netherlands, New Zealand, Peru, Republic of Korea, Republic of the Philippines, Singapore, Sri Lanka, Thailand, Tonga, United Kingdom, United States and Vietnam.
- ◆ RIMPAC sustains the cooperative relationships that are critical to maintaining international maritime security.
- ◆ This year's RIMPAC iteration marked the 26th in the series that began in 1971 and is now held every two years.
- ◆ The next RIMPAC is planned for the Hawaiian Islands in 2020.

2. Exercise Gagan-Shakti-2018

- ◆ The Indian Air Force (IAF) conducted pan India exercise Gagan Shakti-2018 from 08-22 April 2018.

- ◆ The aim of the exercise was real time coordination, deployment and employment of air power in a short and intense battle scenario.
- ◆ The capabilities of upgraded Mirage-2000 and MiG-29 aircraft were tested for the first time in an operational environment.
- ◆ The IAF conducted all terrain operations - desert, high altitude, maritime scenarios and special operations- in real time with specific focus on key areas like aerial combat, air to surface combat, paratrooper assault and medical evacuation.
- ◆ A major highlight of the exercise was a very high availability and reliability of all combat assets including aircraft, missile systems and radars.
- ◆ High tempo operations also enabled the IAF to ascertain sustainability of the logistics chain.

3. Exercise Khanjar-V

- ◆ The fifth Indo-Kyrgyzstan joint training exercise Khanjar-V culminated after a Joint Tactical Validation Exercise and a closing ceremony held at Counter Insurgency Jungle Warfare School, Vairengte (Meghalaya).
- ◆ The exercise involved insertion of troops by slithering from helicopters and destroying a terrorist hide out.
- ◆ The purpose of this exercise was to provide training to join forces of both countries to join the counter-terrorism campaign.
- ◆ It demonstrated the commitment of both armies in working closely with each other to address the growing issue of global terrorism in all its forms.
- ◆ The exercise was a success and has taught valuable lessons to the troops of both the countries.

- ◆ Last year this exercise was held in Kyrgyzstan during February 20th – 5th March 2017.

4. Multilateral Exercise Milan- 2018

- ◆ Multilateral exercise Milan- 2018 was held at Andaman Sea between 6-13 March, 2018.
- ◆ The theme of 'Milan-2018' was 'Friendship Across the Seas'.
- ◆ The aim of the 10th edition of the exercise was to expand regional cooperation and combat unlawful activities in critical sea lanes.
- ◆ 11 naval ships of 8 countries (Australia, Bangladesh, Indonesia, Malaysia, Myanmar, Singapore, Sri Lanka and Thailand) and nine Indian ships had participated in this exercise.
- ◆ Milan exercise was first held in 1995 with participation of just five navies (India, Indonesia, Singapore, Sri Lanka and Thailand).
- ◆ The exercise is being hosted biennially by Indian Navy under the aegis of Andaman and Nicobar Command.
- ◆ It is aimed to enhance inter-operability between participating countries.

5. Naval Exercise Varuna- 2018

- ◆ The Indo-French joint naval exercise Varuna-18 was held in Arabian Sea off Goa coast.
- ◆ It was aimed to explore measures to facilitate operational-level interactions between their armed forces and increase mutual cooperation, considering the common global threats.
- ◆ It was conducted in three segments – Arabian Sea, Bay of Bengal and South-Western Indian Ocean.
- ◆ It included anti-submarine, air defence and asymmetric engagement exercises.
- ◆ The first phase of the exercise was held in Arabian Sea.
- ◆ The second phase was held off the Chennai coast in Bay of Bengal in April 2017.
- ◆ The third phase was held near France's La Reunion Island in South Western Indian Ocean in May 2018.

6. Exercise Vajra Prahar 2018

- ◆ The joint military exercise between India and the United States was held at Joint Base Lewis-McChord (JBLM) in Seattle, USA.

- ◆ The aim of the exercise was to promote military relations between the two countries by enhancing interoperability and mutual exchange of tactics between Special Forces.
- ◆ It is an Indo-US Special Forces joint training exercise conducted alternately in India and the US.
- ◆ A 45-member Special Forces team from Indian Army's Southern Command participated in this exercise alongside US soldiers.
- ◆ Though the exercise began in 2010, there was a gap of three years between 2012 and 2015.
- ◆ The last edition was held in Jodhpur in March 2017.
- ◆ The objectives of the joint training is to share the best practices between the two armies and to develop joint strategies by sharing expertise of conducting operations in a counter-insurgency and counter-terrorism environment, while capitalising on the rich repository of experiences of each other armies.

7. Exercise Kakadu-2018

- ◆ Kakadu-2018 was a biannual joint exercise took place both ashore and at sea off the coast of Darwin, Australia.
- ◆ This year's exercise involved 27 nations, 23 ships and submarines, 21 aircraft and more than 3000 personnel.
- ◆ Indian Naval Ship Sahyadri took part in this exercise.
- ◆ The Indian Navy has won the coveted Kakadu Cup-2018 in Australia beating 22 other teams.
- ◆ Kakadu exercise is a multilateral maritime engagement hosted by the Royal Australian Navy with support from the Royal Australian Air Force.
- ◆ This biannual joint exercise which started in 1993, took place both ashore and at sea off the coast of Darwin in Australia's north.
- ◆ The name Kakadu is derived from Kakadu National Park, a protected area in the northern territory of Australia, 171 km south-east of Darwin.

SEVEN PRACTICE QUESTIONS FOR MAIN EXAM

Answer each of the following questions in 200 words:

- Q1. The Central Bureau of Investigation (CBI) has from time to time courted controversies and criticism for its handling of politically sensitive cases. Discuss why the CBI needs to undergo structural reforms to do its job well.
- Q2. At a time when Donald Trump's America is proving to be a disruptive actor, cooperation such as Asia-Europe cooperation could be a stabilizing force. Comment.
- Q3. What do you understand by 'gig economy'? One of the big trends we have seen over the last decade is the rise of the 'gig economy'—where, instead of full-time employment, organisations contract with independent workers for short-term engagements. As the gig economy keeps expanding, discuss how gig economy will mismatch the demand-supply of labour force.
- Q4. Indian non-banking financial companies (NBFCs) are particularly vulnerable to wholesale funding constraints in the form of high and volatile borrowing costs. Is it time to introduce wholesale banks in India? Critically evaluate.
- Q5. Globalization itself is evolving, with changes in global trade flows, capital flows and the Fourth Industrial Revolution. This has huge implications for India's future. How well placed is India to benefit from the new face of globalization? Discuss.
- Q6. How would the recent phenomena of protectionism and currency manipulations in world trade affect macroeconomic stability of India?
- Q7. What is Intermediate Range Nuclear Forces (INF) Treaty? Proposed US withdrawal from the three-decade-old disarmament pact with Russia presents both a challenge and opportunity for India. Discuss.

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