GS SCORE

Current ANALYST

Cover Story:

Sports
Culture
in India

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Objective

With the changing pattern of IAS and preparation methodology, now the aspirant is facing the issue of information overload. The proper articulation of information is important for penning down one's thoughts in the Mains answer.

Thus GSSCORE is coming up with "CURRENT ANALYST" – a magazine that provides material on contemporary issues with complete analysis.

The material has been designed in lucid and QnA format so that an aspirant can develop thinking process from Basic to Advance while reading the topic.

This will enhance the informative and analytical knowledge of aspirants.

All the best !!!

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COVER STORY

SPORTS CULTURE IN INDIA

Context

P V Sindhu, Sakshi Malik and Dipa Karmakar won medal at Rio Olympics, 2016. Thus the question arises about sports culture in India and Issues in its development.

Introduction

The Youth represent the most dynamic and vibrant segment of the population. India is one of the youngest nations in the World, with about 65 per cent of the population being under 35 years of age. While most of these developed countries face the risk of an ageing workforce, India is expected to have a very favourable demographic profile.

It is estimated that by the year 2020, the population of India would have a median age of 28 years only as against 38 years for United States, 42 years for China and 48 years for Japan. This 'demographic dividend' offers a great opportunity. However, in order to capture this demographic dividend, it is essential that the economy has the ability to support the increase in the labour force and the youth have the appropriate education, skills, health awareness and other enablers to productively contribute to the economy.

This demands the commitment of the entire nation to all-round development of the youth of India, so that they can realise their full potential and contribute productively to nation-building process.

Key elements of youth empowerment

Education: Educational attainment not only affects the economic potential of youth, but also their effectiveness as informed citizens, parents, and family members. Article 26 of the 1948 Declaration of Human Rights gives everyone the right to education, and further states that, Technical and professional education shall be made generally available and higher education shall be equally accessible to all on the basis of merit. It points to continuing and unacceptable differentials in

education by residence and gender. In particular, it recognizes the need to address the great disparity in primary and higher education between rural compared with urban areas, and for females compared with males. This is important for youth empowerment.

Employment: Article 23 of the Declaration of Human Rights, gives everyone a right to work, to free choice in employment, to just and favorable conditions of work, and to protection against unemployment. However, in India, employment, unemployment and under-employment are all challenging youth issues. Adequate and appropriate employment at the appropriate ages is a key to successful development and exploitation of the human capital that youth represent. India is faced with a dual challenge in this regard: on the one hand, it needs to prevent youth from entering the labour force and working in exploitative and unskilled jobs before they have had an opportunity to mature, complete their education, and develop marketable skills; and on the other, it must provide for the full and appropriate employment of the youth population that has successfully completed its education or has acquired the requisite skills and is ready to enter the labour force. A large unemployed youth population not only puts the nation at risk of instability, but also costs the country in terms of productivity and health expenses. Some research suggests that one year of unemployment among youth reduces life expectancy by about five years.

Health: Reproductive and sexual health is an important component of the overall health of all of the adult population, but is particularly cogent for the youth population. Youth is a period of life when heightened emotions, a sense of invulnerability, and

an intensively heightened sex drive often lead to high risk taking and sexual experimentation. Despite the resulting need for information on sex and sexual and reproductive health, youth, particularly unmarried youth, face many social barriers to obtaining accurate and complete information on these subjects. As a result, much preventable reproductive health related problems, including unwanted teenage pregnancies and sexually transmitted diseases (STD), persist.

Malnourished youth unlikely to contribute to their full potential to the economic growth of the nation, but their malnourishment can also threaten the health of the next generation. Another issue of grave concern among youth is substance abuse. Drug use, smoking and irresponsible alcohol consumption is common problems associated with youth. Substance abuse has many negative effects on the health of youth as well as on their educational attainment and productivity.

Sports and games have always been seen as an integral component in the all-round development of the human personality. Apart from being a means of entertainment and physical fitness, sports have also played a great role in generation of the spirit of healthy competition and bonding within the community. The achievements in sports at the international level have always been a source of national pride and prestige.

With modern sports being highly competitive, the use of modern infrastructure, equipment and advanced scientific support has changed the scenario at the national and international level.

Keeping in line with the growing demands for advanced infrastructure, equipment and scientific support, Government of India has taken several initiatives and is providing the necessary assistance to sportspersons by way of training and exposure in international competitions backed up with scientific and equipment support.

Why do we need sports?

Sports In personal life:

➤ The chief object of sports is, of course, bodily exercise. It is a famous quote, "A sound body has a sound mind". The health of the body is essential for success in life. To keep healthy, one must take an active interest in sports and games.

➤ Sports are no less important than foodgrains, fresh water and knowledge. The countries like England, Germany, France, USA, China and Japan etc. have made games as an essential part of education at school level. It is interesting to note that in some countries there are many nurseries and training

center for games. They admit boys and girls for necessary training to become future athletes, gymnasts and sportsman.

Sports In Society

➤ Sports occur in a given cultural environment and are socially structured. Human individual is a social being and he evolves in a society. An individual perform any physical activity or sports within the society only.

➤ Following are some importance of physical education and sports in society:

◻ **Sports Ethics:** Sports develop social values in individuals, which directly or indirectly enhances social ethics in an athlete. In the field of sports, ethics (fair play, respect, etc.) is highly required.

◻ **Role Play:** The process of physical education teaches us "Role play" as an important aspect. Realization and understanding the responsibilities by an individual makes the society healthy and more progressive.

◻ **Cooperation and Competition:** Cooperation and competition are two important characteristics of sports. Social interaction gives importance to both aspects and in sports both exist together. Sports teach us that cooperation is as important as competition.

◻ **Self-Discipline:** Field of sports make the individual more disciplined and determined. This trait makes the individual an asset to society.

◻ **Team Work & Group Dynamics:** To work in same team or group and putting all effort collectively to gain good performance as a team/or group require group dynamics.

What is the status of Sports in India?

History of sports In India

➤ In India, sports is defined as "one of the ways to full realisation." In the day and age of the *Rig-Veda, Ramayana* and *Mahabharata,* men of stature were expected to be competent in chariot-racing, archery, horsemanship, military tactics, wrestling, weight-lifting, swimming and hunting.

➤ The Guru-Shishya (teacher-pupil) relationship has always been an integral part of Indian sport from time immemorial. The present scenario of coaches is also a part of traditional sports. The gurus would take their shishyas under their mentorship and introduce them to sports and military tactics. The weapons of war, for instance, the javelin (toran) and the discus (chakra), were frequently used in sports.

➤ It is more than likely that many of today's Olympic disciplines are sophisticated versions of the games of strength and speed that flourished in ancient India. Chess, wrestling, polo, archery and hockey (possibly a fall-out from polo) are some of the games believed to have originated in India.

➤ Yoga was an integral part of ancient Indian culture. Yoga was practiced by almost every school of thought to achieve spiritual and mental peace. The people forgot it but now people have once again realized the importance of yoga.

➤ Chess originated in ancient India and was known as Chatur- anga – meaning four limbs. It represents four-fold division on the ancient Indian army – infantry, war elephants, cavalry and chariots. Chaturanga is the direct ancestor of shatranj, which was played by the Pandavas and the Kauravas.

➤ Ancient India claims to have been the origin of judo and karate. Kerala's martial art form Kalaripayattu is similar to karate. Those who practice it have to develop acrobatic capabilities, when using swords or knives to attack their adversaries, and even an unarmed exponent who can be a force to reckon with.

Achievements Pre-Independence

➤ With hardly any infrastructure, promotional efforts, training or coaching facilities, sports in the pre-Independence era were mere fledglings.

➤ The success at the international level was limited only to hockey in the form of three precious Olympic gold medals and to some extent polo. Some of the rulers of the erstwhile princely states were keen followers of polo and cricket and alongside them also patronised professional wrestlers. Another striking feature of India's sporting scenario is that a large number of sports are played in the country ranging from as different games as cricket to carrom, polo to billiards, hockey to chess besides traditional indigenous games like kho-kho and kabaddi. Only a few countries can boast of such a sporting diversity.

Achievement Post-Independence

➤ One notable feature of the Indian sports culture is that, their organised and systematic development took place only during the post-Independence period.

➤ India's sportspersons have generally performed well only at the Asian and Commonwealth levels and in quite a few cases at the world level as well. India's sporting icons such as chess wizard Viswanathan Anand, cricket legend Sachin Tendulkar, billiards maestro Geet Sethi, tennis duo Leander Paes and Mahesh Bhupathi and iron women Kunjarani Devi and Karnam Malleswari are currently rated among the world's best. Gopi Chand and Aparna Popat in badminton, Jaspal Rana and Mansher Singh in shooting, Chetan P. Baboor in table tennis, Narain Karthikeyan in motor racing, Jeev Milkha Singh in golf, Baichung Bhutia in football, Dhanraj Pillay in hockey and A.Maria Irudayam in carrom are some of the other contemporary Indians who have created waves with their exceptional skills to make their presence felt at the international level. All these sportspersons and many others brought prestige and splendour to the Indian sports.

➤ From the legendary era of Major Dhyanchand of his winning the 3 Olympics gold medals in the India's national sports i.e. in 'Hockey' consecutively from the 1928-1932-1936, to the Abhinav Bindra's first individual gold medal of sport in 2008 Olympics shooting and this year's one silver medal in Badminton and one bronze medal in wrestling proven the Indian sport caliber in the most prestigious form of the sport i. e. Olympics.

Awards to coaches and sportspersons

➤ **RAJIV GANDHI KHEL RATNA AWARD:**

Instituted in 1991-92 consists of medallion and a cash award Rs. 7.5 lakh given to the most spectacular and outstanding sport Persons.

➤ **ARJUNA AWARD:**

Instituted in 1961, given to players who have exhibited good performance consistently for the previous three years at the international level and have shown qualities of leadership, sportsmanship and sense of discipline.

➤ **DRONACHARYA AWARD:**

Instituted in 1985, it honors eminent coaches who have assisted national athletes and team in achieving outstanding results at international competitions.

➤ **RASHTRIYA KHEL PROTSAHAN PURUSKAR:**

For community sports development, Promotion of sports academies of excellence, support to elite sportspersons and employment to Sportspersons. It recognizes the contribution made to sports development by entities other than sportspersons and coaches.

> ➤ **PADMA AWARDS AND BHARAT RATNA:**
>
> Many Indian players are honored and awarded with the **'Padmabhushan'**, and **'Padmashree'**.

Constitutional, Legal, Policy and Institutional Framework

Sports development is a national priority, as it promotes active lifestyle, child and youth development, social inclusiveness, employment opportunities, peace and development, and above all a sense of belongingness and national pride. The Constitutional, Legal, Policy and Institutional provisions related to sports are:

➤ **Constitutional Framework:** According to the Constitution of India, sport is a state subject. The state governments in India allocate funds for developing sports and sports infrastructure as per their priority list. While being state subject, sports development comes within the purview of the States up to the state level, at the national and international level, (including meeting international treaty obligations), it falls within the realm and remit of the Union Government under its residuary powers and within the ambit of Entries 10 and 13 of the Union List in the Seventh Schedule of the Constitution of India.

➤ **Legal Framework:** Globally, countries across the world have enacted laws or enunciated guidelines for the regulation of sports in public interest and in national interest. The need to regulate sports arises out of several considerations such as the need to prevent racism in sports, eradicate doping in sports, prevent age fraud in sports, protect athletes' rights, prevent child abuse and sexual harassment in sports, protect gender equality in sports, prevent betting and gambling in sports, ban dangerous sports, promote professional management and managerial and financial accountability in sports, address anti-trust and competition policy issues related to sports, regulate sports broadcasting rights, regulate the price and entry to sports events, etc.

➤ **Policy Framework:** Government of India has been, from time to time, took various steps and initiatives to promote good governance practices in the management of sports at the national level in pursuance of successive National Sports Policies.

➤ **Institutional Framework:**

◻ **Ministry of Youth Affairs and Sports-(MYAS)** is responsible - to determine the eligibility conditions for recognition of National Sports Foundations (NSFs), to determine scale of assistance to NSFs and to lay down conditionalties which NSFs will have to fulfill if they wish to avail themselves of Government support.

◻ **National Sports Federations** NSFs are fully responsible and accountable for the overall management, direction, control, regulation, promotion, development and sponsorship of the discipline for which they are recognized by the concerned International Federation. They are expected to discharge these responsibilities in consonance with the principles laid down in the Olympic Charter or in the charter of the Indian Olympic Association.

◻ **Sports Authority of India** provides the necessary support to NSF for the identification, training and coaching of sportspersons, including provision of infrastructure, equipment and such other assistance. Further SAI will also be responsible to release funds to NSFs against proposals approved by the Government. Release of funds to IOA shall, however continue to be made by the Ministry.

◻ **National Olympic Committee (NOC),** i.e., the Indian Olympic Association (IOA) is the body responsible for selecting athletes to represent India at the Olympic Games, Asian Games and other international athletic meets and for managing the Indian teams at the events. It also acts as the Indian Commonwealth Games Association, responsible for selecting athletes to represent India at the Commonwealth Games.

◻ **National Anti Doping Agency (NADA)** is responsible for promoting, and monitoring the doping control programme in sports in the country- this is compliant with the Anti Doping Code of World Anti Doping Agency (WADA).

Initiatives taken by government

➤ Creation of **Regional Sports Federation** and their recognition, categorization of sports disciplines to make them eligible for assistance based on their performance, categorization of sports disciplines and recognition of 'yoga' as a sport discipline.

➤ **Special Area Games** aims at scouting natural talent for modern competitive sports and games from inaccessible tribal, cash award rural and

coastal areas of the country and nurturing them scientifically for achieving excellence in sports.

➤ **Centers of Excellence government runs schemes** to identify and train outstanding sportspersons who are medal prospects for the country in international competitions.

➤ **Laksmibal National University of Physical Education** is a nodal institute provides the graduate, post graduate and Doctorate Degree courses in Physical education.

➤ Government of India provides **assistance to National Sports Federations (NSFs)** for conducting National Championships and International Tournaments in India, participation in international tournaments abroad, organizing coaching camps, procuring sports equipment, engagement of foreign coaches and disbursement of salaries of the paid Joint/Assistant Secretaries through the scheme of assistance to national sports federations and other schemes.

➤ The Ministry of Youth Affairs and Sports has revised the existing 'Scheme relating to Talent Search and Training' and renamed it as **'Scheme of Human Resources Development in Sports'**. Under the revised Scheme, the Government intends to focus on developing human resources in sports sciences and sports medicine, sports coaching/umpires for the overall development of sports and games in the country. This will help the country be self reliant in these fields over a period of time in general and meet the requirements of the proposed National Institute of Sports Sciences and Medicine in particular.

➤ The **National Sports Development Fund** (NSDF) was instituted by the Central Government with a view to **mobilise resources from the Government as well as non-governmental sources**, including the private/corporate sector and non-resident Indians, for promotion of sports and games in the country. To make contributions to the fund attractive, 100 per cent exemption from income tax is available on all contributions. Further, Government contribution is on matching basis to the contributions received from other sources.

All India Council of sports

➤ This is the advisory body for the Ministry of Youth Affairs and Sports working in the field of popularizing sports among the youth as a way of life, increasing outreach of sports to rural and tribal areas, areas affected by Left Wing Extremism (LWE), North East and Jammu and Kashmir.

➤ Integration of sports in educational curriculum in schools, colleges and universities, Welfare measures for sportspersons; issues and matters specifically referred to the Council by the Ministry of Youth Affairs & Sports.

Khelo India

➤ 'Khelo India' Scheme has three components viz., competitions, talent and sports infrastructure. Objectives of the scheme are mass participation of youth in annual sports competitions through a structured competition, Identification of talent, guidance and nurturing of the talent through existing sports academies and new set up either by the central Government or State Government or in PPP mode and creation of Sports Infrastructure at mofussil, Tehsil, District, State levels, etc.

➤ The competitions above the age group of 36 are also proposed keeping in mind the general health and well-being of adult population so that overall economy of the country gets a boost due to reduction of lifestyle and other diseases like obesity, diabetes, etc. by adopting the physical activities and participation in these sports competitions.

➤ There shall be a separate set of competitions for physically challenged candidates. The competitions will be 100% funded by Centre and it will be Central Sector Scheme.

Initiative for disabled

➤ Persons with the disabilities are encourage and trained under the various schemes run by the government. India has achieved an exceptional laurels in this field at the national and international levels in different fields. Government gives assurance of their employment in the government jobs like, Indian railways, ONGC, etc.

National playing fields association of India

➤ The main objectives of NPFAI are to protect, preserve, promote, develop and improve playing fields and open spaces and other facilities for sports and games; and to evolve a national policy on playing fields, playgrounds, play pitches, parks and open spaces.

What are the current achievements at International forum?

Olympics – Recent Updates

➤ Sakshi Malik (freestyle wrestler) won the bronze medal in the 58 kg category, becoming the first Indian female wrestler to win a medal at the Olympics and the fourth female Olympic medalist from the country.

➤ PV Sindhu became the first Indian woman to win an Olympic silver medal.

➤ Deepa Karmakar is the first Indian female gymnast ever to compete in the Olympics, and the first Indian gymnast to do so in 52 years.

Fig. 1

Paralympics – Recent Updates

➤ The Rio 2016 Paralympic Games got India two golds, a silver and a bronze medal – four medals in all.

➤ Devendra Jhajharia – The gold medallist in javelin this year, had won a gold medal at the 2004 Summer Olympics in Athens too.

➤ Mariyappan Thangavelu created history by winning a gold medal in the men's high jump T-42 event, with a leap of 1.89 metres, thereby putting his Periyavadagampatti village in Tamil Nadu's Salem district on the world map.

➤ Varun Singh Bhati, who jumped a personal best of 1.86 metres to clinch bronze in the men's high jump T-42 event, faced a lot of hardships before achieving the historic feat.

➤ Deepa Malik - A historic silver medal ensured Deepa Malik scripted history; she won second place in the women's shotput event at the Rio Paralympics with a personal best throw of 4.61m.
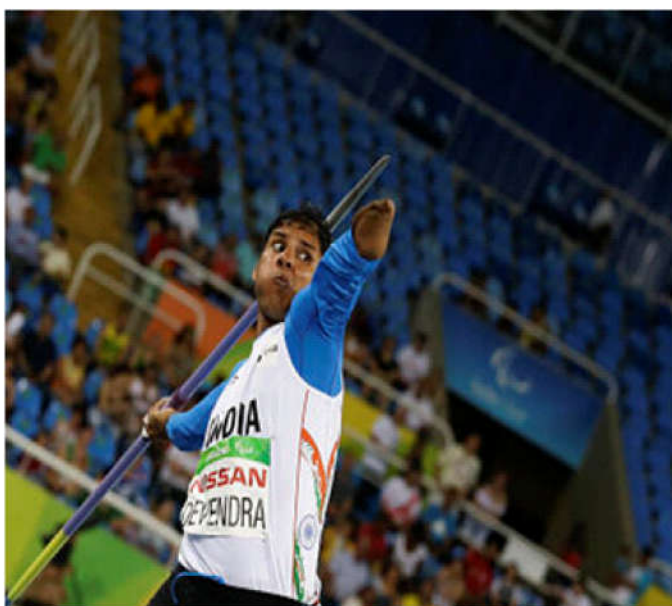

Fig. 2

Fig. 3

In light of recent achievements, we should not just be celebrating and awarding those accolades, but looking at where we fell short in the treatment of our athletes, and making sure that we do better next time, that we prepare better, and give them the kind of treatment they deserve.

What are the issues and challenges involved in Indian Sports?

➤ Sports in a democratic country cannot thrive merely with State help. The role of the sports bodies is crucial in this regard as it is only they who have to plan, promote, propagate and develop their respective games.

➤ Though the detractors of the Indian sportspersons usually attribute their below par performances to poor stamina, lack of killer instinct and motivation, there are several other factors, too such as lack of adequate knowledge, about the latest developments in the sports medicine and technology, non-availability of modern sports equipment at affordable prices and absence of innovative coaching methods.

Poor Sports Infrastructure, Facilities and Amenities

➤ Sports infrastructure plays a crucial role in achieving excellence in the global arena of sports. It not only helps in producing sportspersons of international repute, but also encourages the youth population of a country to participate in sporting activities to create a culture of sports. In India, the standard of sports infrastructure is not at a satisfactory level for a number of reasons such as

a) The state governments in India allocate funds for developing sports and sports infrastructure as per their priority list. There is no unique approach in developing sports infrastructure throughout the country.

b) Although, India is having a few world class stadiums and the availability of sport coaches in the country still India is lacking to cope up with the international standards and availability of the best sport amenities.

c) Hockey is India's national sport but the way it has lost its importance in the field of its emergence in grassroots levels and the spreads across the every part makes it forbidden in some sort. Hockey is performing very poor play at the international levels. It is the fact which is lacking through the infrastructure and proper training facilities. No sport in India except cricket is well managed.

Spend More on Athletes & Less on Comforts for Ministers

➤ While there were cases of Indian athletes having to travel in economy class, and arrive at Rio without much aid from the IOC, the ministers and bureaucrats all came to the Olympics in their traditional luxurious way.

Sportspeople Deserve Better Treatment

➤ A number of sportspeople are forgotten by the ministry and media once the games are over – unless they have won a medal, in which case they get to stay in the limelight for longer. For true development of sports, India needs to start caring better for its sportspeople and their families, a number of whom come from poverty. Flight tickets, accommodation, world class training, stability and help for their family is the least they deserve.

Population Does Not Equate To Medals & Success

➤ This is for all those who say India does not win despite having such a large population. Achievements will not come until there is a proper strategy in place for developing sports and helping aspiring sportspeople grow in the nation.

Sports Divide

Fig. 4

➤ Cricketers in India are given so much attention by the media and the advertising companies. Even in terms of incentives, the other sportsmen lag far behind the cricketers.

Coaches are not well paid

➤ The Indian sportspersons are really eager to learn - the technical, the physical and mental aspects of the game everyday but they lack guidance as the coaches are not well paid by the government of India.

Doping issues

➤ Recently, Inderjeet Singh has been tested positive with his A sample testing positive for two weak steroids used to build muscular strength and energy whereas in sample B, he was tested negative. Also, Narsingh Yadav's both A and B dope samples have returned positive. He has been placed under provisional suspension.

Harassment of women in sports

➤ Sexual harassment and abuse happen in all sports and at all levels. Prevalence appears to be higher in elite sport. Members of the athlete's entourage who are in positions of power and authority appear to be the primary perpetrators. Peer athletes have also been identified as perpetrators.

What should be the future strategy to become sports superpower?

Administrative Effectiveness

➤ Clear role delineation between NSFs, SAI and the Government.

➤ Detailed guidelines for preparation of Long Term Development Plans (4-year cycle). Provision made for annual sanction budgets of development plans.

➤ An emphasis on professionalizing and upgrading the administrative and financial management of Federations.

➤ An emphasis on systems to handle players' grievance.

➤ Grouping of sport disciplines into — priority, general and others for the purpose of determining the entitlement for government assistance.

➤ Recognition of the role of sports promoters, particularly in event management.

➤ Prevention of sexual harassment of women in sports, etc.

➤ Guidelines for efficient management of Coaching Camps.

➤ Better procedures for Selection of Coaches, Selection of Athletes, etc.

Sports as a career

➤ With the results of Indian contingent in the latest Olympics held in Rio, there is a question starting to regain its old heights: "What can inspire future generation to take sports as a career in India? Straight answer is - Better Education system, Family orientation and improved Government support is the key to inspire youth to take sports as a career.

➤ Improvement of these two things- knowledge and awareness can be the starter steps for making India a sporting giant.

Better Incentives

➤ Increase the salaries of coaches and other related staff, introduce a transparent scouting system and make sure those with the potential do not have to worry about their future as a sports person.

Engaging Private Sector

➤ There is need for channelizing more funds for creating sports infrastructure, training of potential sportspersons and in engaging world class coaches. Government also wants corporate to use the excellent facilities available with the stadia for the meetings. Also, the government is working out various schemes for encouraging peoples' connect for these stadia by creating facilities for jogging, walking, cycling, etc.

Sports as a developing industry in India

➤ Sport is regarded as one of the largest industries globally in terms of employment and revenue. The Business of Sports is a multi-billion dollar global industry propelled by enormous consumer demand. The sports business means many different things to different people. This is a truly global industry, and sports stir up deep passion within spectators and players alike in countries around the world.

➤ In the past, it was just a loss-making affair in India, but now, sport is going to be the next big industry in India. In developed countries, sports contribute around 2 to 4 percentage of total employment. Today, sport's contribution to India's total employment is just 0.05%. Initiatives such as professional leagues of developed sports, commercialization of underdeveloped sports, professionalization of heritage sports and increased corporate sector investments, sports industry expects a faster growth in shorter time frame. It has the potential to overtake IT and related industries before 2020 in every aspect. The sports goods industry in India is nearly a century old and has flourished due to the skills of

its workforce. Being labor-intensive in nature, the industry provides employment to more than 500,000 people. The nucleus of this industry in India is in and around the states of Punjab and Uttar Pradesh. Jalandhar in the state of Punjab and Meerut in the state of Uttar Pradesh account for nearly 75% of total production. The Indian sports goods industry also has a presence in the cities of Mumbai, Kolkata and Chennai, albeit at a lower scale.

Fig. 5

Sports Leagues for promotion of Hockey Football and Kabaddi

➤ It is time for sports leagues to take off in India. After the roaring success of Indian Premier League Twenty20 (IPL) cricket, film stars and business houses have lined up to invest in new set of sports in the country like Pro Kabaddi League, ISL Indian Football league, etc.

Media Attention

➤ We need the media to come to the fore-front and help re-vitalize the sports that have gone down the popularity charts. The channels need to show live coverage of various games promote the sports culture in India.

Better Women participation

➤ Our Women were truly super in the recent Rio Olympics. The new sportswomen generation is needed to achieve the reigns and encourage the coming generations. The new winners made women, visible in the social space as will.

➤ The female sensation in badminton today are P.V. Sindhu, Saina Newhal, Sakshi Malik, etc. Similar legendary sportswomen are Karnam Malleshwari,

Anju Bobby George, Anjum Chopra, Mary kom, P.T. Usha and Sania Mirza. The fact is that, all the girl players enthusiastic and concerned with sports. They wanted not only to work but also to see a career in sports. Empowerment in this sense refers to the surgical procedure through which women gain the self-confidence, strength, and in some contexts the information and skills, needed to clear strategic choices to improve their spirits.

Niti Aayog draft action plan for improving India's performance at Olympics

With an aim to improve India's medal prospects in the future and to ensure that the country wins at least 50 medals at the 2024 Olympics, Niti Aayog has come out with a 20-point plan of action.

The action plan has been divided into short term and long term initiatives. These are:

➤ Prioritise 10 sports and develop an outcome oriented action plan for each of these sports similar to countries like Kenya and Jamaica participate in only two Olympics sports but have managed to get a medal tally of 100 and 78 respectively. The 10 priority sports should be ones with high winning potential, as well as those in which India has won medals in the past.

➤ There is a need for scouting natural sports talent from inaccessible tribal, rural and coastal areas of the country and nurturing it to excel. With the funding being very low at Rs 12,000 per annum, it has demanded that rigorous efforts be made to increase the pool of financial resources for these players to attract more people from remote areas.

➤ It has recommended for hiring more national and international coaches per sport and putting in place a "well-defined and transparent selection criteria".

➤ It has also suggested implementing a sports injury insurance scheme which should be open to all categories of sportspersons and provide them with life time insurance between the ages of 5 to 35 years in addition to providing families compensation, in case of loss of life.

➤ Niti Aayog has also called for strengthening and scaling up of the 56 existing Sports Authority of India (SAI) training centres.

It has also demanded that a grievance redressal system be put in place so that children, and in particular girls, do not encounter abuse.

➤ It has recommended for creation of more sports academies. These academies should provide a platform for sub-junior, junior and senior players to get expert guidance on all aspects related to their physical and psychological training under one roof," it said.

➤ It has recommended heavy investments in marketing and advertising tournaments, encouraging movie stars to endorse sports leagues in priority sports, allowing private companies or PSUs to acquire naming rights and making leagues more spectator friendly

➤ Niti Aayog has also spoken extensively in favour of encouraging development of sports infrastructure through private or public private partnership mode (PPP).

Conclusion

➤ Current status of sports is just the start and the work has to be carried further to promote sports in every field of discipline. We need to promote sports, not just as a good career but as a good business proposition too.

➤ People often cite lack of government support, training and infrastructure. But one thing we often forget is personal passion, dedication and years of hard work. India has talent and all that is required is motivation, appropriate conditions and quality training and of course, recognition and appreciation after the victory. But above all those keen on winning gold in Olympics must have fire inside along with dedication and persistent hard work. After all ultimately it is human body which wins gold.

➤ Improvement of these three things- Infrastructure, knowledge and awareness and incentives can be the starter steps for making India a sporting superpower.

➤ A simple and systematic approach can resolve many problems. Overnight we can't become a superpower. But yes better government assistance, slow steady and honest system will be a major factor in ensuring that India becomes a super power in the sports by 2020.

SPECIAL ISSUES

COLLEGIUM SYSTEM AND JUDICIAL APPOINTMENTS IN INDIA

Context

The differences between the judiciary and the government over transfer and appointment of judges are going on after the striking of NJAC as unconstitutional by the Supreme Court.

The appointment of judges to the Supreme Court of India and the High Court has over the years been a subject of intense conflict between the judiciary and the executive due to the opaque system of appointment.

What are the Constitutional provisions related to the appointed of judges?

Article 124(2) and 217(1) provide procedure for appointment of judges in higher judiciary.

Article 124(2) reads *inter alia* thus:

Every Judge of the Supreme Court shall be appointed by the President by warrant under his hand and seal *after consultation with such of the Judges of the Supreme Court and of the High Courts in the states as the President may deem necessary for the purpose and shall hold office until he attains the age of sixty-five years:*

Provided that in the case of appointment of a Judge other than the Chief Justice, the Chief Justice of India shall always be consulted.

Article 217(1) provides that *every Judge of a High Court shall be appointed by the President by warrant under his hand and seal after consultation with the Chief Justice of India, the Governor of the State, and, in the case of appointment of a Judge other than the Chief Justice, the Chief Justice of the High Court*, and shall hold office, in the case of an additional or acting Judge, as provided in article 224, and in any other case, until he attains the age of sixty-two years.

Article 124(2) talks about two type of consultation. One, being discretionary on the part of the President and the other being mandatory under the provision. Under Article 217(1) the process of 'consultation' by the President is mandatory and this clause does not speak of any discretionary consultation.

Under the DPSP, Article 50 states that, 'The State shall take steps to separate the judiciary from the executive in the public services of the State.'

Means separation of judiciary and executive and excluded any executive interference in the matter of appointment to safeguard the Independence of Judiciary.

What is Collegiums System?

➤ In India, the system of appointment of judges is a 22 years old Court framed Collegium system. The Collegium system of appointment of judges is popularly referred to as Judges-Selecting-Judges.

➤ The Collegium system was created by two judgements of the Supreme Court in 1990s in which a body of senior apex court judges headed by the Chief Justice of India selected persons and recommended their names for appointment as judges.

➤ Under the Collegium system of appointment and transfer of judges of high courts and the Supreme Court, the chief justice of the respective high courts and two other senior-most judges of the court comprise a Collegium empowered by virtue of a 1993 judgment of the Supreme Court to identify suitable candidates, do due diligence and recommend for appointment as judges of the court.

➤ The shortlisted candidates are scrutinized by collegiums of five senior-most judges of the apex court headed by Chief Justice of India (CJI) before being cleared for appointment. The same collegium of the apex court identify serving judges and chief justices of high courts for elevation to the Supreme Court.

➤ There is no mention of the Collegium either in the original Constitution of India or in successive amendments.

➤ According to the collegiums, the upper age limit should be pegged at 55 years for elevation. The government is of the view that while deciding to make additional judges of the HC the collegiums is not "strictly complying" with the existing procedure.

A JURY OF JUDGES

WHAT IS THE COLLEGIUM SYSTEM?

		CRITICISMS
● A forum which decides on **appointments, transfers (A/Ts)** of judges.	● Born from 'Three Judges Cases' which gave **primacy to CJI's call** on A/Ts	● **Administrative burden** of checking professional background data
● Comprised of Chief Justice of India, 4 **Supreme Court judges**	● Judiciary gets **greater say than Executive** on A/Ts	● **Closed-door affair, lacks transparency**
● President merely **approves** CJI's choice		● **Exclusivity** sidelines talented junior judges, advocates

SOME OF THE CHANGES SOUGHT:

● CJI cannot make **unilateral choice**
● Consulted **judges' views** need to be in writing
● **Non-compliance** must make CJI choice **non-binding**
● **Transfer of judges** reviewable only in case of non-compliance

Fig. 6

Important cases in the virtue of the collegial system

➤ In the judges transfer case, S. P. Gupta vs. Union of India 1981, Record Association vs. Union of India-1993 and Special Reference 1 of 1998 are the three cases which unfold the principle of judicial independence.

➤ It laid down the norms that no other branch of the State apart from the Judiciary that is Legislatives and the Executives, predominate the authority in the appointment of the judges.

➤ Based on the judgment in the second judges case 1993, the Supreme court then created the collegiums system which continue till today. The third judges' case of 1998 is an opinion delivered by the Supreme Court of India responding to the question of law regarding the collegiums system raised by former president of India K.R. Narayanan under the presidential constitutional power.

What are the issues and their implications?

The mode of selecting the judges or the Collegiums system is neither mentioned in the original Constitution of India nor in the successive course of the Amendments. This back stage system resulted into the conflicts between the Parliament and Judiciary and termed as controversial by legal scholars and jurist within/out India.

The collegium system has failed to create an unbiased system for making the appointments of the judges of the Supreme Court and the High Courts and many voices from the legal fraternity have been demanding its replacement.

Justice A K Patnaik, who stepped down as a Supreme Court judge a couple of years ago after serving as a judge in various capacities for two decades, had this to say: "Many competent persons have often been ignored and those who were close to members of the SC Collegium were chosen because there was no objective assessment whatsoever while making the selections."

In the year 2013, The Public interest litigation (PIL) was filled by one NGO to challenge the Collegiums system of appointment of the judges. Later the Chief justice of India P. Sathasivam was against any attempt to change the collegiums system.

In May 2013, the judges of the Punjab and Haryana High Court protested the elevation of nine advocates as judges of the High Court. They alleged that the independence and integrity of the judiciary has been put at stake by the Collegiums while giving recommendations, because the decisions of the Collegiums seem to have been based on considerations other than merit and integrity of the candidate. These judges further wrote that it has now become a matter of practice and convenience to recommend advocates who are the sons, daughters, relatives and juniors of former judges and Chief Justice.

The implications of such degradation are that the judges are selected on criteria such as caste, religion, office affiliations, political considerations and even personal interests and quid pro quo. The result of this is the poor quality of judges and judgments. It resulted in delay in the judgment delivery, lack of clarity and clear reasoning in judgments, lack of knowledge of even basic principles of law and lack of ability and willingness to learn and ghost writing of judgments.

The Collegiums system of the appointments also raises demands for transparency and openness in the appointment process because of the secrecy shrouding the appointments. The issue is not who appoints the judges but how they are appointed. As long as the process is opaque and appointments are made on personal considerations, there will be problems of favoritism, corruption, nepotism and appointments on criteria other than merit and capacity.

Issue of standardization

The pool of eligible candidates for judicial selection is partly determined by the Constitution. The Constitution does not speak about standards of integrity, propriety, competence, independence, etc. as qualifications essential for judicial selection. Apparently, they are taken for granted and left to the selectors to assess them by whatever means available to them.

Collegium judges say they know the qualities of the men and women practising before them and no one else can claim better knowledge about this. But there is no verifiable method of creating a pool of eligible persons for consideration.

The system of examination and interview employed in the selection to the lower judiciary is perhaps not acceptable either to judges or to advocates. In the circumstances, a transparent procedure is to prescribe the norms and standards expected of candidates seeking to be appointed as judges and invite applications from them.

Alternatively, they can be nominated by retired judges, senior advocates, bar councils or bar associations, etc., testifying to their possession of qualifications prescribed. On receipt of applications, a system of shortlisting based on comparative merit, again according to pre-determined norms and procedures, can follow to identify those who are meritorious. Both the original list of applicants/nominees and those shortlisted along with their details can be posted on the website of the court for a reasonable period to elicit objections, if any, from the government as well as the public. There can be a technical committee of retired judges to shortlist the applications and to respond to objections/grievances in the initial stage of selection. This part of the procedure should be open to Right to Information Act queries as well.

What is National Judicial Appointment Commission (NJAC)?

➤ In 2013, Rajya Sabha has passed the Constitutional Amendment Bill, involving the amendments of the Article 124(2) and 217(1). Amendment made way for the creation of Judicial Appointment Commission for the appointment of higher Judiciary posts on the recommendation of the President.

➤ For scrapping the collegiums systems of appointment of judges, Rajya Sabha passed the National Judicial Appointment Commission (NJAC) Bill, 2014 and in 2014 the National Judicial Appointment Commission Act, 2014 was enacted. The appointments remained frozen for nearly a year when the Supreme Court scrutinized the constitutional validity of the proposed NJAC.

Fig. 7

What is the stand taken by Supreme Court on NJAC?

By a majority of 4:1, Supreme Court has struck down the 99th Constitutional Amendment (NJAC Act) and restored the previous collegial system stating that, NJAC is interfering with the autonomy of the judiciary by the executive. NJAC Act consists of manipulating of the 'BASIC STRUCTURE OF THE CONSTITUTION', where parliament does not have any right to change the basic structure. Furthermore, Supreme Court recognizes the fact that, the Collegiums system of judges appointing judges is lacking transparency and credibility which would be rectified by the judiciary.

In wake of this issue, Supreme Court to draft the Memorandum of Procedure (MoP) on the ground of previous MoP dealing with:

➤ Appointment of Chief Justice of India and other Judges of Supreme Court.

➤ Appointment of Chief Justices and other judges of High Courts; with in consultation with Chief Ministers of the States and Chief Justice of the All 24 High Courts has assigned the task to the Law Ministry.

➤ The issues highlighted by the draft MoP are:
   a) Transparency in the appointment process
   b) Eligibility Criteria
   c) A permanent secretariat for the collegiums
   d) A process to evaluate and deal with complaints against candidates.

WHAT'S COLLEGIUM SYSTEM

❍ Collegium system based on Three Judges Cases

❍ Under it, appointment of judges are made by Chief Justice of India and four most senior Supreme Court judges.

❍ Has no constitutional backing.

❍ Constitution of India's Article 124 says appointments to be made by President in consultation with judges as President may deem necessary.

❍ Critics say it is a closed-door system which lacks transparency

WHAT'S NJAC

❍ NJAC was a body created to end the two-decade-old Supreme Court Collegium system of judges appointing judges.

❍ Was passed by Lok Sabha on August 13, 2014. Was passed by Rajya Sabha a day later.

❍ Will consist of six people – CJI, two senior-most Supreme Court judges, Law Minister and two 'eminent' persons.

❍ Critics say judges in NJAC will need support of others to push a name through. They fear judicial independence being compromised.
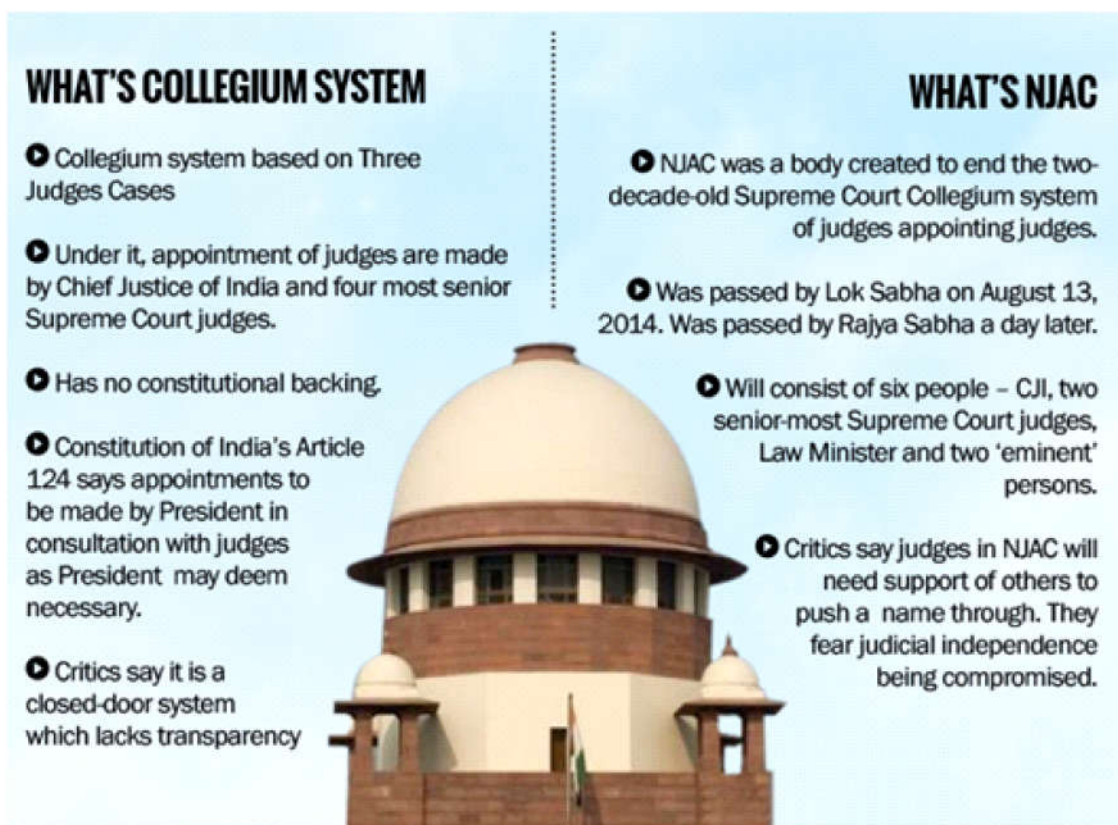
Fig. 8

Recently the petition, moved by the National Lawyers Campaign for Judicial Transparency and Reforms, had sought a fair, open and non-discriminatory selection process for the appointment of judges from a wider pool of candidates and not from an elite group.

But the Supreme Court dismissed a plea seeking an independent panel - independent of its collegiums and the government - to select judges for appointment to the higher judiciary.

Other reforms proposed to make system transparent

➤ Government had pressed for bringing the system of appointment under the ambit of RTI to bring greater transparency in it. But it undermines the possibility that, it could lead to a flood of applications from aspirants and 'interested parties' seeking file noting and other details.

➤ Moreover, government is planning to include CJI and others members of collegiums to established a 'transparent and workable' complaint mechanism to deal with complaints against sitting judges.

➤ There has to be fixed criteria to be followed by each High Court while recommending names of lawyers and sessions judges for elevation to the HC bench.

➤ New recommendations seeks HC collegiums to consider 15 years record of each sessions judge while considering his case, so that performance as a judicial officer is considered as the main criteria while making the recommendation, whereas the SC Collegiums wants to focus on seniority.

Conclusion

Transparency is a vital factor in constitutional governance. Transparency is an aspect of rationality. The need for transparency is more in the case of an appointment process.

Whereas, as of now the judiciary and the government have failed to reach consensus over clauses in the draft MoP. But we must remember that the independence of the judiciary is not the private right of judges but it is the right of citizens. Appointment of judges is seen as a crucial mechanism to achieve judicial independence so the Judiciary must be independent of executive, senior judges and in their ideology. Ultimately, judicial legitimacy rests on public confidence in the courts.

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MIHIR SHAH COMMITTEE REPORT: NATIONAL WATER COMMISSION (NWC)

Context

Mihir Shah Committee proposed the concept of an integrated policy for groundwater and surface water. The committee proposed for formation of National Water Commission.

Introduction

The committee in its report *'21st Century Institutional Architecture for India's Water Reforms: Restructuring the CWC and CGWB'* has recommended for the formation of a new National Water Commission (NWC) to be established as the nation's apex facilitation organisation dealing with water policy, data and governance. The seven-member committee, headed by former planning commission member Mihir Shah, was constituted in September 2015 to ensure development of water resources in the country.

NWC - The proposed National Water Commission will be a science-led agency to advise the States on how much water they can use without affecting rivers and groundwater, taking surface- and groundwater-usage as a single entity. The new body should be an adjunct office of the Ministry, functioning with both full autonomy and requisite accountability. NWC will subsume Central Water Commission and Central Ground water Board and integrate all the water management efforts.

CWC - The CWC, established in 1945, is in charge of surface water and creating storage structures such as dams and medium-scale reservoirs.

CGWB - The Central Ground Water Board is tasked with managing groundwater.

What are the key recommendations of the Committee?

India faces unprecedented challenges of water management in the 21st century. As the water crisis deepens by the day, the old 20th century solutions appear to be distinctly running out of steam. These solutions were devised in an era when India had yet to create its irrigation potential. After long term deliberations the Committee has recommended for an urgent overhaul of the current water management systems.

Key recommendations are -

➤ National Water Commission has been proposed which will subsume the Central Water Commission (CWC) and Central Ground Water Board (CGWB).

➤ A paradigm shift is required in both surface and groundwater management policies to face new national challenges. It says that existing institutions are inadequate to address present and future water needs.

➤ CWC and CGWB were created in a different era and needed restructuring to work on a new mandate in a manner that overcomes the schism between groundwater and surface water. The one issue that really highlights the need to unify CWC and CGWB is the drying up of India's peninsular rivers, the single most important cause of which is over-extraction of groundwater.

➤ By focusing on water stored in dams we could add 35 million hectares to irrigate area over next 10 years at a very low cost. For this we need to shift focus from construction to management and maintenance.

➤ NWC be headed by a Chief National Water Commissioner and should have full time commissioners representing hydrology, hydrogeology, hydrometeorology, river ecology, ecological economics, agronomy (with focus on soil and water) and participatory resource planning and management.

➤ To adopt the participatory approach to water management that has been successfully tried all over the world, as also in Madhya Pradesh, Gujarat and Andhra Pradesh.

➤ View groundwater and surface water in an integrated, holistic manner.

➤ If river rejuvenation is the key national mandate of the Ministry of Water Resources, then this cannot happen without hydrologists and hydrogeologists working together, along with social scientists, agronomists and other stakeholders.

➤ Focus on river basins which must form the fundamental units for management of water.

What are the current water management challenges?

The CWC and CGWB were created in an era when India faced a very different set of challenges. Then it was crucial to build irrigation capacity to ensure food self-sufficiency.

Current Challenges are -

➤ *Stored water:* While big dams played a big role in creating a huge irrigation potential, today the challenge is to effectively utilize this potential, as the water that lies stored in our dams is not reaching the farmers for whom it is meant.

➤ *Groundwater level:* Groundwater, which truly powered the Green Revolution, faces a crisis of sustainability. Water levels and water quality have both fallen creating a new kind of crisis, where the solution to a problem has become part of the problem itself. The new challenge is to manage our aquifers sustainably. Data from the agriculture ministry shows that nearly half of India's farm lands are un-irrigated and groundwater is the major source of water for irrigated holdings. For instance, for 45% of irrigated land the source of water is tube wells drawing groundwater resources. In comparison, canals irrigate just 26% of irrigated land, and tanks and wells only 22% of irrigated land.

➤ *Water Table falling:* Water tables were getting depleted in most parts of India.

➤ *Groundwater Pollution:* As much as 60% of India's districts faces groundwater over-exploitation and serious quality issues. The contamination by fluoride, arsenic, mercury, and even uranium are another major challenge.
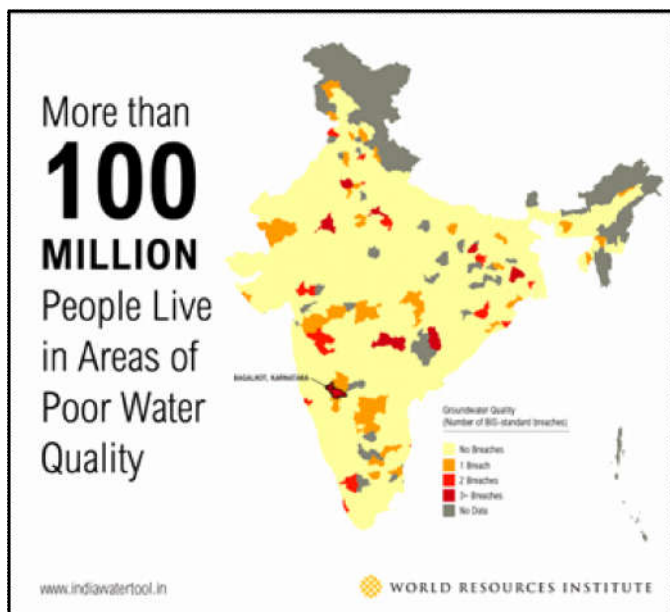
Fig. 9

➤ *Poor Irrigation Facilities:* Recent instances of droughts and farmers' suicides underscored the gravity of the poor situation. India has invested Rs.4 trillion in major and medium irrigation projects since Independence. This had created an irrigation potential of 113 million hectares, which was actually utilized by 89 million hectares. However the gap between created potential and utilisation "is growing by the year."

➤ *Extreme climatic conditions:* Climate change poses fresh challenges as more extreme rates of precipitation and evapo-transpiration exacerbate impacts of floods and droughts.

➤ *Disproportionate Water Usage:* If the current pattern of water usage continues, about half of the demand for water will be unmet by 2030.

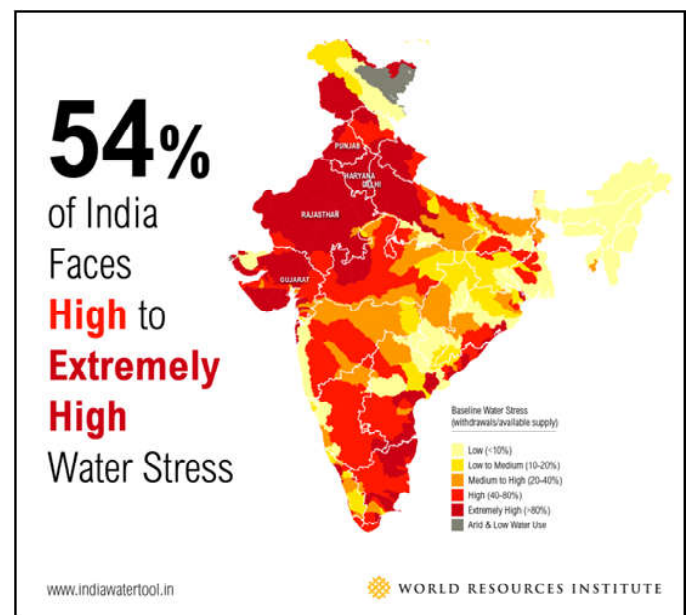*Fig. 10*

What is the provision for human resource working in CWC?

Committee has suggested that all existing functions and personnel of the CWC find their appropriate place in the eight divisions of the NWC, which include Irrigation Reform, River Rejuvenation, Participatory Groundwater Management, Urban and Industrial Water, Water Security (including droughts, floods and climate change) and Water Quality.

How will the issues of States be considered in NWC?

Committee included the views of States while framing the recommendations. It has been suggested that appraisal must become a demand-based exercise, done through a partnership between the Central and State governments, as also institutions of national repute. This is a key part of the reform proposed.

NWC is not going to be monolithic. The NWC will be a knowledge institution providing solutions to water problems faced by State governments, farmers and other stakeholders, on demand, in a truly user-friendly manner.

What is the committee's stand on river interlinking?

The report contains a summary of all the scholarly work available on interlinking of rivers (ILR). This work negates the engineering myth that water must not be allowed to flow "wastefully" into the sea.

Scientists fear that the humongous River Interlinking project could even endanger the integrity of India's monsoon cycle, which depends crucially on fresh river water flowing into the sea.

The report is much more concerned with the challenge of ensuring that the water stored in dams actually reaches the farmers. This dam storage is low-hanging fruit that can give us an increase of millions of hectares of irrigated area at much less than the cost of the river interlinking and in much

less time, avoiding all inter-State conflicts, land acquisition problems, as also corruption that has become a big issue in irrigation projects over the years.

Conclusion

This is the third time since 2000 that reports have been placed for restructuring the CWC and it is still unclear how seriously the government is likely to go ahead with restructuring. However the recent water crises in the face of droughts in 2014 and 2015 and growing concerns with groundwater contamination have provided a fresh trigger.

The committee is of the view that these reforms will be the equivalent of the 1991 reforms in water sector that we've never had. The idea behind the organizational restructuring is to ensure that all water resources in the country are managed in a holistic manner and not separately as surface water, ground water or river water. NWC will bring groundwater management on par with surface water. An effort is also being made to move away from engineering solutions like construction of large irrigation projects and towards more sustainable ways of water use.

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REVISED DTAA TREATY – INDIA AND CYPRUS

Context

Recently, the Cabinet approved the revised Double Taxation Avoidance Agreement (DTAA) with Cyprus, a move that gives India the right to tax capital gains on investments routed through Cyprus prospectively from April 1, 2017.

What is DTAA?

It stands for Double Taxation Avoidance Agreement. A DTAA is a tax treaty signed between two or more countries. Its key objective is that tax-payers in these countries can avoid being taxed twice for the same income. A DTAA applies in cases where a tax-payer resides in one country and earns income in another. DTAAs can either be comprehensive to cover all sources of income or be limited to certain areas such as taxing of income from shipping, air transport, inheritance, etc.
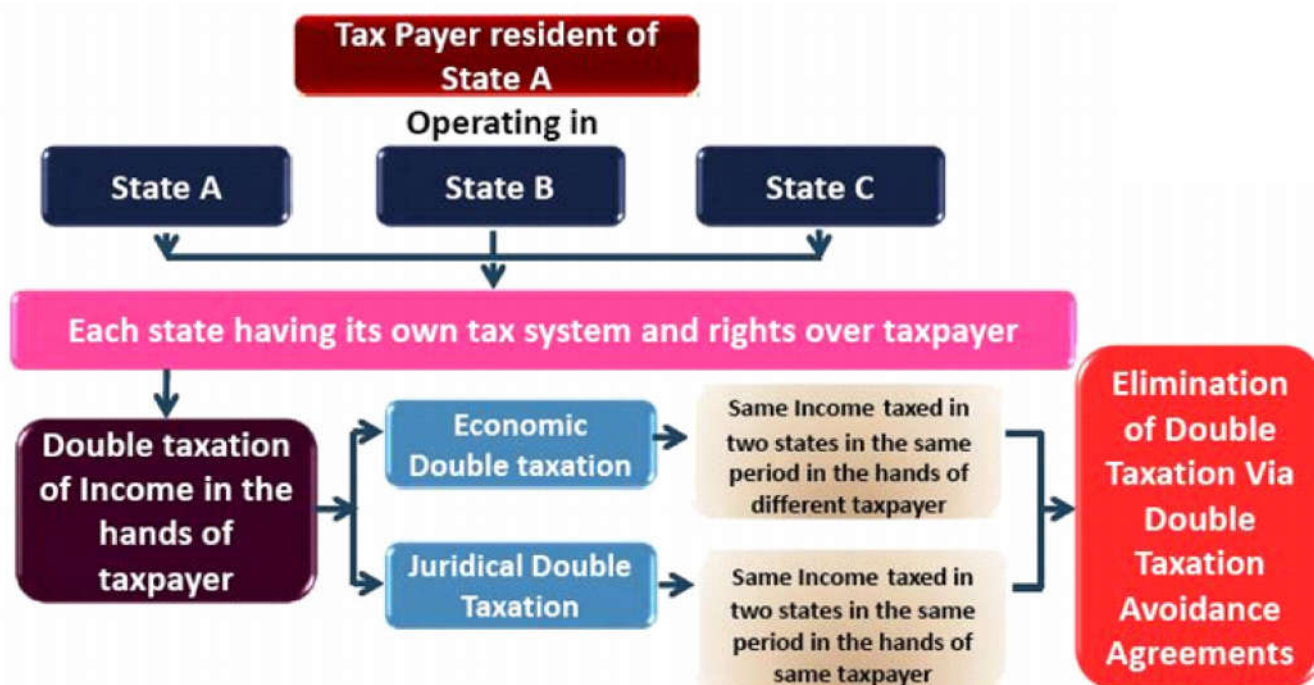

Fig. 11

India has DTAAs with which nations?

India has DTAAs with more than eighty countries, of which comprehensive agreements include those with Australia, Canada, Germany, Mauritius, Singapore, UAE, UK and USA.

What are the benefits of DTAA?

DTAAs are intended to make a country an attractive investment destination by providing relief on dual taxation. Such relief is provided by exempting income earned abroad from tax in the resident country or providing credit to the extent taxes have already been paid abroad.

For example, if a person is sent on deputation abroad and receive emoluments during stint away from home, income may sometimes be subject to tax in both the countries. The person can claim relief when filing tax return for that financial year, if there is an applicable DTAA. Similarly, if the person is an NRI having investments in India, DTAA provisions may also be applicable to income from these investments or from their sale.

DTAAs also provide for concessional rates of tax in some cases. For instance, interest on NRI bank deposits attract 30 per cent TDS (tax deduction at source) here. But under the DTAAs that India has signed with several countries, tax is deducted at only 10 to 15 per cent. Many of India's DTAAs also have lower tax rates for royalty, fee for technical services, etc.

Example citing the working of DTAA:

An NRI individual living in X country maintains an NRO account with a bank based in India. The interest income on the balance amount in the NRO account is deemed as income that originates in India and hence is taxable in India.

In case, India and X nation are contracted under the DTAA, this income will have tax implications in accordance with the rate specified in the agreement. Otherwise, the interest income will attract tax @ 30.90 % i.e. the current withholding tax. Also, NRI is entitled to avail the benefits under the provisions of DTAA between India and his country of residence with respect to interest income on government securities, company fixed deposits, dividend and loans.

Benefits to India from existing DTAAs

For India to prosper, the economy has to grow. And for growth in today's globalised world, foreign investments are inevitable. DTAAs basically provide clarity on how certain cross-border transactions will be taxed and this encourages foreign investors to take the plunge.

Favourable tax treatments for capital gains under certain DTAAs such as the one with Mauritius have encouraged a lot of foreign investment into India. Mauritius accounted for $93.65 billion or one-third of the total FDI flows into India between April 2000 and December 2015. It has also remained a favoured route for foreign portfolio investors.

Why there is a need to revise existing DTAAs?

It is a major step in the fight against tax evasion, "round tripping" and "base erosion/profit shifting", as the countries like Mauritius, Cyprus and Singapore are considered a haven for money laundering, round-tripping, and profit-shifting. India faces tax loss in such situation.

India recently amended its Double Taxation Avoidance Agreement (DTAA) with Mauritius and Cyprus to plug certain loopholes. Now, a Mauritian entity will have to pay capital gains tax here while selling shares in a company in India from April 2017. Earlier, the company could avoid tax as it was not a 'resident' in India. It could get away from the taxman in Mauritius too, due to non-taxation of capital gains for its residents. As a result, many shell entities sprang up in Mauritius to profit from investments in India and get away without paying taxes anywhere. However, given India's narrow tax base, it can ill-afford a tax regime that allows big fish to completely evade the tax net, citing a DTAA.

Hence, the ongoing drive to revise the treaties is to plug loopholes in these agreements. India has recently revised DTAAs with Mauritius and Cyprus and is also in process of revisiting its treaty with Singapore.

India's DTAA with Cyprus

India and Cyprus have a DTAA since 1994. Cyprus is a major source of foreign funds flows into the country. From April 2000 till March 2016, India received foreign direct investment to the tune of Rs 42,680.76 crore from Cyprus.

Cyprus used to have a DTAA with India but was blacklisted on November 1, 2013, by the Indian government for non-cooperation.

There were negotiations ongoing. The completion of negotiation on avoidance of double taxation and prevention of fiscal evasion has paved the way for removal of Cyprus from the list of 'Notified Jurisdictional Areas' retrospectively from November 2013.

Significance of Revised DTAA with Cyprus

It is a move that gives India the right to tax capital gains on investments routed through Cyprus prospectively from April 1, 2017. The fresh DTAA with Cyprus, which is considered a haven for money laundering, round-tripping, and profit-shifting, assumes significance coming soon after the signing of the revised pact with Mauritius.

As in the case of Mauritius, the treaty with Cyprus had provided for residence-based taxation of capital gains. With the revision of the treaty now approved by the Cabinet, capital gains will be taxed in India for entities resident in Cyprus, subject to double tax relief. In other words, India will have the right to tax capital gains arising in India.

Money laundering can happen from anywhere and obviously low-tax jurisdictions (such as Cyprus) help in money laundering. Cyprus is basically used for structuring debt instruments. The revision of agreements with Mauritius and Cyprus could see this debt-restructuring business moving from the latter to the former.

In the Mauritius revised DTAA, the rate for withholding of debt instruments was reduced to 7.5 per cent. In Cyprus, this rate was 10 per cent. It is not clear whether the rate has been revised in the new DTAA. If it has not, then a lot of that business will now shift to Mauritius where the rate is lower.

Excessive taxes paid by way of higher withholding taxes from November 1, 2013 being the date from when Cyprus was notified as a non-cooperative jurisdiction could possibly be claimed as refunds given if the withdrawal of the notification with retrospective effect.

Another difference between the Cyprus and Mauritius treaty is the limitation of benefit clause. A limitation of benefit clause is meant to prevent the misuse of treaties in which they have threshold saying if you invest a particular amount in a country then you are not a shell or paper company. There is no limitation of benefit clause in the Cyprus treaty although there is one in the revised treaty with Mauritius and was always there in the agreement with Singapore.

The Cyprus DTAA also includes a provision for assistance in collection of taxes. It also has a revised provision for the exchange of information that would enable the use of information exchanged for other purposes.

Conclusion

DTAA is an effective financial agreement that is beneficial to both the taxpayer as well as the respective tax collection authorities in various countries.

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T.V.S.N. PRASAD REPORT ON PELLET GUNS

Context

Recently, the Home Ministry-appointed expert committee, which was to explore alternatives to pellet guns as non-lethal weapons to deal with protestors in the Kashmir Valley, submitted its report to the central government.

About the committee

It was a seven-member Expert Committee under the chairmanship of T.V.S.N. Prasad, Joint Secretary, Ministry of Home Affairs, for exploring the other possible alternatives to pellet guns as non-lethal weapons submitted its report to the Union Home Secretary Rajiv Mehrishi.

Background

Since mid-July, due to the current wave of protests against the Indian military presence, more than 570 patients have reported to Srinagar's main government hospital with eyes ruptured by lead pellets, sometimes known as birdshot, fired by security forces armed with pump-action shotguns to disperse crowds.

There has been widespread criticism of excessive force used by Central Armed Police Force (CAPF) especially CRPF which has been deployed to tackle law and order and usage of pellet guns.

Hence, the government has formed the T.V.S.N Prasad committee to look into the alternatives to pellet guns.

The setting up of a committee and its recommendation comes after global criticism over the use of pellet guns against the Kashmiri protesters that have killed at least three and maimed or blinded thousands of civilians.

What are pellets?

They are essentially metal balls loaded with lead, which can be fired from a firearm. Once the gun goes off, they are sprayed in large numbers at targets, following no defined path, but travelling at speeds high enough to penetrate soft skin tissue. Eyes are particularly vulnerable; once a pellet strikes the eye, it damages it significantly or entirely and often causes blindness.

They are a form of non-lethal crowd control methods used by police and military worldwide. The other popular methods are tear gas, water cannon, pepper spray, teaser guns etc.

What are they intended for?

Pellets guns are intended to injure individuals and cause pain. They are effective over short ranges up to 500 yards but when fired from close quarters can be lethal, particularly when sensitive parts like eyes are hit. Pellets can penetrate soft tissues. Security forces were asked to open minimal fire at protesters and if necessary "below their waist."

Impacts of Pellets

Security forces claim that it is a "non-lethal weapon", but doctors treating pellet victims say it maims a person forever. Pellets are loaded with lead and once fired they disperse in huge numbers, and penetrate the skin's soft tissues, and eye being the delicate structure is the most vulnerable to damage. Once the pellet goes inside an eye it shatters tissues and causes multiple damages to all parts of the eye. Both mainstream and separatist leaders have always raised their voice against the use of pellet guns.

What are the recommendations of the committee?

An expert committee has suggested the use of chilli-filled grenades and 'stun lac shells' to control mobs in addition to the pellet guns.

Pelargonic Acid Vanillyl Amide (PAVA) also called Nonivamide and other non-lethal ammunition like 'stun lac cells' and Long Range Acoustic Device (LARD) which create deafening noise to paralyse people were understood to have suggested as possible alternatives to the pellet guns. However, LARD is likely to be used in rural areas as it could prove dangerous for old buildings in downtown Srinagar.

The expert committee also recommended Standard Operating Procedures for deployment of this new assortment of non-lethal weapons.

Pellet guns are, however, unlikely to be completely banned but will be fired in "rarest of rare cases".

Senior government functionaries have arrived at this conclusion after extensive consultations with security forces and examining the ground realities in Kashmir Valley. The committee also analysed and is understood to have recommended the supply of few other non-lethal/less-lethal munition to security forces personnel deployed for crowd control and counter-protests in the Kashmir valley and other similar situations elsewhere.

What is PAVA?

The name PAVA stands for Pelargonic Acid Vanillyl Amide, also called Nonivamide, and is a organic compound found characteristically in natural chilli pepper.

On the Scoville scale (the degree to measure the power of chilli), PAVA is categorised as "above peak" meaning it will severely irritate and paralyse humans, but in a temporary fashion. It is also used as a food additive to add pungency, flavouring and spicy effect to food.

Why PAVA is a better option?

The committee found that PAVA can be categorized in the less-lethal munitions category and once fired, the shells bursts out to temporarily stun, immobilize and paralyse the target (protestors) in a more effective way than a tear gas shell or pepper sprays.

Further the panel noted that the PAVA is "bio safe, better than chili grenade or tear smoke shell and can also be used in combination with stun and tear shells" by security forces facing unruly protestors in place of pellet guns.

It is also called as pepper shots, used in many countries across the world as an effective tool for riot control. Unlike pellets, chili pepper balls do not penetrate skin or pose ricochet hazards, making it a less dangerous weapon for defence even at short range.

Do we really need such weapons to control protest?

The police have a duty to protect lives and safety and prevent violent crime. However in carrying out this duty they must as far as possible use non-violent means. When the use of force is unavoidable because of compelling reasons, it should be only what is strictly necessary and to the extent required.

Hence, in case of Jammu and Kashmir there should be stricter implementation of a standard operating procedure that is followed in such situations, and police should fire the pellet guns from a safe distance, whenever it is extremely necessary.

In policing protests, the police must also distinguish between persons engaging in violence and peaceful demonstrators or bystanders. Any force used should be only against those acting violently, and the police should always ensure that uninvolved persons are protected from injury.

When the police are trying to contain violent persons, it is important that they should focus on use of force accurately at those individuals. However, pellet guns cannot ensure well-targeted shots and causes serious injury even to bystanders or other protesters not engaging in violence. These risks are almost impossible to control. Because of this high potential to cause unwarranted injury, even to bystanders and others, pellet guns should have no place in law enforcement.

The use of pellet guns is not in line with international standards on the use of force. The objectives of the police should be achieved in a less harmful way with other devices which can be more accurately aimed, and where the risk of harm can be better controlled.

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SCORPENE LEAK AND THE INDIAN MARITIME SECURITY

Context

'The Australian' newspaper reported that over 22,000 pages detailing the combat and performance capabilities of six Scorpene-class submarines produced by India in partnership with French company DCNS have been leaked.

Introduction

India has a rich maritime heritage. The Indian Navy and its sister Service, the Merchant Marine, have much to be proud of our sea-faring traditions. The earliest reference to maritime activities in India is contained in the Rig Veda. There is also plenty of evidence derived from Indian literature and art, including sculpture and painting, besides the evidence of archaeology to suggest the antiquity of the Indian maritime tradition.

Archaeological evidence in the form of a seal with the representation of a boat and the dockyard at Lothal, dates back our maritime tradition to circa 2500-1700 B.C. The early growth of Indian shipping and ship-building along with the commercial acumen of our merchant class, the courage and fortitude of our sailors, helped India to sail the oceans for many centuries. From about the 15th century onwards there was a decline in India's maritime activity till the 17th century.

The origins of the Indian Navy lay in a group of ships belonging to the East India Company arriving in Surat in 1612. In 1830, they came under the British Crown and the Service was named the Indian Navy. The name Indian Navy changed to Bombay Marine, Indian Marine, Royal Indian Marine and Royal Indian Navy from 1863 onwards till it became the Indian Navy once again on January 26, 1950.

Role of Navy

The full range of operations in which a nation's naval forces are involved is vast, ranging from high intensity war fighting at one end to humanitarian assistance and disaster relief operations at the other end. This broad continuum of operations can be broken down into distinct roles such as:

➤ **The Military Role:** The essence of all navies is their military character. The navy's military role is characterized by the threat or use of force at and from the sea. This includes application of maritime power in both offensive operations against enemy forces territory and trade, and defensive operations to protect own forces, territory and trade. Tasks include Surveillance Maritime Strike, Anti-submarine Operations Anti-Surface Operations Anti-Air Operations, Amphibious Operations, Information Operations Electronic Warfare Special Operations Mine Warfare VBSS Harbour Defence.

➤ **The Diplomatic Role:** Naval Diplomacy entails the use of naval forces in support of foreign policy objectives to build 'bridges of friendship' and strengthen international cooperation on the one hand, and to signal capability and intent to deter potential adversaries on the other.

➤ **Constabulary Role:** The increasing incidence of maritime crime has brought into sharp focus, the constabulary role that navies have to perform. In the constabulary role, forces are employed to enforce law of the land or to implement a regime established by an international mandate. Objectives under this role are Coastal Defence, Security of EEZ, Good law and order at Sea through tasks of Counter infiltration, Anti-Piracy, Anti-Poaching, Anti-Trafficking.

➤ **Benign Role:** Benign tasks include humanitarian aid, disaster relief, Search and Rescue (SAR) etc. Much of the capacity to perform these functions derives itself from the mobility, reach and endurance inherent in naval task forces, coupled with their Sea-lift capability.

India's new Maritime Security Strategy

Indian Navy has articulated a proactive strategy for the navy's expanding roles and responsibilities in the Indian Ocean over the next ten years. A change is evident in the new strategy document- *"Ensuring Secure Seas"* in contrast to the 2007 maritime strategy which was relatively conservative.

This strategy is marked by a critical development i.e. the growing civil-military consensus on the importance of the sea for India's prosperity and security.

Economic factors also lie behind the civil-military convergence over maritime security. With higher economic growth fuelled by greater energy consumption, India is dependent on the Indian Ocean for both trade and energy. Over 90% of India's foreign trade by volume and 70% in value terms is seaborne, accounting for 42% of India's GDP. Its oil imports have increased to nearly 80% of total demand. Most major international shipping lanes in the Indian Ocean are located close to India's island territories.

Threats and concerns in Indian Ocean Region (IOR)

The navy's primary driver towards increasing its capabilities is China's assertive policy towards India and the expansion of Chinese influence in the Indian Ocean, which it perceives as possible encirclement. Pakistan's naval aviation and expanding submarine force also present a threat to the Indian navy. The possibility that nuclear-armed missiles could be deployed aboard four Pakistani surface ships would require these ships to be tracked as a priority, thereby requiring considerable Indian naval effort and resources.

Strategy

Government has set the Indian Ocean as a foreign-policy priority, with maritime dominance apparently the goal as India seeks to counter China's expansionist policies and confront maritime terrorism.

Five key dimensions in strategy

➤ The strategy expands India's areas of 'maritime interest' in meaningful ways. These include 'areas of national interest based on considerations of Indian Diaspora, overseas investments and political reasons'. Since the Indian Maritime Doctrine of 2004, revised in 2009, India's areas of maritime interest have been defined as both 'primary' and 'secondary'. While the 'primary' area has broadly encompassed the northern Indian Ocean region, the 2015 strategy expands this both southwards and westwards to include the south-west Indian Ocean and the Red Sea (formerly a 'secondary' area of interest). The 'secondary' area of interest is also expanded to include the western coast of Africa and the Mediterranean Sea.

➤ Second, it pointedly advances the former government's policy of becoming a 'net security provider' to island states in the Indian Ocean. The strategy seeks to 'shape a favourable and positive maritime environment' for enhancing net security in India's areas of maritime interest.

➤ Third, the document formally states that the future fleet will be based on the development of three carrier battle groups, each centred on an aircraft carrier, as well as the development of an operational capability of two carrier task forces, each comprising one or more carrier battle groups.

➤ Fourth, as the sea trials of India's first Arihant-class nuclear-powered ballistic missile submarine take place, the new strategy emphasises the assurance of punitive retaliation in accordance with India's 'no first use' and 'non-use against non-nuclear weapon states' policy. Importantly, it notes that 'SSBN deployments also counter an adversary's strategy of seeking advantage from nuclear posturing or escalation'.

➤ Fifth, the strategy emphasises the importance of maintaining freedom of navigation and strengthening the international legal regime at sea, particularly UNCLOS.

The Indian navy's operational footprint in the Indian Ocean has also increased in the last eight years since the publication of its 2007 maritime strategy. The navy has played an active role in counter-piracy operations in the Arabian Sea since 2011 when pirates reached waters near India's Lakshadweep chain of islands. This is in addition to its much-publicised anti-piracy patrols in the Gulf of Aden and the Somali basin since 2008. It has also carried out Non-combatant Evacuation operations in Libya (2011), Kuwait (2014) and Yemen (2015), as well as Humanitarian Assistance and Disaster Relief operations such as cyclone relief (in 2007, 2008, 2013 and 2014). Navy-to-Navy staff talks now take place with over 20 countries and institutional bilateral/trilateral exercises with 11 countries. In August 2013, a dedicated communications satellite for the navy, GSAT-7, was launched for surveillance purposes.

SUBMARINES – Key to Maritime Security

The diplomatic activity is matched by changes to the Indian's navy's capabilities and posture.

Its fleet of 14 submarines and 100 patrol and coastal combatants, alongside two squadrons of maritime patrol aircraft, is to be expanded with the reported aim of becoming a 200-ship navy in the next decade. As a result, India has one of the most ambitious warship building programmes in the world, with only the US and Russia significantly more active.

INDIA'S SINKING SUBMARINE FLEET

PLANNING

July 1999 | Cabinet Committee on Security approves 30-year submarine building plan:

Phase-I (2000-2012) | Construct 12 submarines (6 each under Project-75 & Project-75-India with foreign collaboration)

Phase-II (2012-2030) | Construct 12 more submarines (fully indigenously)

GRIM STATUS CHECK

➤ No new conventional submarine inducted to Navy till now

➤ 13 very old existing diesel-electric submarines (9 Russian Kilo & 4 German HDW). Only 6-7 operational at any given time

➤ 1 nuclear-powered INS Chakra, without nuclear missiles, on lease from Russia for $900 million since 2012 (Deal for 2nd being discussed for $1.5 billion)

ALIVE ▶

PROJECTS

Project-75 (₹23,652 crore)
➤ 1st of 6 Scorpene submarines to be inducted by Dec 2016 (4 years behind schedule)

➤ No deal for heavy-weight torpedoes, which are the primary weapon for a submarine, till now

➤ Rest 5 by 2020 (at intervals of 9 months each)

➤ Govt likely to order 3 more Scorpenes

Project-75-India (estimated cost over ₹70,000 crore)
➤ Granted 'acceptance of necessity' in Nov 2007

➤ But tender yet to be issued. Indigenous defence/private shipyard & foreign collaborator not selected

➤ Will take at least 7-8 years to roll out the first submarine after contract is inked

Nuclear
➤ 3 nuclear-powered submarines (SSBNs), with nuclear-tipped missiles, under-construction at Vizag (for over ₹30,000 crore). First one, INS Arihant, undergoing final sea trials, to be commissioned soon

➤ 6 nuclear-powered nuclear submarines (SSNs) to be constructed in India (estimated cost: over ₹50,000 core)

China: 5 nuclear & 51 diesel-electric submarines. Inducting 5 advanced JIN-class nuclear submarines (with 7,400-km JL-2 missiles)

Pakistan: 5 diesel-electric submarines. Ordered 8 more from China

US has 72 nuclear submarines, Russia over 40, UK and France have around 8-12 each

Fig. 12

Why are submarines so Important?

A submarine is the quietest military platform and extremely tough to detect. Their main cover is their ability to move stealthily under water and keep an eye on enemy movement of vessels. Submarines are the most potent military platforms currently available even ahead of aircraft carriers which need a large entourage to protect it.

The nations which possess nuclear weapons, base their second strike capability (ability to strike back after being hit first by nuclear strike) on nuclear powered ballistic missile submarines. This underscores the importance of Scorpene.

How do submarines operate?

Submarines operate under water. They rely on sonar or sound waves for communication and detection. Each class of submarine operates over specific frequencies which are called as their signature and it's highly guarded.

What Is Stealth technology?

Every military platform has a footprint which shows up on radar, which is used by adversaries to track it. So it is extremely important to minimise the footprint to protect our military assets and retain the element of surprise in case of an attack.

For a submarine, stealth is the most important protection. Stealth is a relative concept. It can be increased relatively to varying levels by adopting several measures right from the platforms design to operational measures to reduce noise and vibrations to stay away from prowling radars and sonars.

What is Kalvari Class Submarine?

The Kalvari class is a class of submarines based on the Scorpene-class submarine being built for the Indian Navy. It is a class of diesel-electric attack submarine which is designed by French naval defence and energy company DCNS and being manufactured by Mazagon Dock Limited in Mumbai.

Project 75I-class submarine

➤ The project 75I-class submarine is follow-on of the project 75 Kalvari-class submarine for the Indian navy.

➤ Under this project Indian navy intends to acquire 6 diesel-electric submarines.

➤ Submarines in this class will also feature advanced Air Independent Propulsion (AIP) System which will enable them to stay submerged for longer duration and increasing its operational range substantially.

➤ Submarines are, in fact, the ultimate stealth weapons. Despite advances in sonar technology over the decades, detecting, tracking and targeting submarines remains extremely difficult, particularly in the Indian

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Ocean where the salinity of the seas and the presence of thermal zones of variable water temperature, make submarine detection extremely difficult.

➤ Submarines make the detection and counter-detection even tougher. Designed to be extremely silent, the submarines can loiter under water for days, scouring the seas through long-range passive sonar signals, which detect the presence of other submarines and warships in the vicinity.

About Scorpene Submarine

Scorpene is a conventional powered submarine weighing 1,500 tonnes and can go up to depths of 300m. It is built by DCNS of France.

India had signed a USD 3.75 bn deal for six of submarines to be built by Mazgaon Dock Limited (MDL) in Mumbai with transfer of technology from French shipbuilder DCNS in October 2005.

The first submarine began sea trials in May 2016 and is expected to be commissioned into the Navy by October. The remaining five submarines are at various stages of construction and MDL has assured to hand over one submarine every nine months.

Scorpene data leak

The manufacturers' (French Company DCNS) manual of 22,400 pages is leaked detailing the technical specifications of the Scorpene submarine.

What Has Leaked?

Noise Levels — Details of how much noise the submarine makes underwater. The leaked data shows various profiles of operations, from steady underwater to moving at different speeds. The data is on how much noise it makes during different missions. This data would help enemy units identify and target the submarine.

Cavitation Data — One way to detect a submarine underwater is to listen for the sound its propellers make. Leaked data states till which speed the Scorpene can travel and different depths without making this cavitation signature. Would help enemy map out endurance, underwater capability of the submarine

Sonar Characteristics — Full details of how the sonar of the Scorpene works, the frequencies it uses, its range and more. The enemy now knows the exact capabilities of the submarine to detect threats from underwater. Will make it easier to plan a counter strategy for the fleet

Fig. 13

Documents detail the combat and stealth capabilities of the Scorpene, including the frequencies at which they gather intelligence, the levels of noise they make at various speeds and their diving depths, range and endurance and so on. It also discloses magnetic, electromagnetic and infra-red data as well as specifications of the submarine's torpedo launch system and the combat system.

Submarines are generally shrouded in opacity given the intrinsic nature of the underwater domain they operate in and the traditional secrecy that surrounds them as a platform.

Australian news report suggested that all the significant design parameters of the Indian Scorpene were now in the public domain. This exigency would compromise the credibility of the Indian submarine and defeats its purpose even before the first Scorpene is formally inducted into the Indian Navy by the end of this year.

Why Scorpene Data Leak does not Compromise Security of Project-75?

The Australian newspaper reported 22,400 pages of documents pertaining to India's Scorpene submarine programme, called Project-75. After days of deliberations, there is near unanimity that while such data being put out publicly was not a good thing, it did not affect Project-75 in any significant way.

Most of this data is generic and belongs to Naval Staff Qualitative Requirements (NSQR) provided by the Navy to the French company, and 'binding data' for the product. It does not pertain to any specific submarine, and has limited usage for the adversary.

The only thing, which if leaked out from the supplier that can really compromise the operation of our submarines is the *"source code of the Fire Control System."* It is a top secret thing which the DCNS doesn't even share with the company providing the weapons. The Australian hasn't claimed that it is in the possession of the software code, and besides that, everything else is not really going to matter.

Also the technical aspects such as stealth features, noise levels, magnetic/electromagnetic data are something that undergo change over time. A submarine's noise is a result of its on-board machinery and propeller configurations. They are different at different speeds, depths, seawater and saline conditions. They are so distinct that even the acoustic signatures for two vessels of the same class are not the same.

The performance deteriorates drastically when they operate in warmer and more saline waters. Hence even classified and actual figures of performance would be vastly different.

Does Scorpene data leak underline the hazards of India's dependence on foreign sources for military hardware?

India has the dubious distinction of being the world's largest importer of arms today. Given the serial abortion of every significant Indian defence hardware contract, starting with the Bofors 155 mm gun and HDW submarine contracts in the 1980s, matter deserves greater attention.

Hardly had the Augusta-Westland "scandal" receded to the back pages of newspapers when the revelation in Australian media hit the news. It would appear that the huge "data dump" of over 22,000 document pages, belonging to French shipbuilder DCNS, contains information relating not only to Indian Scorpene, but also a Russian amphibious ship and a Brazilian stealth frigate.

Moving on to the strategic level, as long as India remains so abjectly dependent on foreign sources for military hardware, it will continue to be vulnerable to sleaze, scandals and scams that not only bring a bad name to the country but have effectively halted the process of military re-equipment and upgradation. That this is happening when our northern and western neighbours are re-arming and re-organising their militaries is worrisome.

Four issues need to be highlighted because they call for the urgent attention of our policy makers-

➤ First, as an industrialised nation and a maritime power, the lack of submarine design and building competence had been a critical lacuna in India's maritime capability. China has been building subs since the 1960s and Pakistan since 2002.

➤ Second, we must never forget that India has the dubious distinction of being the world's largest importer of arms today. This is despite our vast defence-industrial complex, comprising thousands of scientists and a network of sophisticated DRDO laboratories, backed by production facilities of the government-owned ordinance factories and defence public sector undertakings.

➤ Third, it is time for Indians to face up to a fact that is known to every foreign firm that bids for an Indian contract: Arms deals are the "golden goose" for election funding. Till such time that we attain a modicum of self-sufficiency in military hardware — 20 to 30 years hence — a consensus needs to be

struck between the major political parties to treat defence contracts highly important and exclude them from the purview of election fund-raising.

► Finally, banning or "blacklisting" of arms companies alleged to be involved in malpractices may appear to be a dramatic antidote because it makes a splash in the media. But in reality, it is counter-productive because it harms our security far more than the impugned firm.

Conclusion

In the centuries ahead the oceans around us will undoubtedly have a larger significance both from the point of view of India's security concerns as well as economic development. In a world of growing entanglements, the Navy requires a forward-leaning strategic blue-print for enhanced maritime reach and deployment in the Asian littorals.

However, the navy remains some way from possessing the capabilities that would be required for the degree of maritime dominance in the Indian Ocean to which India is now aspiring. The navy's fleet is ageing, with an estimated 60% of vessels reported to have reached various stages of obsolescence. Warships under construction are suffering considerable cost and schedule over-runs.

The Scorpene-class submarine is the first to be acquired in 16 years, in an attempt to stabilise the fleet's fast-dwindling numbers. Scorpene leak has generated an international furore and created gleeful interest for sure. Apart from India, France and Australia, the governments of Malaysia and Chile that have acquired the Scorpene, and Brazil, that is acquiring this platform, will be studying the security implications of this leak very closely.

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INDIA-US TIES: LOGISTICS EXCHANGE MEMORANDUM OF AGREEMENT

Context

India and the United States have signed Logistics Exchange Memorandum of Agreement (LEMOA) that will enable both countries to use each other's bases for repair and replenishment of defence supplies.

Introduction

India-US relations have been on an upswing since the turn of the century. After breaking the logjam in India-US ties dating back to the Cold War period, it was Prime Minister Atal Bihari Vajpayee, who during a visit to the US, made bold move by going beyond the hesitations of history.

2004 onwards there has been no looking back as US has vied to strengthen US-India relations. With India's economic profile and growth rates steadily going up, India has become a particularly attractive destination for the US and the West.

Recently the defence partnership between US and India took a new shape. With the high level delegation meetings in August, decade long talks were concluded on Logistics Exchange Memorandum of Agreement (LEMOA).

How strong are defence relations between the India and US?

➤ India-US defence cooperation has witnessed an unprecedented boom for well over a decade now, rising from being "as flat as a chapatti" in 2002, in the words of former US Ambassador to India, to the present day, with the aggregate worth of defence acquisitions from US exceeding $10 billion.

➤ The last year has seen a series of major advancements in the US-India security relationship, which is increasingly becoming central to US's vision of sustaining a "principled security network" in the Asia-Pacific.

➤ The two countries updated their ten-year defence cooperation framework last year, followed by the June designation of India as a MDP, and now have concluded LEMOA.

What exactly is LEMOA?

LEMOA was a long-anticipated bilateral deal on military logistics exchange, which was first mooted in the early 2000s. After 12 years of back and forth, India and the US have agreed on a logistics exchange memorandum of understanding (LEMOA). This is a watered down version of the standard logistics cooperation agreement that the US military has with dozens of countries.

Key features of LEMOA agreement are -

➤ LEMOA formalises an ad-hoc arrangement already in practice and furthers India-US military-to-military cooperation. The agreement provides access to each other's military facilities for fuelling and logistic support on a reimbursable basis.

➤ The core of both agreements is a regularisation of the ability of naval ships and aircraft of both countries to dock in each other's bases for taking on supplies like fuel. Indian and US naval ships and aircraft have often used each other's naval and air bases before. Base usage and taking on supplies will now be much easier for naval ships and aircraft under both flags.

➤ These activities are limited to joint military exercises, training, port calls and humanitarian missions and other military activities that both sides mutually agree to undertake.

➤ It does not give the US automatic access to Indian military bases or to logistical support, but simply smoothen existing practices.

➤ The advantage over the current situation is precisely following: Though the US does currently use Indian military bases and logistics during joint military exercises — this is managed on a case-by-case basis, which is simply more cumbersome. LEMOA does not necessarily give anything that the US does not already get, but it makes the process more regularised.

➤ LEMOA helps grease the wheels on the bureaucracy underlying defence collaboration, including reimbursements for military logistics sharing.

Why this was stalled for almost a decade?

Talks did not make much progress under the UPA government because of the fierce opposition from the then Defence Minister A.K. Antony. The agreements were perceived too intrusive and would be seen as compromising on India's non-aligned stance.

The UPA government was also cautious about the sensitivities of both Russia and China, though it was moving closer to the U.S. However, under new government, India has been taking firm steps, indicating its willingness to forge a closer strategic relationship with US.

Why India Agreed to a Logistics Agreement with the United States?

➤ Maritime collaboration between India and the United States has been increasing. Besides, India's ties with U.S. allies in the region, like Japan and Australia, have also improved by leaps and bounds. Hence this will help in improving security scenario in the South Asia and Asia Pacific.

➤ Further both India and the United States have concerns about China's growing aggressiveness in the South China Sea and beyond. China has put a "technical hold" on India's attempts to designate the Pakistan-based terror outfit Jaish-e-Mohammed's chief Maulana Masood Azhar as a terrorist at the United Nations. At the same time, China has been going all out to woo countries in India's neighborhood like Nepal, Sri Lanka, and Maldives. China's island building activities in the South China Sea and its deployment of missile batteries on Woody Island in the South China Sea have set it on a collision course with the United States and its allies in the region, like Japan and the Philippines.

Significance of LEMOA

➤ India will be the main beneficiary. While Indian naval ships and aircraft increasingly venture further away from their home, India has no bases and in some cases not even agreements with foreign governments along the Atlantic and Pacific. The US navy and air force, on the other hand, has a global network which is now accessible to Indian ships and aircrafts.

➤ US warships and aircraft now have additional sites to use in India, but they already have many bases around the region at their disposal.

➤ Indian arrangements with the US for such access open up new options in beefing up India's logistics capacity for missions in the Indian Ocean.

➤ In one of the more concrete benefits, LEMOA strengthens India's outreach to areas that were not typically within its reach. With one aircraft carrier in operations, India's capacity to undertake far sea operations has been fairly limited. Signing LEMOA opens up opportunities such as gaining access to US military bases in Djibouti and Diego Garcia.

Criticism

➤ Critics in India have claimed that LEMOA draws India into a nascent alliance with the US. But this is not true as buying diesel and food supply is hardly the stuff of strategic alignment. Also, agreement does not create any obligations on either Party to carry out any joint activity.

➤ There is a criticism that this agreement would allow US troops to be based on Indian soil which is not true. It does not provide for the establishment of any bases or basing arrangements.

➤ Another view is that India has been so sensitive about what amounts to the military equivalent of buying groceries on credit, which looks absurd when the US is emerging as India's number one source of high end arms, its key overseas source for counter-terrorism intelligence and its most common military exercise partner.

➤ Another misperception about the LEMOA has been that signing it will make India a party to America's conflicts and policies, especially in West Asia and East Asia. But this is not true either, even most countries formally allied with the US have not been dragged into these wars, let alone those simply signing the LEMOA.

Conclusion

India and US have agreed to expand collaboration under the Defence Technology and Trade Initiative, infuse greater complexity in their military engagements and maritime exercises, commence discussions on submarine safety and anti-submarine warfare, and initiate a bilateral maritime security dialogue that would include diplomats and the defence establishments.

With LEMOA behind them, the United States and India still have a lot to look forward to. The other two foundational agreements aside, India will no doubt be looking for clarity on where defence technology cooperation will go with its newfound MDP status.

Lastly, it is politically symbolic - a sign signifying the state of India-US strategic ties. This worries some, who argue that India should remain independent of both lest China take a more antagonistic line with India. But China's behaviour has been antagonistic even before, and its behaviour is part of the reason why LEMOA is symbolically important.

REPORT OF WORKING GROUP ON DEVELOPMENT OF CORPORATE BOND MARKET IN INDIA

Context

Recently, the 'Report of the Working Group on Development of Corporate Bond Market in India' was submitted to RBI Governor Raghuram Rajan in his capacity as chairman of the FSDC (Financial Stability and Development Council) sub-committee by Security Exchange Board of India (SEBI).

Corporates, governments and individuals rely on various sources of funding to meet their capital requirements. Specifically, corporates use either internal accruals or external sources of capital to finance their business. Funds are raised from external sources either in the form of equity or debt or hybrid instruments that combine the features of both debt and equity.

The capital raised by companies through debt instruments is broadly referred to as corporate debt. Corporate debt consists of broadly two types – bank borrowings and bond.

Corporates borrow from banks and other financial institutions for various business purposes and for varying durations through non-standardized and negotiated bank loans. Bank finance takes the form of project loans, syndicated loans, working capital, trade finance, etc.

What are Corporate Bonds?

These are debt securities issued by a corporation and sold to investors. These are considered of having higher risk than government bonds, thus having higher interest rates. Such bonds in form of debt financing are a major source of capital for many businesses. The market where it is sold or purchased is known as corporate bond market.

There are many components of corporate bonds. Major components are given below:

Issue Price is the price at which the Corporate Bonds are issued to the investors. Issue price is mostly same as Face Value in case of coupon bearing bond. In case of non-coupon bearing bond (zero coupon bond), security is generally issued at discount.

Face Value (FV) is also known as the par value or principal value. Coupon (interest) is calculated on the face value of bond. FV is the price of the bond, which is agreed by the issuer to pay to the investor, excluding the interest amount, on the maturity date. Sometime issuer can pay premium above the face value at the time of maturity.

Coupon/Interest is the cash flow that are offered by a particular security at fixed intervals /predefined dates. The coupon expressed as a percentage of the face value of the security gives the coupon rate.

Coupon Frequency means how regularly an issuer pays the coupon to holder. Bonds pay interest monthly, quarterly, semi-annually or annually.

Maturity date is a date in the future on which the investor's principal will be repaid. From that date, the security ceases to exist.

Call/Put option date is the Date on which issuer or investor can exercise their rights to redeem the security.

Maturity/Redemption Value is the amount paid by issuer other than coupon payment is called redemption value. If the redemption proceeds are more than the face value of the bond/debentures, the debentures are redeemed at a premium. If one gets less than the face value, then they are redeemed at a discount and if one gets the same as their face value, then they are redeemed at par.

Difference between Corporate Bonds and Stocks

Purchase of corporate bond is lending money to the corporate by an Investor whereas through stocks investor buys a piece of the company. In stocks investor has to bear both profit and loss

whereas in corporate bonds the investor only gets the interest rather than profit, reduces the risk of investors.

Why India needs development of Corporate Bond Market?

Recently, a report released by Crisil (Credit Rating Information Services of India Limited), suggested that a deep corporate bond market was desirable in India because of the following reasons:

➤ India needs around Rs 43 lakh crore ($650 bn) for infrastructure build-out over five fiscals to 2020. At a time when major public sector banks are stressed with rising non-performing assets and mounting losses, many feel that relying predominantly on banks to fund infrastructure development in the country will not be prudent and the country must look beyond the banks. Such constraints mean the corporate bond market has become crucial to India's growth story. Thus steps are necessary to attract investors and issuers. These may include policy impetus for issuers to tap bond markets, and offering protection through innovative credit-enhancement mechanisms such as a bond guarantee fund, which will draw a larger set of issuers and investors.

➤ CRISIL also highlighted on the need for multiple modes of raising funds. For growth-finance to be structurally de-risked there is a need for new innovative structures and vehicles. This need more issuers beyond the financial sector, which means mandating large companies to raise a portion of their funding requirement through bonds and commercial papers.

➤ Corporate bond issuance in India is currently dominated by private placements with institutions, which accounts for over 95 per cent of the total issuance of corporate debt.

➤ The CRISIL report believes that there are several positives in the economy that favour development of corporate bond market in India. A conducive macro-economic milieu, elevated stress at public sector banks, the imperatives of financing large infrastructure build-outs, favourable regulations, ongoing innovations in bond structures, and the Insolvency and Bankruptcy Code, 2016 — are all positives for India's corporate bond market.

Benefits of Corporate Bond Market

It has been well recognized that a well-developed corporate bond market complements a sound banking system in providing an alternative source of finance to the real sector for its long-term investment needs. An active corporate bond market also helps in the diversification of risks in the financial system. In order to enable public and private sector firms to borrow for longer maturity periods in local currency to meet their investment needs and avoid balance sheet mismatches and foreign currency exposures, there is a need to accelerate the development of local currency bond market. An active corporate bond market could also provide institutional investors such as insurance companies and provident and pension funds with quality long term financial assets, helping them in matching their assets and liabilities.

Government initiatives to strengthen Corporate Bond Market in India

India is making efforts to become most advantageous tax jurisdiction with regard to investment in infrastructure sector.

A number of measures in the Budget 2016-17 has been taken to boost corporate bond market including setting up of a dedicated fund to provide credit enhancement to infrastructure projects by Life Insurance Corporation; encouraging large borrowers to access a certain portion of their financing needs through market mechanism instead of the banks; expansion of investment basket of foreign portfolio investors to include unlisted debt securities; introduction of electronic auction platform for private placement market in corporate bonds.

Even the RBI and SEBI are jointly planning to set up a complete information repository for corporate bonds, covering both primary and secondary market segments.

The HR Khan Committee Report

The Financial Stability and Development Council Sub-committee (FSDC-SC) in its meeting held in 2015 decided to constitute a Working Group on Corporate Bonds with representation from the Ministry of Finance, Government of India and all the regulators with the remit to guide the implementation of the recommendations made by all the earlier committees and suggest further measures that may be taken to develop the corporate debt market in the light of evolving macroeconomic and financial market conditions within a specific time span. Accordingly, a Working Group was constituted under the chairmanship of HR Khan.

Financial Stability and Development Council Sub-committee (FSDC-SC)

With a view to strengthening and institutionalizing the mechanism for maintaining financial stability, enhancing inter-regulatory coordination and promoting financial sector development, the Financial Stability and Development Council (FSDC) was set up by the Government as the apex level forum in December 2010. The Chairman of the Council is the Finance Minister and its members include the heads of financial sector Regulators (RBI, SEBI, PFRDA, IRDA & FMC) Finance Secretary and/or Secretary, Department of Economic Affairs, Secretary, Department of Financial Services, and Chief Economic Adviser. The Council can invite experts to its meeting if required.

Issues with the Corporate Bond Market

The Group recognized some of the structural features of the corporate bond market in India impinging on the development of a deep corporate bond market:

➤ The corporate bond issuance is dominated by private placements as this account for more than 95% of the total issuance of corporate debt (2014-15);

➤ A majority of the issuances are concentrated in the 2-5 year tenure;

➤ The investor base is limited/narrow as the investment mandates of institutional investors such as insurance companies, pension funds and provident funds, despite review of the minimum credit rating from time to time, provide limited space for going down the credit curve as the investments are made in fiduciary capacity to protect the interests of subscribers;

➤ Small outstanding stock of individual issuances is one of the key factors impacting secondary market trading as re-issuances have not picked up inspite of the enabling provisions by SEBI;

➤ Functional trading platform with Central Counter Party (CCP) facility like NDS-OM in G-Sec is not available; the existing DvP-III settlement introduced by stock exchanges has found no takers;

➤ There is total lack of liquidity in credit risk protection instruments like Credit Default Swaps (CDS);

➤ Stamp duties on corporate bonds across various states have not been standardized; tax regime for financial instruments remains one of the key drivers of investor interest;

➤ There are inherent structural incentives for borrowers to prefer bank financing, e.g., cash credit system and no disincentive for enjoying unutilized working capital limits;

➤ As the corporate debt market cannot be looked as totally detached from the sovereign bond market, this market may get a fillip as the interest rates come down with the inflation and fiscal consolidation targets being achieved; and

➤ In the current context, many large non-financial corporate who should normally be the preferred issuers of bonds are leveraged and hence cannot access either loan from banks or bond financing through market mechanism.

The HR Khan Committee recommendations for development of Corporate Bond Market

➤ In a bid to develop a strong corporate bond market in India, an expert group suggested standardization of corporate bond issuance, relaxing norms for allowing foreign investments, creation of a bond index and encouraging corporate to tap the market.

➤ The HR Khan committee on corporate bond market has proposed that banks should be allowed to pledge corporate bonds as collateral to borrow funds from the Reserve Bank's overnight repo window. As of now, banks can only pledge government securities to borrow from the Reserve Bank of India, and allowing them to pledge corporate bond could spur more buying of the debt by lenders.

➤ The report added to impose some limits, including limiting the corporate bonds that can be pledged to top-rated securities.

➤ SEBI also proposed allowing insurance and provident fund companies to invest in hybrid capital debt instruments, including additional Tier I or perpetual bonds. Banks are the main issuers of those securities and would benefit from an expanded buyer base.

➤ The panel also proposed setting up a platform to guarantee and settle corporate bond trading, to make it similar to the one for government bonds.

➤ The report said market participants need a debt market index as benchmark. SEBI is in dialogue with stock exchanges to design a suitable debt market index.

➤ Large corporate with borrowings from the banking system above a cut-off level may be required to tap the market for a portion of their working capital and term loan needs. Necessary guidelines may be issued by the RBI taking into account market conditions by September 2016.

➤ The panel also wants necessary amendments in FEMA regulations to allow investment by FPIs in unlisted debt securities and pass through securities issued by securitizations.

➤ A centralized database for corporate bonds markets may be established expeditiously in two phases, for secondary market trades by the end of August 2016 and for both primary and secondary markets by the end of October 2016.

➤ In order to standardize bond issuance, it said, "...SEBI may have a re-look at the guidelines issued in October 2013 so as to clarify on day count convention, shut period, basis for yield calculation, calculation of coupon interest and redemption with intervening holidays with illustrations."

➤ The report said given that the public sector banks would be required to raise around Rs. 80,000-85,000 crore by way of issuance of AT-1 instruments, there is an implicit need to broaden the investor base and make these instruments more attractive to the investors.

➤ "Insurance companies and EPFO (Employees' Provident Fund Organization) may be allowed to invest in AT-1 bonds of banks subject to prudential limits with credit rating up to investment grade.

➤ The panel also said regulated entities like banks, PDs, in addition to brokers, may be encouraged by the regulators to act as market makers in corporate bond market subject to appropriate risk management framework.

➤ The panel suggested the credit rating agencies may be mandated to strictly adhere to the regulatory norms with regard to timely disclosure of defaults on the stock exchanges and their own website.

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SURROGACY (REGULATION) BILL, 2016

What is Surrogacy?

Surrogacy is a method of reproduction whereby a woman (referred to as surrogate) agrees to carry a pregnancy and give birth as a substitute for the contracted parties.

What are the types of Surrogacy?

Some types of surrogacy refer to the genetic circumstances and others types refer to the types of arrangement (whether money involved or not). On the basis of genetic circumstances Surrogacy may be Natural (traditional / Straight) or Gestational. On the basis of types of arrangement it can be Altruistic or Commercial.

On the Basis of Genetic Circumstances

➤ **Natural (Traditional/ Straight) Surrogacy:** It may be partial or total surrogacy. In traditional surrogacy the surrogate is pregnant with her own biological child, but this child was conceived with the intention of relinquishing the child to be raised by others such as the biological father and possibly his spouse or partner and thus the child that results is genetically related to the Surrogate mother. The child may be conceived via sexual intercourse, home artificial insemination using fresh or frozen sperm or impregnated via IUI (Intrauterine Insemination), or ICI (Intracervical Insemination), which is performed at a fertility clinic. Sperm from the male partner of the 'commissioning couple' may be used, or alternatively, sperm from a sperm donor can be used. Donor sperm will, for example, be used if the 'commissioning couple' are both females or where the child is commissioned by a single woman.

➤ **Gestational Surrogacy:** In gestational surrogacy, a surrogate is only a carrier/female host and is not genetically or biologically related to the child. The Surrogate is implanted with an embryo that is not her own, and becomes pregnant with a child to which she is not the biological mother. After birth, the surrogate relinquishes the child to the biological mother and/or father to raise, or to the adoptive parent(s) (in which case, the embryo would have been a donated embryo). The surrogate mother may be called a gestational carrier.

On the Basis of Arrangement

➤ **Commercial Surrogacy:** Commercial Surrogacy is a form of surrogacy in which a gestational carrier is paid to carry a child to maturity in her womb and is usually resorted to by higher income infertile couples who can afford the cost involved or people who save or borrow in order to complete their dream of being parents. This procedure is legal in several countries including India. Commercial surrogacy is also known as 'wombs for rent', outsourced pregnancies' or 'baby farms'.

➤ **Altruistic Surrogacy:** Altruistic surrogacy is a situation where the surrogate receives no financial reward for her pregnancy or the relinquishment of the child (although usually all expenses related to the pregnancy and birth are paid by the intended parents such as medical expenses, maternity clothing, accommodation, diet and other related expenses).

Why Surrogacy needed?

The ever-rising prevalence of infertility world over has led to advancement of assisted reproductive techniques (ART). The intended parents/ Commissioning Couple may enter into a surrogacy arrangement because of:

➤ **Infertility:** Female infertility, or other medical issues, which may make the pregnancy or delivery risky.

➤ **Risky pregnancy:** The intended mother could also be fertile and healthy, and prefer the convenience of someone else undergoing pregnancy and labor for her.

➤ **Same sex couple:** Surrogacy can help the same sex couples realize their dream of having their own child which is otherwise not possible for them to have a child of their own by natural way.

➤ **Single parent:** For those who want to fulfill their desire of having a child sans a partner, surrogacy is a ray of hope.

Is Surrogacy a new concept?

It is only in the last 20 years that surrogate motherhood has increasingly become an issue of national and international public debate, after the ART such as IVF etc was started, but Surrogacy has also been seen around a long time and dates back to biblical times, even around 4000 years ago. In ancient Hindu society there existed a practice known as Niyogpratha, wherein a woman who was childless because her husband was impotent was allowed to conceive through her brother-in-law. Niyogpratha was surrogate fatherhood. The scholars of Islam have pronounced a Fatwa regarding surrogacy; it is considered illegal and immoral for a woman to carry the child of any man other than the husband's. The bible promotes the idea of surrogate motherhood. However, as far as earlier law of Christians is concerned it promotes surrogate fatherhood.

In America, in the late 1970's to early 1980's a lawyer named Noel Keane created the very first surrogacy agency. In India it is just 20 years back that commercial surrogacy was allowed.

Why India is a surrogacy hub?

India has become a favorite destination of fertility tourism. Each year, couples from abroad are attracted to India by so-called surrogacy agencies because cost of the whole procedure in India is as less as one third of what it is in United States and United Kingdom (10-20 lakhs). Indian clinics are at the same time becoming more competitive, not just in the pricing, but in the hiring and retention of Indian females as surrogates. Legal environment is favorable. Therefore, it has emerged as an International Hub.

What are the issues with present regulation?

India has emerged as a surrogacy hub for couples from different countries and there have been reported incidents concerning unethical practices, exploitation of surrogate mothers, abandonment of children born out of surrogacy and rackets of intermediaries importing human embryos and gametes, highlighting the need to prohibit commercial surrogacy and allow ethical altruistic surrogacy.

The 228th report of the Law Commission of India has also recommended for prohibiting commercial surrogacy and allowing ethical altruistic surrogacy to the needy Indian citizens by enacting a suitable legislation. The Supreme Court (2008) called surrogacy a medical procedure legal in several countries including India. The surrogacy debate started with the Baby Manji Yamada case in which the commissioning parents divorced during the pregnancy and the commissioning mother refused to accept the baby. The court finally granted custody to the baby's grandmother. In 2008, another case, on the citizenship of surrogate babies, led the Gujarat High Court to state that there is "extreme urgency to push through legislation" which addresses issues that arise out of surrogacy.

How did the provisions of draft ART Bill 2010 try to solve the issues?

The Indian government has drafted legislation, earlier floated in 2008, finally framed as ART Regulation Draft Bill 2010. Some of the **features** of proposed bill were:

➤ An authority at national and state level should be constituted to register and regulate the I.V.F. clinics and A.R.T centers, and a forum should be created to file complaints for grievances against clinics and ART centers.

➤ The age of the surrogate mother should be 21-35 years, and she should not have delivered more than 5 times including her own children.

➤ Surrogate mother would not be allowed to undergo embryo transfer more than 3 times for the same couple.

➤ If the surrogate is a married woman, the consent of her spouse would be required before she may act as surrogate to prevent any legal or marital dispute.

➤ A surrogate should be screened for STD, communicable diseases and should not have received blood transfusion in last 6 month as these may have an adverse bearing on the pregnancy outcome.

➤ All the expenses including insurance of surrogate medical bill and other reasonable expenses related to pregnancy and childbirth should be borne by intended parents.

➤ A surrogacy contract should include life insurance cover for surrogate mother.

➤ The surrogate mother may also receive monetary compensation from the couple or individual as the case may be for agreeing to act as such surrogate.

➤ It is felt that to save poor surrogate mothers from exploitation, banks should directly deal with surrogate mother, and minimal remuneration to be paid to the surrogate mother should be fixed by law.

➤ The surrogacy arrangement should also provide for financial support for the surrogate child in case the commissioning couple dies before delivery of the child, or divorce between the intended parents and subsequent willingness of none to take delivery of the child so as to avoid injustice to the child.

➤ A surrogate mother should not have any parental rights over the child, and the birth certificate of the baby should bear the names of intended parents as parents in order to avoid any legal complications.

➤ Guidelines dealing with legitimacy of the child born through ART state that the child shall be presumed to be the legitimate child of the married/unmarried couple/single parent with all the attendant rights of parentage, support, and inheritance.

➤ The ART clinics should not be allowed to advertise for surrogacy for its clients, and couples should directly seek facilities of ART Bank.

➤ The intended parents should be legally bound to accept the custody of the child/children irrespective of any abnormality in the child/children.

➤ Confidentiality should always be maintained, and the right to privacy of the donor as well as surrogate mother should be protected.

➤ If a foreigner or NRI is seeking surrogacy, they should enter an agreement with written guarantee of citizenship for the child from their government, and they should also appoint a local guardian who would be legally responsible for taking care of the surrogate during and after the pregnancy till the child is delivered to the foreigner couple or reaches their country.

➤ Sex-selective surrogacy should be prohibited, and abortions should be governed by the Medical Termination of Pregnancy Act 1971.

The Bill is still pending with Government and has not been presented in the Parliament. The government has recently launched the draft Surrogacy Bill, 2016.

What is the aim of the Surrogacy Bill, 2016?

The Bill will regulate surrogacy in India by establishing National Surrogacy Board at the central level and State Surrogacy Boards and Appropriate Authorities in the State and Union Territories. The legislation will ensure effective regulation of surrogacy, prohibit commercial surrogacy and allow ethical surrogacy to the needy infertile couples.

What are the provisions of the Surrogacy Bill 2016?

A copy of the draft Bill has not been placed in the public domain. According to news reports, the features of the Bill include:

➤ **Ban on commercial surrogacy:** The Bill bans commercial surrogacy. Altruistic surrogacy would be permitted on the fulfilment of certain conditions.

➤ **Regulation of surrogacy:** The parentage of children born out of surrogacy should be legal and transparent. Surrogacy Boards would be established at the central level and state levels, and appropriate authorities in the union territories. These bodies would regulate surrogacy services in the country.

➤ **Eligibility to opt for surrogacy:** Only childless couples who have been married for at least five years would be eligible to go for altruistic surrogacy, provided that at least one of them is proven to have fertility related issues.

➤ Married couples who have biological or adopted children, **single people, live-in partners and homosexual** persons would **not be eligible** to opt for surrogacy. **Foreign nationals** would not be allowed to commission surrogacies in India.

➤ **Surrogate mothers:** Childless or unmarried women would not be allowed to be surrogate mothers. Surrogate mothers may only be close relatives, and would be permitted to be a surrogate only once.

➤ Establishment of **National Surrogacy Board at the central level and State Surrogacy Boards** and Appropriate Authorities in the State and Union Territories.

Why the new bill is getting opposition?

➤ **Economic Impact:** Economically poor women earn more than 10 years' worth of their regular salary for being surrogate, they are opposing because their right to livelihood is being hampered. It fulfills the deep seated wish for a family.

➤ **Adoption is not that easy:** Contrary to sensible logic (there are many children in need of a home - so adoption should be easy), being allowed to adopt a child is difficult and takes a long time. The whole paperwork process along with psychological evaluations and waiting list etc. may take many years.

➤ **Surrogate mothers are conscious of their choice:** Under normal circumstances surrogate mothers are very conscious of their decision to carry someone else's child. They are well informed and well paid. Most of these women have a positive experience and feel satisfied in what they perceive as an altruistic gesture (even though they are getting paid). All the parties involved i.e Intended Parents, Surrogate, Fertility specialists, Lawyers, and Surrogacy agencies are benefitted. It also gives foreign currency to the country.

Following the law, the surrogacy will become a black market and more the exploitation will be. It is against Human rights and fundamental right of women to reproduce under Article 21. The High Court of Madhya Pradesh has passed a landmark final judgment in the case of Sandesh Bansal v. Union of India in 2008, recognizing that a woman's right to survive pregnancy and childbirth is a fundamental right protected under Article 21 of the Indian Constitution. Indian medical practitioners are moving from India to other fertility hubs such as Cambodia.

Conclusion

There is a strong need to modify and make the adoption procedure simple for all. This will bring down the rates of surrogacy. Altruistic and not commercial surrogacy should be promoted. Laws should be framed and implemented to cover the grey areas and to protect the rights of women and children.

There is a need to move for ethical surrogacy. Ethical Surrogacy includes a set of guidelines that ensure that the welfare of the surrogate mother is given fundamental importance.

The components of Ethical Surrogacy are:

➤ Providing the surrogate mother with 24/7 medical care.

➤ Providing clean and safe housing for the surrogate.

➤ Continuing medical care and housing even after the delivery.

➤ Providing emotional and psychological support.

➤ Respecting the surrogates' rights to privacy.

➤ Offering the excellent compensation, including non-cash options.

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SOCIETAL USE OF DRONES

Context

Indian Railways to enhance passenger safety has proposed the use of Drones in the vulnerable sections, including ghats and mountainous terrains across the country.

What are Drones?

Drones are unmanned aerial vehicle (UAV) either controlled by 'pilots' from the ground or increasingly, autonomously following a pre-programmed mission. Drones basically fall into two categories: those that are used for reconnaissance and surveillance purposes and those that are armed with missiles and bombs. The use of drones has grown quickly in recent years because unlike manned aircraft they can stay aloft for many hours; they are much cheaper than military aircraft and they are flown remotely so there is no danger to the flight crew.

The first tangible use of drones came to the fore in 1998 when Bill Clinton's government lost precious manpower and money as it was trying to trace al-Qaeda leader Osama bin Laden. Three years later, in November 2001, the first assault using armed drones was carried out when the US government tracked and killed al-Qaeda military chief Mohammed Atef in the rocky stretches of Afghanistan.

UAVs typically fall into one of six functional categories (although multi-role airframe platforms are becoming more prevalent):

➤ Target and decoy – providing ground and aerial gunnery a target that simulates an enemy aircraft or missile

➤ Reconnaissance – providing battlefield intelligence

➤ Combat – providing attack capability for high-risk missions

➤ Logistics – UAVs specifically designed for cargo and logistics operation

➤ Research and development – used to further develop UAV technologies to be integrated into field deployed UAV aircraft

➤ Civil and Commercial UAVs – UAVs specifically designed for civil and commercial applications

Societal applications of Drones

Drones are a rapidly growing form of technology, used for numerous purposes outside the military.

➤ **Humanitarian projects:** UAVs have increasingly been utilized for search and rescue operations as well as for hurricane hunting.

UAVs with 3-D mapping technology had been involved in Haitian relief efforts after Hurricane Sandy. They are in demand by farmers seeking to manage far-flung crops and fields, by mining companies monitoring changes to open pit mines, and by festivals to monitor crowd size for security reasons. UAVs could also be useful in the delivery of small medical supplies, such as getting vaccines to remote or hard to access areas.

➤ **Remote sensing:** UAV remote sensing functions include electromagnetic spectrum sensors, gamma ray sensors, biological sensors, and chemical sensors. Biological sensors are sensors capable of detecting the airborne presence of various microorganisms and other biological factors. Chemical sensors use laser spectroscopy to analyze the concentrations of each element in the air.

➤ **Commercial aerial surveillance:** Aerial surveillance of large areas is made possible with low cost UAV systems. Surveillance applications include livestock monitoring, wildfire mapping, pipeline security, home security, road patrol, and anti-piracy. Wildlife conservation, including tracking Orangutans in Sumatra and monitoring several endangered species. Namibia has teamed up with the WWF (World Wildlife Fund) to fly drones over national parks, in hope of spotting poachers, as well as monitoring animals.

➤ **Infrastructure project monitoring:** Real-time awareness and accuracy have always been challenges on construction sites, and even if we are only at the beginning of understanding what can be automated, it seems that drones are able to provide the data required at each phase of the construction process. During the pre-construction phase, by providing better field data, drones can significantly improve the speed and quality of the design process. They are able to capture high-resolution videos and images, enabling 3D modelling and providing data about a site's initial status for investors and property.

➤ **Aerial shooting:** The primary functionality of drones for the media and entertainment industry is aerial photography and filming. Drones can shoot

commercials and movies; some prominent examples of the latter in which drones were used are Skyfall, The Wolf of Wall Street and Harry Potter. They can prove useful in reporting events by capturing footage for news broadcasts, the BBC being one company that has its own in-house drone team; at sports competitions, for which they were already used during such prestigious events as the 2014 Winter Olympics in Sochi; and for wildlife documentaries, including National Geographic's use of UAVs to film lions in Africa. Drones can also be used to shoot private events: Many video and photography companies now offer drones to capture footage of special occasions. Using drones can have numerous advantages over other methods of capturing images. One is their lower cost compared to planes or helicopters. Drones can also improve the quality of films and photos, in particular as the miniaturisation of technology makes it possible to place 4K cameras on these devices. Drones can take shots from very close, as they make little noise, for example approaching athletes during sporting events without distracting them. They can also take photos or videos at unique angles, operating at a greater height than a crane but lower than a helicopter. Finally, they can capture footage that would otherwise not be available, by reaching remote locations: for example, filming birds in the topmost branches of a tree for a wildlife documentary.

➤ **Oil, gas and mineral exploration and production:** UAVs can be used to perform geophysical surveys, particular geomagnetic surveys where the processed measurements of the Earth's differential magnetic field strength are used to calculate the nature of the underlying magnetic rock structure. A knowledge of the underlying rock structure helps trained geophysicists to predict the location of mineral deposits. The production side of oil and gas exploration and production entails the monitoring of the integrity of oil and gas pipelines and related installations. For above-ground pipelines, this monitoring activity could be performed using digital cameras mounted on one or more UAVs. The InView UAV is an example of a UAV developed for use in oil, gas, and mineral exploration and production activities.

➤ **Crop supervision:** Until now, the main obstacle in farming has been the large area of farmed land and low efficiency in crop monitoring. This problem is exacerbated by increasingly unpredictable weather conditions, which increase farming risk and field maintenance costs. Until recently, the most advanced form of monitoring used satellite imagery. The main limitation was that images had to be ordered in advance, could be taken only once a day and were not very precise. In addition, the services were extremely expensive and gave no guarantee of quality, which could easily drop on a cloudy day. Today, drone technology offers a large variety of crop monitoring possibilities at a lower cost. Furthermore, drones can be integrated at every stage of the crop lifecycle, from soil analysis and seed planting to choosing the right moment for harvesting.

Drones will allow farming to become a highly data-driven industry, which eventually will lead to an increase in productivity and yields. Due to their ease of use and low cost, drones can be used for producing time series animations showing the precise development of a crop. Such analysis could reveal production inefficiencies and lead to better crop management.

Applications of Drones specific to India

➤ *Monitoring of naxal areas*

For a thickly populated country like India with tough terrains like the Himalayas, the use of drones, also known as Unmanned Aerial Vehicles or UAVs, can be many. Armed forces have been using drones to counter insurgency in areas where human monitoring is a huge challenge due to rough weather conditions. Since the 1999 Kargil War against insurgency attempts by neighbouring Pakistan and the subsequent storming of the Indian Parliament in Delhi in 2001, the Indian Army has acquired over 100 UAVs.

India has already stated its intent to get more UAVs as combat weapon distributing vehicles for border areas where road connectivity is a challenge. Interestingly, India accounts for 7% of global arms imports over the past 7 years.

With Naxal/Maoist insurgency showing no signs of letting up, the government is under huge pressure to deal with Naxal violence, which is threatening to disrupt normal life in quite a few states. As the insurgents mostly operate under the green cover (dense forests) or from other remote areas, drones can send in crucial data related to people movement and alert government agencies. This, in turn, can save lives and resources deployed to remote areas to fight insurgency.

The data collected by drones can go straight to the experts, without any human interference. It is no wonder, therefore, that the Panna National Park in Madhya Pradesh had deployed these drones to capture tiger movement and also for tracking poachers too.

➤ *Delivery of materials*

The big use for drones in India is area specific. While in urban areas it can be used to make deliveries, as announced by Amazon, drones can play a vital role in bringing down the traffic jams which have been close to the cardiac arrests that the cities get more often. Drones can also be used to enhance vigilance in urban sectors. These give 360 degree view to the law enforcements that can help them fight crime better.

➤ *Monitoring of natural resources*

Another valid use for drones will be in rural areas, the food bowl of the country. Drones or UAVs can be greatly helpful in estimating the natural resources or the abuse of the same. For an agrarian economy like India, drones can go a long way in aiding agricultural activities such as sowing seeds on vast tracts of land. They can also help in spraying pesticides that will keep the crop safe from natural predators. Crop insurance and crop mapping are major areas where drones can be integrated into the farming system for the benefit of farmers.

➤ *Disaster management*

Disaster management is another key area as the aerial images taken by drones can pinpoint rain intensity, provide flood warning data and help generate alerts for impending natural disasters. These can also help in relief distribution to areas cut off by floods or snow.

➤ *Railways uses drones for survey of vulnerable sections*

A novel initiative by the Mysuru division has the potential to ensure better preparedness by the Indian Railways to enhance passenger safety by ramping up measures in the vulnerable sections, including ghats and mountainous terrains across the country.

The Mysuru division recently completed an aerial survey of the ghat section between Sakleshpur and Subramanya using drones in view of the monsoon.

The drone deployed by the authorities provided them an aerial perspective by way of a high resolution video of nearly two hours which was closely studied and gave the Railway authorities better perspective to act.

➤ *Monitoring of vulnerable regions*

As line patrolling is extremely difficult for pipeline sections passing through forests, rivers, environmentally sensitive areas and other inaccessible areas, GAIL (India) Limited has awarded an order for aerial surveillance of 200 kilometres for the Hazira Vijaipur Jagdishpur /Dahej Vijaipur pipelines with drones as a pilot project.

Conclusion

One of the most contentious issues concerning the integration of UAVs into airspace appears to be that of protection of privacy.

In an attempt to regulate the operation of unmanned flying devices such as drones, the Directorate General of Civil Aviation (DGCA) has come out with draft guidelines for operation of civil Unmanned Aircraft System (UAS).

DGCA will register all civil unmanned aircraft and issue an operator permit on case to case basis. All unmanned aircraft intended to be operated in India will require a Unique Identification Number (UIN) issued from DGCA. "International operations of civil UAS (flying across the territory) and/or over water shall be strictly prohibited. The UA shall not be flown over the entire air space over the territory of Delhi (30 km radius from Rashtrapati Bhavan) and areas falling within 50 km from the international borders. Also, UA (unmanned aircraft) shall not be flown over other sensitive locations viz. nuclear stations, military facilities and strategic locations.

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ALGAL BLOOM ISSUE

Context

IIT Madras has developed an optical system to detect and monitor algal bloom.

What is an Algal Bloom?

An algal bloom or marine bloom or water bloom is a rapid increase in the population of algae in an aquatic system. Algal blooms may occur in freshwater as well as marine environments.

Blooms of autotrophic algae and some heterotrophic protists are increasingly frequent in coastal waters around the world and are collectively grouped as harmful algal blooms (HABs).

Blooms of these organisms are attributed to two primary factors: natural processes such as circulation, upwelling relaxation, and river flow; and, anthropogenic loadings leading to eutrophication.

What are its Indicators?

Broadly, bloom species can be classified into three different groups:

➤ Those which produce harmless water discolourations, but the dense bloom on decomposition can cause anoxia and lead to indiscriminate mortality of marine life,

➤ Species which produce potent toxins causing a variety of gastrointestinal and neurological illness to humans, and

➤ Species which are not toxic to humans but harmful to fish and invertebrates by damaging or clogging their fish gills. The high–biomass producers are linked with production of scums and reduction of habitat for fish and shellfish.

Typically only one or a few phytoplankton species are involved and some blooms may be recognized by discoloration of the water resulting from the high density of pigmented cells.

Colors observed are green, yellowish-brown, or red. Bright green blooms may also occur. These are a result of blue-green algae, which are actually bacteria (cyanobacteria).

What causes harmful algal blooms?

Algal blooms are the result of an excess of nutrients (particularly phosphorus and nitrogen) into waters and higher concentrations of these nutrients in water cause increased growth of algae and green plants.

Harmful algal blooms need:

➤ Sunlight

➤ Slow-moving water

➤ Nutrients (Nitrogen and Phosphorus)

Nutrient pollution from human activities makes the problem worse, leading to more severe blooms that occur more often.

What are its consequences?

A. Public Health Concerns

➤ Exposure to algal toxins may occur through consumption of tainted water, fish, or shellfish; recreational activities; or inhalation of aerosolized toxins.

➤ Algal toxins are known to cause illness immediately (hours to days) after exposure. In addition, several algal toxins are believed to be carcinogens or to promote tumor growth, although more research on the effects of long-term exposure is needed.

B. Ecologic Concerns

➤ HABs may cause mortality of aquatic organisms because of low dissolved oxygen or algal toxins. Algal toxins also may cause mortality of terrestrial organisms using the water source.

➤ As more algae and plants grow, others die. This dead organic matter becomes food for bacteria that decompose it. With more food available, the bacteria increase in number and use up the dissolved oxygen in the water. When the dissolved oxygen content decreases, many fish and aquatic insects cannot survive. This results in a dead area.

C. Economic Concerns

➤ Economic concerns associated with HABs include increased drinking-water treatment costs, loss of recreational revenue, loss of aquacultural and fisheries revenue, and livestock sickness or fatalities.

➤ Taste-and-odor compounds are of particular concern to drinking-water suppliers because of customer dissatisfaction with malodorous drinking water.

Algal Bloom in India

Harmful algal blooms (HAB), lethal for human beings and marine ecosystems alike, are steadily increasing in intensity in the Indian waters. Researchers have found out that the toxic blooms had increased by around 15 per cent over the last 12 years in Indian seas.

There were 80 harmful blooms between 1998 and 2010 in the Indian seas against the 38 that took place between 1958 and 1997. The number of such blooms was just 12 between 1917 and 1957, according to scientists.

The blooms turn lethal for human beings when they consume marine organisms that feed on such algae. Incidents of paralytic shell fish poisoning, following an algal bloom, was reported in 1981 from Tamil Nadu, Karnataka and Maharashtra. Three persons lost their lives and 85 were hospitalised in Tamil Nadu.

In a similar incident at Vizhinjam in Kerala in 1997, seven persons died and around 500 were hospitalised. These people had consumed a mussel, which had fed on toxic algae. Another bloom that hit Kerala in 2004 resulted in nauseating smell emanating from the coastal waters extending from Kollam to Vizhinjam. More than 200 persons suffered from nausea and breathlessness for short duration due to the foul smell. The bloom also resulted in massive death in the region.

Upwelling, formation of mud banks, nutrient discharges from estuaries and run-off from the land during southwest and northeast monsoons cause some algae blooms in coastal waters.

The changing patterns of nutrient ratio of the coastal and the open ocean waters due to anthropogenic activities, increased aquaculture operations leading to enrichment of coastal waters, dispersal of toxic species through currents, storms, ship ballast waters and shell fish seeding activities were some of the factors triggering the blooms.

Why Algal Bloom Are Rising Especially In the Arabian Sea?

All the major algal blooms are predominantly found to be associated with the cooler water masses of the western coast in the northern Arabian Sea.

These blooms then spread into the central Arabian Sea along with a whirling motion of waters and currents. The blooms reach its peak spatial distribution between November and February and minimum in June to September.

Factors responsible for initiation and growth of algal blooms are:

➤ Enhanced cooling,
➤ Vertical mixing,
➤ Favourable winds,
➤ Atmospheric deposition of the mineral aerosols from surrounding deserts.

The Bay of Bengal is relatively free of algal blooms except off the Ganges–Brahmaputra Estuarine Frontal system and estuarine and coastal regions where nutrients are abundant supply.

What is the Recent Development for detecting algal bloom?

An **integrated optical system** capable of detecting and monitoring algal (or phytoplankton) blooms both spatially and temporally in coastal and open ocean waters has been developed by a team of researchers at the Indian Institute of Technology (IIT), Madras.

The optical system provides an array of optical parameters and spatial information regarding **algal bloom density (chlorophyll)** and their **causative algal species** that are commonly seen in coastal and oceanic waters around India, particularly in the Arabian Sea.

The limitations of the field-based techniques for studying algal blooms are:

➤ Techniques are limited in time and space.
➤ Being labour intensive.
➤ Time-consuming and expensive.
➤ They cannot be used for monitoring large water bodies.

Thus the optical-detection system uses:

➤ The ocean colour satellite data.
➤ In situ measurements.
➤ Underwater light field data collected from the field.

Hence, the optical system is capable of detecting and classifying blooms present **under water.**

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JUVENILE JUSTICE

Context

Recently for the first time the Juvenile Justice Board has asked a child in conflict with law (CCL) to face trial as an adult for allegedly kidnapping and gang-raping a minor along with his friends in March this year.

What is the meaning of juvenile?

Juvenile can be defined as a child who has not attained a certain age at which he, like an adult person under the law of the land, can be held liable for his criminal acts.

Juvenile is used when reference is made to a young criminal offenders and minor relates to legal capacity or majority.

Principles of Juvenile Justice System

► The Juvenile Justice (JJ) system is based on principles of promoting, protecting and safeguarding the rights of children.

► Imprisonment of child offenders is prohibited and recommended for provision of reformatory schools and constitution of children's courts with procedures 'as informal and elastic as possible'.

► Establishment of various kinds of institutions for the care of juveniles – a juvenile home for the reception of neglected juveniles, a special home for the reception of delinquent juveniles, an observation home for the temporary reception of juveniles during the pendency of any inquiry regarding them, and an after-care home for the purpose of taking care of juveniles after they were discharged from a juvenile home or a special home.

► Involvement of voluntary agencies at various stages of the juvenile justice process.

What were the previous laws related to it?

Juvenile Justice (Care & Protection of Children) Act 2000:

► Endorsed the "justice" as well as the "rights" approach towards children.

► Divided juveniles as "juveniles in conflict with law" and "children in need of care and protection". This segregation aims to curb the bad influence on the child who is in need of care and protection from the one who is in conflict with law.

► Proposed Standardization in the definition of a 'juvenile' or a 'child' across the country except for Jammu and Kashmir.

► Juveniles in conflict with law are to be handled by the juvenile justice board.

► Children in need of care and protection to be dealt by child welfare committee.

Drawbacks in JJA 2000:

► Does not provide for care, protection, development and rehabilitation of neglected, delinquent children and includes within its ambit child labourers.

► Delays in various processes under the Act, such as decisions by Child Welfare Committees (CWCs) and Juvenile Justice Boards (JJBs), leading to high pendency of cases.

► Increase in reported incidents of abuse of children in institutions.

► Lack of clarity regarding roles, responsibilities, functions and accountability of Child Welfare Committees and Juvenile Justice Boards.

Why changes required?

The NCRB statistics relating to violent crimes by juveniles against women states that the number of rapes committed by juveniles has more than doubled over the past decade from 399 rapes in 2001 to 858 rapes in 2010. "Crime in India 2012" records that the total number of rapes committed by juveniles more than doubled from 485 in 2002 to 1149 in 2011.

The brutal Delhi gangrape case has bought forth a new controversy related to juvenile justice in India. One of the accused is a minor of 17 years, as Section 15(1)(g) of the JJ Act mandated that a juvenile convicted of any offence can be sentenced to a special home for a period of three years, maximum and thereafter be released on probation.

What are the features of the new Act?

The new JJ Act, provides for strengthened provisions for both children in need of care and protection and children in conflict with law.

► Some of the key provisions include: change in nomenclature from 'juvenile' to 'child' or 'child in conflict with law', across the Act to remove the negative connotation associated with the word "juvenile"; inclusion of several new definitions such as orphaned, abandoned and surrendered children; and petty, serious and heinous offences committed by children; clarity in powers, function and responsibilities of Juvenile Justice Board (JJB) and Child Welfare Committee (CWC); clear timelines for inquiry by Juvenile Justice Board (JJB); special provisions for heinous offences committed by children above the age of sixteen year; separate new chapter on Adoption to streamline adoption of orphan, abandoned and surrendered children; inclusion of new offences committed against children; and mandatory registration of Child Care Institutions.

► Under Section 15, special provisions have been made to tackle child offenders committing heinous offences in the age group of 16-18 years. The Juvenile Justice Board is given the option to transfer cases of heinous offences by such children to a Children's Court (Court of Session) after conducting preliminary assessment. Since this assessment will take place by the Board which will have psychologists and social experts, it will ensure that the rights of the juvenile are duly protected if he has committed the crime as a child. The trial of the case will accordingly take place as a juvenile or as an adult on the basis of this assessment. Preliminary assessment will be for a period of three months. The child will not suffer from any disqualification that arises from any conviction under the Act.

► As per the provision, the records of any conviction will be destroyed after the expiry period of appeal, except in the case of heinous crimes.

► The provisions provide for placing children in a 'place of safety' both during and after the trial till they attain the age of 21 years after which an evaluation of the child shall be conducted by the Children's Court.

► After the evaluation, the child is either released on probation and if the child is not reformed then the child will be sent to a jail for remaining term. The law will act as a deterrent for child offenders committing heinous offences such as rape and murder and will protect the rights of victim.

► To streamline adoption procedures for orphan, abandoned and surrendered children, the existing Central Adoption Resource Authority (CARA) is given the status of a statutory body to enable it to perform its function more effectively.

► Several rehabilitation and social reintegration measures have been provided for children in conflict with law and those in need of care and protection. Under the institutional care, children are provided with various services including education, health, nutrition, de-addiction, treatment of diseases, vocational training, skill development, life skill education, counselling, etc to help them assume a constructive role in the society. The variety of non-institutional options include: sponsorship and foster care including group foster care for placing children in a family environment which is other than child's biological family, which is to be selected, qualified, approved and supervised for providing care to children.

► Several new offences committed against children, which are so far not adequately covered under any other law, are included in the Act. These include: sale and procurement of children for any purpose including illegal adoption, corporal punishment in child care institutions, use of child by militant groups, offences against disabled children and, kidnapping and abduction of children.

► All child care institutions, whether run by State Government or by voluntary or non-governmental organisations, which are meant, either wholly or partially for housing children, regardless of whether they receive grants from the Government, are to be mandatorily registered under the Act within 6 months from the date of commencement of the Act. Stringent penalty is provided in the law in case of non-compliance.

Implications what if, juvenile has started count as adolescent in India?

Many people worry about the brim- what distinguishes a person who is 17 years and 11 months old and another who is 18 years and one month old? 80 per cent of the juveniles who are released from adult prisons go on to commit more serious offences.

If juveniles in the age group of 16 to 18 years accused of heinous crimes under laws for adults.

It will create an adverse impact in rehabilitation of juveniles in conflict with law.

► By approving the Bill, the government has accepted its failure to ensure rights to the children in this country. "The juveniles in the age group of 16-18 years will be in traumatic situation if they are brought before the criminal court for having committed serious crimes. The basic premise to

enact such a law is public anger over a recent crime pertaining to rape and murder. But such step obviously will lead to retributive justice, not juvenile justice".

➤ The discretionary powers will be given to Juvenile Justice Board to transfer such juveniles to criminal court for trial and punishment. "Since JJB is presided over by Chief Judicial Magistrate of the district, one could assume that the chances of transfer of adolescents to adult court would apparently be more".

➤ Harsh punishment cannot be a deterrent and this in turn could make the juveniles hardcore criminals, the proposed amendment of Juvenile Justice Act is retrogressive and would undermine the basic objectives of the Act.

➤ Children aged between 16 and 18 are forced to commit the crime at the behest of others, the amendment could not be construed as reformative in nature. "The essence of Juvenile Justice Act is to reform but this amendment goes against the spirit of the Act.

➤ Adolescents are less culpable than adults because adolescent criminal conduct is driven by transitory influences that are constitutive of this developmental stage. By nature of their psycho-biological profile, adolescents are greatly influenced by their environment, and too immature to weigh the consequences of their actions."

➤ Juveniles are more susceptible to negative influences and pressure, are less likely to focus on future outcomes, are less risk-averse than adults, have poor impulse control, and evaluate risks and benefits differently all of which pre-dispose them to make poor decisions. Similarly, the brutality of a juvenile is no indicator that they cannot be reformed as responsible citizens of the nation.

➤ A stringent law against child sexual abuse that could end up incarcerating adolescents indulging in "consensual sexual experimentation."

➤ Act can be misused by families or police to victimise teenage boys and girls for indulging in sexual exploration. Both rape and kidnapping charges can lead to a seven-year sentence or more.

➤ It is regressive because all studies show a high rate of recidivism if you treat juveniles as adults, Indian jails are universities of crime. Such legislation would put us on par with countries like Saudi Arabia, Sudan and Yemen.

➤ If a child less than 18 years is subjected to a normal trial and a normal jail, there remains no chance of rehabilitation; they often turn into hardened criminals, repeat offenders. Moreover, the child's brain at that age is still in its formative stage, they are not fully mature yet to understand the full implications of their action. It also goes against the United Nations Convention on Child Rights which mandates that 18 years is the cut-off age for children.

➤ Law should include an "age-gap provision" to ensure there is no misuse against consenting adolescents. An age gap provision means that a pre-determined age is treated as age of consent, provided the gap in age with the sexual partner is within a prescribed limit.

➤ Under Section 16(1), the Act permits juvenile who has completed or is above the age of 16, to be tried as adults for heinous offences. This particular amendment shook the audience who expected a reformatory approach from the legislature. According to them, it not only violates Article-14 of the Constitution, but beats the purpose of the Indian justice system with regard to juveniles i.e. to bring reformation and rehabilitation. Though around 90% of the brain gets developed by the age of six, but the fine tuning and cognitive maturity of the brain continues breaking the barriers of such age bars.

➤ Under this new legislation, a preliminary inquiry will be conducted by the Boards to determine whether a juvenile offender is to be sent for rehabilitation or be tried as an adult. Section-19(3) says that the enquiry will be assisted by experienced psychologists, psycho-social workers and other experts. This provision may affect the presumption of innocence and lead to disproportionate procedure and arbitrariness under the constitution.

➤ Psychologically, researchers have clearly found that older adolescents (14-17) are actually more prone to reckless behaviour. In fact, the act of engaging in such high-risk crimes only points towards a lack of maturity, rather than an excess of it. Instead of creating an enabling environment for our children to grow, as a society we are failing them and punishing them.

➤ Juveniles between the ages of 16 and 18, accused of heinous offences like rape, murder, acid attack, dacoity, will now be subjected to a preliminary assessment to gauge their "mental and physical capacity to commit such offence, ability to understand the consequences of the offence, and the circumstances in which the offences were committed".

➤ The children who are alleged or found to be in conflict with law, it can be seen that most of

them belong to a weak socio-economic background. More than 50% of the total juveniles apprehended has either not gone to school at all, or have dropped out after primary level; and more than 75% of them belong to families with an annual income less than Rs. 50000. So, if we bring in an amendment now, it is those who constitute disadvantaged lot who will suffer. As a system, we failed them once, and now we are failing them again.

Conclusion

Laws are not to be made on passions and emotions, but on facts, logic, reason and experience. When a la w is made, it should be based on the generality of the situation, and not on exceptions. If laws are made to uphold the popular sentiments based on the exaggerated media reports unsupported by facts, it is likely to be counter-productive. Even if we are to believe that the juvenile in Nirbhaya case was the brutal of all, that one incident is not sufficient to justify a policy change in this direction.

Unfortunately, the current system in India serves neither the purpose of rehabilitation nor deterrence against future crime. Remand homes in India are not conducive to the reform and rehabilitation of juveniles as envisioned by the principles enshrined in international law.

Restorative justice is best ensured for this underclass by addressing the fundamental problems that create juvenile offenders in society in the first place, by ensuring universal access to education and social care for all children.The need of the hour is to increase investment into developing infrastructure, recruiting qualified staff, restoration, rehabilitation and education.

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BIOFORTIFICATION

Context

The recent scientific study has stated that the Machine-polished grains are poorer in such "micronutrients" thus biofortification is must to meet the challenge of malnutrition.

What is Hidden hunger?

Hidden hunger occurs when the quality of food people eat does not meet their nutrient requirements, so the food is deficient in micronutrients such as the vitamins and minerals that they need for their growth and development.

According to the Food and Agriculture Organization of the United Nations some 870 million suffer from hunger, but almost a third of the world's population still do not get enough essential nutrients and suffer from hidden hunger.

Hidden hunger is more prevalent in poorer countries in Asia and Africa, but it also exists in wealthy countries like America.

What is Biofortification and its significance?

Micronutrient malnutrition (MNM) is widespread in the developing regions of the world. It can affect all age groups, but young children and women of reproductive age tend to be among those most at risk of developing micronutrient deficiencies.

People's deficiencies in key vitamins and minerals continue to pose a very serious constraint to human health and economic development. Even moderate levels of deficiency (which can be detected by biochemical or clinical measurements) can have serious detrimental effects on human function. Worldwide, the three most common forms of MNM are iron, vitamin A and iodine deficiency. Together, these affect at least one third of the world's population, the majority of which are in developing countries. Of the three, iron deficiency is the most prevalent. It is estimated that just over 2 billion people are anaemic, just under 2 billion have inadequate iodine nutrition and 254 million preschool-aged children are vitamin A deficient.

Fortification is the practice of deliberately increasing the content of an essential micronutrient, i.e. vitamins and minerals (including trace elements) in a food, so as to improve the nutritional quality of the food supply and provide a public health benefit with minimal risk to health.

Hence, it represents a promising strategy to enhance the availability of vitamins and minerals for people whose diets are dominated by micronutrient-poor staple food crops.

What is the significance of micronutrients?

A healthy diet is considered to be one that satisfies human needs for energy and all essential nutrients (FAO 2004).

Micronutrient deficiencies are common. Roughly one third of the world's population suffers deficiencies of vitamins (particularly A and C) and minerals (such as zinc, iodine and iron).

Micronutrient deficiencies particularly affect poor rural populations in low and middle income countries as maintaining access to such a diversity of foods is not easy for poor populations.

Vitamins and minerals are the two types of micronutrients. While only needed in small amounts, they play important roles in human development and well-being, including the regulation of metabolism, heartbeat, cellular pH, and bone density. Lack of micronutrients can lead to stunted growth in children and increased risk for various diseases in adulthood. Without proper consumption of micronutrients, humans can suffer from diseases such as rickets (lack of vitamin D), scurvy (lack of vitamin C), and osteoporosis (lack of calcium).

Many are constrained by income level or distance to markets to eating a monotonous nutritionally inadequate diet consisting largely of one staple cereal or root crop (WHO 2014).

The public health benefits of fortification includes:

➤ Prevention or minimization of the risk of occurrence of micronutrient deficiency in a population or specific population groups.

➤ Contribution to the correction of a demonstrated micronutrient deficiency in a population or specific population groups.

➤ Plausible beneficial effects of micronutrients consistent with maintaining or improving health (e.g. there is some evidence to suggest that a diet rich in selected anitoxidants might help to prevent cancer and other diseases).

What are popular examples of biofortification cases?

Examples of biofortification projects include:

➤ Iron-biofortification of rice, beans, sweet potato, cassava and legumes;

➤ Zinc-biofortification of wheat, rice, beans, sweet potato and maize;

➤ Provitamin A carotenoid-biofortification of sweet potato, maize and cassava;

➤ Amino acid and protein-biofortification of sourghum and cassava.

Examples of fortified food:

➤ Case Study of Biofortified Pearl Millet:

Dhanshakti is the first iron biofortified crop to be officially released in India. It has been included in the **Nutri-Farm Pilot Program** launched by the Indian government. High Fe (71 ppm), early-maturing. open-pollinated pearl millet variety Dhanashakti commercialized in India; being adopted by >35,000 farmers. Biofortified pearl millet aims to increase the absorption level of iron in people by 5 to 10 percent, and grain yield by 5 to 6 per cent.

Though small in volume of production compared to wheat and rice, pearl millet is strategic because it is consumed by the poor in dry rural areas. About 35 million people eat pearl millet that costs much less than rice and wheat.

This new crop can be one of the strongest means to fight anaemia. It has 50-65 ppm iron, about twice more iron than modern wheat varieties, said Rai. Its increased zinc content is crucial for a person's immunity, brain functions and reproductive health.

Biofortified crops are farmer friendly, as no separate agricultural practice is required to grow them.

➤ **All India Coordinated Pearl Millet Improvement Project (AICPMIP)** initiated a coordinated Initial Hybrid Biofortification trial to encourage the incorporation of Fe and Zn traits into partners breeding programs and promote high-Fe hybrids for fast-track release.

➤ **Biofortified Sorghum:** ICRISAT-bred biofortified sorghum line ICSR 14001 with 50% higher Fe and Zn than base level out yielded all other entries in the state multilocation in Maharashtra state, India. ICSR 14001 proved superior under on-farm testing; under testing by the All India Coordinated Sorghum Improvement Project (AICSIP) towards its commercialization.

➤ **Biofortified Salt:** All India Institute of Medical Sciences has come out with a salt mixture containing some of the micronutrients including zinc and iron, to be given to children suffering from diarrhoea and dehydration. Zinc is essential in supporting our immune system, in synthesising (and degrading) DNA, in wound healing and several other activities. And the amount of zinc we need is not very much. In a human body of, say, 70 kg, there is but 2 to 3 grams of zinc. But if the level falls down to below normal, growth is retarded, diarrhoea sets in, eye and skin lesions appear, and appetite is lost. Thus, addition of zinc in the daily diet becomes essential.

The results are strikingly positive; with micronutrient supplementation, particularly zinc, in young children with acute diarrhoea was found to be very useful indeed.

What are the Challenges for the adoption of Biotech Biofortified Crops?

➤ A major problem of developing fortified crops is the cost of research and of regulatory compliance, due to due to the extreme precautionary regulation of biotech crops.

➤ GM technology tends to be proprietary, so intellectual property (IP) issues also need to be duly considered. As many as 16 patent and 72 intellectual property issues had to be resolved in the process of making Golden Rice available to poor farmers at no cost.

➤ A successful biofortification strategy requires widespread adoption of the crops by farmers and consumers, and this presents several important challenges.

➤ Public acceptance is also essential, especially if the new trait changes perceptibly the qualities of the crop, such as color (like in Golden Rice), taste, and dry matter content. Adequate information programs will play an essential role in ensuring acceptance.

➤ Wide dissemination of the technology, a requisite for success, also relies on good market networks and channels for the dissemination of agricultural information.

➤ The lack of agricultural infrastructure in some developing countries, especially in Africa, is a significant challenge for adoption of new biofortified varieties.

Conclusion

Biofortified crops, either by conventional breeding methods or by modern biotechnological tools, are not a panacea. The ultimate aim in global nutrition remains a sufficient and diverse diet for the world's population. However, biofortified crops can complement existing micronutrients interventions; can have a significant impact on the lives and health of millions of people, especially those most in need.

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DIRECTLY ELECTED MAYOR

Context

Shashi Tharoor has introduced a private member's bill for Mayoral reform to amend the Constitution for strengthening local governments.

The Municipal Corporation in India is the highest form of municipal government designed for the administration of civic affairs of top class cities in the country.

About Municipal Corporation

The Municipal Corporation consists of a committee which includes a Mayor with Councillors. The Corporations provide necessary community services to the Metropolitan Cities. The Mayor heads the Municipal Corporation. The corporation remains under the charge of Municipal Commissioner. The Executive Officers along with the Mayor and Councillors monitor and implement the programs related to planning the development of the corporation. The number of Councillors also depends upon the area and population of the city. In India, the four metropolitan cities; Delhi, Mumbai, Kolkata and Chennai, have the largest corporations.

The elections to the Municipal Corporations are conducted under the guidance, direction, superintendence and control of the State Election Commission. The corporations fall under the State government jurisdiction, therefore there are no uniform provisions for the election of the municipal bodies.

Why there is a debate on directly elected Mayor?

Indian cities have a weak and fragmented institutional architecture in which multiple agencies with different bosses pull the strings of city administration. Understandably, the most touted urban governance reform is that of having a directly elected Mayor.

Mayoral reform has now made its way into Parliament with Shashi Tharoor introducing a private member's bill to amend the Constitution for strengthening local governments.

What can be an Empowered Mayor?

The passage of the 74th Constitution Amendment in 1992 resulted in Urban Local Bodies (ULBs). However, it did not prescribe the manner of election, tenure or powers of the Mayors/Chairpersons of ULBs. The bill seeks to alter this system.

The bill aims to establish strong leadership for cities by providing for a directly elected and empowered Mayor. It also touches the right notes on other key urban governance reforms such as mandating the constitution of Area Sabhas and Ward committees and strengthening the devolution of functions to local governments.

It mandates the direct election of the Mayor, fixes the Mayor's term to be coterminous with that of the municipality, and makes the Mayor the executive head of the municipality. Vesting the executive powers of the municipality with the Mayor would be a very positive move.

How is the present system of Indirectly elected system of Mayor?

Most Indian cities still follow the Commissionerate system of municipal administration, a British legacy, in which the State government-appointed Commissioner is the executive head of the city while the Mayor has a largely ceremonial role.

In a democracy, executive power should vest with a person or a body that is democratically accountable. However, this does not necessitate the Mayor to be directly elected. After all, we do not directly elect the Prime Minster or the Chief Minister. Still they enjoy wide powers and are democratically accountable.

Can direcly elected mayors solve the problem?

Mayors do not enjoy similar powers not because they are not directly elected, but because State governments exercise enormous control over ULBs — politically, administratively and financially.

For responsive urban governance, we need a **powerful political executive in the** city with more autonomy, whether directly or indirectly elected.

An empowered executive at the city can also be achieved through an indirectly elected "Mayor-in-Council" system in which, much like the cabinet system in Parliament, the Mayor has to maintain the support of the majority of the council.

What can be possible problems of such System?

There is little evidence to suggest that directly elected mayors are better. In fact, States like Rajasthan and Himachal Pradesh which introduced directly elected Mayors reversed the decision due to the difficulties posed by such a system.

A fundamental issue with a directly elected Mayor is that instead of enabling efficiency, it might actually result in gridlock in administration, especially when the Mayor and the majority of elected members of the city council are from different political parties.

Notably, the bill gives the Mayor veto powers over some of the council's resolutions and also let the Mayor nominate members of the Mayor-in-Council and vest it with powers.

Essentially, it centralises power in the hands of the Mayor and his nominees and creates a political executive which neither enjoys the support of the elected council nor needs its acquiescence for taking decisions.

Conclusion

More cities should perhaps institute a directly elected mayor. But making it the only way through which Mayors can be elected, limits the options of cities and States.

An empowered political executive for the city can be achieved in multiple ways, including a directly elected mayor. When the U.K. sought to reform local governments, a directly elected mayor was only one of the three options given to the local governments.

India's stagnating urban governance system needs major reform, but it shouldn't be driven by using a sledgehammer. Creating an empowered and accountable political executive for cities is important, but a directly elected mayor should be a political option, not a constitutional decree.

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"INDRADHANUSH" PSB REVAMP PLAN ANALYSIS

Context

Indradhanush -a seven-pronged plan to revamp state-run banks failed to bring changes in the working of the Banking system.

Background

The Public Sector Banks (PSBs) play a vital role in India's economy.

But since the past few years, many large projects have stalled because of a variety of legacy issues including the delay caused in various approvals as well as land acquisition and also because of low global and domestic demand.

Public Sector Banks which have got predominant share of infrastructure financing have been sorely affected. It has resulted in lower profitability for PSBs, mainly due to provisioning for the restructured projects as well as for gross NPAs. Thus the Finance Minister came up with Indradhanush scheme to revamp the PSBs.

About INDRADHANUSH Scheme

The Indradhanush framework with its seven pronged plan is for revamping Public Sector Banks (PSBs) of India. Some of the recommendations were inspired by PJ Nayak Committee report.

What are the 7 Pillars of INDRADHANUSH Scheme?

The framework mainly comprised of these seven areas:

➤ Appointments,
➤ Banks Board Bureau (BBB),
➤ Capitalization Plan,
➤ De-stressing,
➤ Empowerment,
➤ Framework Of Accountability,
➤ Governance Reforms.

Appointments

The Government decided to separate the post of Chairman and Managing Director by prescribing that in the subsequent vacancies to be filled up, the CEO will get the designation of MD & CEO and there would be another person who would be appointed as non-Executive Chairman of PSBs.

Why separation was needed?

➤ This approach is based on global best practices and as per the guidelines in the Companies Act to ensure appropriate checks and balances.

➤ The selection process for both these positions has to be transparent and meritocratic.

➤ The entire process of selection for MD & CEO was revamped.

➤ Private sector candidates were also allowed to apply for the position of MD & CEO for the five top banks.

Bank Board Bureau (BBB)

Bank Board Bureau (BBB) will be a body of eminent professionals and officials, which will replace the Appointments Board for appointment of Whole-time Directors as well as non-Executive Chairman of PSBs.

They will also constantly engage with the Board of Directors of all the PSBs to formulate appropriate strategies for their growth and development.

The structure of the BBB is going to be as follows; the BBB will comprise of a Chairman and six more members of which three will be officials and three experts (of which two would necessarily be from the banking sector). Vinod Rai has been named as the head of BBB.

Capitalization

As of now, the PSBs are adequately capitalized and meeting all the Basel and RBI norms. However, the Government of India wants to adequately capitalize all the banks to keep a safe buffer over and above the minimum norms of Basel III.

We are also presuming that the emphasis on PSBs financing will reduce over the years by development of vibrant corporate debt market and by greater participation of Private Sector Banks.

Out of the total requirement, the Government of India proposes to make available Rs.70,000 crores out of budgetary allocations for four years from 2015-16 to 2018-19.

If the internal profit generation are excluded which is going to be available to PSBs (based on the

estimate of average profit of the last three years), the capital requirement of extra capital for the next four years up to FY 2019 is likely to be about Rs. 1,80,000 Crore.

Government estimate that PSB's market valuations will improve significantly due to

➤ Far reaching governance reforms.

➤ Tight NPA management and risk controls.

➤ Significant operating improvements.

➤ Capital allocation from the government.

Improved valuations coupled with value unlocking from non-core assets as well as improvements in capital productivity, will enable PSBs to raise the remaining Rs. 1,10,000 crore from the market.

De-Stressing PSBS

The infrastructure and core sectors have been the major recipient of PSBs' funding during the past decades. But due to several factors, projects are increasingly stalled/stressed thus leading to NPA burden on banks. In a recent review, problems causing stress in the power, steel and road sectors were examined.

It was observed that the major reasons affecting these projects were -

➤ Delay in obtaining permits / approvals from various governmental and regulatory agencies.

➤ Land acquisition.

➤ Delaying Commercial Operation Date (COD).

➤ Lack of availability of fuel, both coal and gas.

➤ Cancellation of coal blocks.

➤ Closure of Iron Ore mines affecting project viability.

➤ Lack of transmission capacity.

➤ Limited off-take of power by Discoms given their reducing purchasing capacity.

➤ Funding gap faced by limited capacity of promoters to raise additional equity and reluctance on part of banks to increase their exposure given the high leverage ratio.

➤ Inability of banks to restructure projects even when found viable due to regulatory constraints.

Some of the actions proposed / undertaken are as follows:-

➤ Project Monitoring Group (Cab. Sectt.) / Respective Ministries will pursue with concerned agencies to facilitate issue of pending approval/ permits expeditiously.

➤ Ministry of Coal/PNG will evolve policies to address long-term availability offuel for these projects.

➤ Respective Discoms will be provided hand-holding towards enabling early reforms.

Strengthening Risk Control Measures and NPA Disclosures.

Besides the recovery efforts under the DRT & SARFAESI mechanism the following additional steps have been taken to address the issue of NPAs:

➤ RBI has released guidelines for "Early Recognition of Financial Distress, Prompt Steps for Resolution and Fair Recovery forLenders: Framework for Revitalizing Distressed Assets in the Economy"suggesting various steps for quicker recognition and resolution of stressed assets.

➤ Creation of a Central Repository of Information on Large Credits (CRILC) by RBI to collect, store, and disseminate credit data to banks on credit exposures of Rs. 5 crore and above,

➤ Flexible Structuring of Loan Term Project Loans to Infrastructure and Core Industries.

➤ Wilful Default/Non-Cooperative Borrowers: RBI has now came out with new category of borrower called Non-Cooperative borrower. A non-cooperative borrower is a borrower who does not provide information on its finances to the banks. Banks will have to do higher provisioning if they give fresh loan to such a borrower.

➤ RBI has tightened the norms for Asset Reconstruction Companies (ARCs). This step will increase the cash stake of ARCs in the assets purchased bythem. Further, by having more cash up front, the banks will have better incentiveto clean their balance sheet.

➤ Establishment of six New Debt Recovery Tribunals DRTs.

Empowerment

The Government has issued a circular that there will be no interference from Government and Banks are encouraged to take their decision independently keeping the commercial interest of the organisation in mind.

A cleaner distinction between interference and intervention has been made. With autonomy comes accountability, accordingly Banks have been asked to build robust Grievances Redressal Mechanism for customers as well as staff so that concerns of the affected are addressed effectively in time bound manner.

The Government intends to provide greater flexibility in hiring manpower to Banks. The Government is committed to provide required professionals as NoDs to the Board so that well-informed and well-discussed decisions are taken.

➤ Framework Of Accountability:

1. A new framework of Key Performance Indicators (KPIs) to be measured for performance of PSBs is being announced. It is divided into four sections in indicators relating to quantifiable criteria:

➤ Efficiency of capital use.

➤ Diversification of business/processes.

➤ NPA management.

➤ Financial inclusion.

Measurement of qualitative criteria which includes strategic initiatives taken to improve asset quality, efforts made to conserve capital, HR initiatives and improvement in external credit rating.

Operating performance evaluated through the KPI framework will be linked to the performance bonus to be paid to the MD & CEOs of banks by the Government. The quantum of performance bonus is also proposed to be revised shortly to make it more attractive.

2. Streamlining vigilance process for quick action for major frauds including connivance of staff. Under the new guidelines, a time frame of six months, red flagging of accounts, constitution of a Risk Management Group (RMG) in banks to monitor pre-sanctionand disbursement, nodal officer for filing complaints with CBI, provisioning in four quarters and creation of Central Fraud Registry have been laid down.

Governance Reforms

The process of governance reforms started with "Gyan Sangam" - a conclave of PSBs and FIs .There was focus group discussion on six different topics which resulted in specific decisions on optimizing capital, digitizing processes, strengthening risk management, improving managerial performance and financial inclusion.

The Hon'ble Prime Minister promised of no interference from any Government functionary in the matter of their commercial decisions.This was immediately translated into a circular issued to all banks assuring them of "no interference policy", but at the same time asking them to have robust grievance redressal mechanism for borrowers, depositors as well as staff.

The GyanSangam recommendations included strengthening of risk management practices. Each bank agreed to nominate a senior officer as Chief Risk Officer of the bank.

Issues involved in implementing "Indradhanush scheme"

A year after the launch, much-hyped Indradhanush scheme seems to be falling apart in the following ways -

➤ Not only does the government seems to have underestimated the capital requirement of the public sector lenders in the wake of unprecedented provisioning for bad debt, there is little change in the way the five large banks with hand-picked CEOs operate.

➤ The human resource issues at the banks remain unchanged and the star-studded Bank Board Bureau (BBB) too has been unable to manage the problem. So far, it has had a limited play in revamping the public sector landscape.

➤ The government's plan to experiment with equity dilution in IDBI Bank is moving slowly and it has got SBI to agree to merge its banking arms with the largest bank of the country.

➤ Half a dozen public sector banks do not have full-time chairmen. At the time of the revamp, the government had said that it would split the post of chairman and MD, with a non-executive chairman at the helm. Since then vacancies have not been filled up.

➤ Indian Overseas Bank(IOB), which has been grappling with losses, has neither a chairman nor an MD & CEO and the lone executive director, is scheduled to retire at the end of next month. While the government has opted to appoint an MD and is finalizing ED appointments for other banks, no thought seems to have been given to the absence of the top deck at the Chennai-headquartered IOB.

➤ Even the selection of nine EDs by BBB has raised eyebrows as it was done against 18 vacancies that were going to arise. And, there were 45 in the fray. Now, there are attempts to widen the field by not giving a second chance to those who could not make it when the last round of interviews were conducted.

➤ Bankers pointed out that with narrowed-down fields, the government has also opted to let candidates decide which bank they opt for instead of filling up vacancies such as the one at IOB. This has also resulted in some of the general managers becoming EDs in the same bank, something that was a taboo for years given the possibility of conflict of interest.

➤ The government's push to rework the functioning of the five public sector banks where private sector executives were invited to apply for CEO's post has also not made any headway so far. Only Bank of Baroda got a CEO from the private sector, while the other four - Canara Bank, IDBI Bank, PNB and Bank of India - had to make do with public sector executives. The banks have been grappling with high NPA levels, leaving them little time to revamp operations. At BoB, there are murmurs of protest over the entry of private sector executives.

Other Loopholes

➤ There is no reference at all to disinvestment, in any way, shape or form.

➤ Regarding capital infusion, whether the government will infuse money to the PSBs according to their performance is not mentioned. Rather than giving capital to all the PSBs, government should have given it according to the performance of the PSBs in a year.

➤ About 80,000 employees are expected to retire in coming two years. And some more are expected to retire in coming years. So, there is an opportunity for government to restructure banks, but such a measure is not mentioned.

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CHINA - MYANMAR RELATIONS

Context

Myanmar State Counselor Ms. Suu Kyi met Chinese officials to boost diplomatic and economic ties in Beijing recently. They both signed various agreements and the stalled Myitsone dam project widely seen as a litmus test of a new phase of Myanmar's ties with China - came under sharp focus during talks between the two leaders.

Fig. 14

Introduction

Sharing a border more than 22 hundred kilometers long, China and Myanmar has established diplomatic ties 66 years ago. Since 2010, China is Myanmar's biggest trading partner, making up one third of its total trade volume.

China is also the country's biggest foreign investor, accounting for nearly 70 per cent of its total agreement investment volume. Myanmar's major exports to China includes gas, rice, sea products, rubber, leather and timber. Imports from China are mainly fuel, industrial materials, chemical products, machinery and consumer goods.

During the recent meet, they both signed various agreements and the stalled Myitsone dam project which is widely seen as a litmus test of a new phase of Myanmar's ties with China — came under sharp focus during talks between the two leaders.

The joint statement by the two governments covered the following areas:

➤ Myanmar's support for China's *'Belt and Road' connectivity* initiative along the ancient Silk Road.

➤ It also supported the *Bangladesh-China-India-Myanmar (BCIM) economic corridor* meant to industrialize a stretch — spanning more than 2,000-km — linking Kunming in China with Mandalay in Myanmar, passing through Bangladesh, and ending at Kolkata in India.

➤ Talks were also held with State Grid Corporation, China's state-owned behemoth that envisions establishing an *Asian super-grid,* with Myanmar as one of its nodes.

➤ For more than half-a-century, Myanmar has been a *victim of militancy,* fuelled by clandestine sale of drugs, timber and jade that is mostly channeled through China. The Joint Statement echoed Beijing's cross-border interests by noting China's support for Myanmar "to realize peace and national reconciliation through political dialogue".

Why China support to Myanmar?

China's involvement in Myanmar ranges from mining, oil, and gas to hydropower. To secure these resources, China outbid all other players, build necessary infrastructure at low cost, provide low-interest or no interest loans, arms sales and technical assistance, provide a political umbrella for the Junta in the international community, and maintain good bilateral relations with ethnic groups and the Junta.

Chinese companies are building roads, dams, and ports, using low interest loans and export credit. For example, China is building the Tasang Dam on the Salween River, which will be integrated into the Greater Mekong subregion power grid.

China's permanent membership in the UN Security Council provided political support to Myanmar's Junta regime. In 2007, the UN drafted a resolution that condemned Myanmar's human rights violations, which if it had not been vetoed by China, would have enabled international humanitarian organizations to operate without restriction and begin political dialogue with all stakeholders.

What is Myitsone dam project Issue?

Over the last 50 years, China has constructed more dams than all other countries combined. But

there is one dam that China never managed to get built i.e. the Myitsone Dam in Myanmar.

The Myitsone Dam was to stand at the headwaters of the Irrawaddy River, Myanmar's lifeline. It was designed as a hydroelectric power project, which would generate energy for export to China, at a time when Myanmar's economy depended on China. Later Myanmar faced crippling United States led sanctions and broad international isolation in the period when it was under Military Rule.

Fig. 15

Where others saw human-rights violations, China saw an opportunity to advance its own strategic and resource interests. When the Myitsone Dam project was introduced, China was also establishing a foothold in Myanmar's Kyaukpyu port on the Bay of Bengal, from which it would build energy pipelines to southern China.

Fig. 16

A stronger presence in Myanmar's Irrawaddy, which flows from near the Chinese border to the Andaman Sea, promised to provide China with a shorter, cheaper trade route to Europe. As an added benefit, the Myitsone project and, more broadly, China's relationship with Myanmar – would advance China's ambition of challenging India's advantage around the Indian Ocean.

But in 2011, just two years after the $3.6 billion project got underway, Myanmar's government suddenly suspended the dam's construction. Moving toward democratic reform, Myanmar government was eager to cast off the view of Myanmar as a Chinese client state.

Myanmar's reversal on the Myitsone Dam became a watershed moment for the country's democratic transition. It helped to bring an end to Myanmar's international isolation, and an easing of the long-standing Western sanctions that made Myanmar so dependent on China in the first place. In 2012, Barack Obama became the first US president ever to visit Myanmar.

Last year, Myanmar elected its first civilian-led government. The National League for Democracy, led by the former political prisoner Aung San Suu Kyi, won the election with a landslide victory.

Alongside all of this democratic progress, however, Myanmar's relations with China cooled considerably. After work on the Myitsone Dam halted, several other dam and energy projects were also put on hold, though Chinese firms did manage to complete multibillion-dollar oil and gas pipelines from Myanmar's western coast to southern China in 2013-14.

Aung San SuuKyi government has already set up an investigation committee to look for an appropriate resolution to the Myitsone dam issue.

Implications of this project

➤ Within Myanmar, the Myitsone project is widely regarded as a yet another neo-colonial policy, designed to expand China's influence over smaller countries, while feeding its own resource greed, regardless of local conditions or needs. And there is plenty of evidence to support this reading – beginning with China's demand for most of the electricity, even as much of Myanmar suffers from long daily power outages.

➤ Moreover, the construction that did take place had serious consequences for the people of

Myanmar. By flooding a large swath of land, the project displaced many subsistence farmers and fishermen, fueling a popular backlash that contributed to the end of a 17-year ceasefire between the Kachin Independence Army and government forces.

➤ Chinese pressure to restart the Myitsone project is reviving anti-Chinese sentiment in Myanmar. Indeed, while Suu Kyi was in Beijing, anti-Chinese protests flared anew back home.

➤ At a time when Myanmar is being wooed by all major powers and eager international investors, there is no incentive for the government to ignore the environmental and human costs of China's projects.

It is time for China to recognize that the decision to end the Myitsone project will not be reversed. It can hope that Suu Kyi's commission makes some face-saving recommendations, such as paying compensation to China or making new deals for smaller, more environmentally friendly power plants. But, with Suu Kyi committed to a neutral foreign policy, China's days of sucking resources from Myanmar, without any regard for the environmental or human costs, are over.

Myanmar is expected to balance its ties between China — its source of big ticket investments — and its other neighbours, including India and the West. China is Myanmar's foremost foreign investors, with investments of $15.4 billion already in the bag.

What is Bangladesh-China-India-Myanmar (BCIM) economic corridor and its impact on Myanmar?

The proposed 2,800-km long economic corridor will traverse from Kolkata via Benapole/Petrapole on the India-Bangladesh border to Dhaka and Sylhet before again entering India near Silchar in Assam. After coursing through Imphal, it moves to the Tamu-Kalewa friendship road in Myanmar. After crossing Mandalay and Tengchong the road will reach Kunming.

Fig. 17   Fig: BCIM corridor

Impact

➤ The corridor goes beyond physical connectivity through roads, railways, waterways and air to providing digital connectivity, trade facilitation and lowering barriers for smooth and seamless movement of goods, services, investment and people.

➤ The region is rich in natural, mineral and other resources. It encompasses 165,000 sq km of area with a population of 440 million people.

➤ It has the potential to generate huge economic benefits in trade, investment, energy, transport and communication linkages.

➤ The corridor aims to revive the south-western trade route of the ancient Southern Silk Road which facilitated the shortest journey between China and India and served as a highway for merchants carrying gold and silver in the 12th century.

What is The Belt and Road Initiative?

The Belt and Road Initiative refers to the Silk Road Economic Belt and 21st Century Maritime Silk Road, a significant development strategy launched by the Chinese government with the intention of promoting economic co-operation among countries along the proposed Belt and Road routes.

The Initiative has been designed to enhance the orderly free flow of economic factors and the efficient allocation of resources. It is also intended to further market integration and create a regional economic co-operation framework for benefit to all.

The *Silk Road Economic Belt* focusses on:

➤ Linking China to Europe through Central Asia and Russia.

➤ Connecting China with the Middle East through Central Asia.

➤ Bringing together China and Southeast Asia, South Asia and the Indian Ocean.

➤ The *21st Century Maritime Silk Road,* meanwhile, focusses on using Chinese coastal ports to Link China with Europe through the South China Sea and Indian Ocean and to connect China with the South Pacific Ocean through the South China Sea.

The *five major goals* of the Belt and Road Initiative are:

➤ Policy co-ordination,

➤ Facilities connectivity,

➤ Unimpeded trade,

➤ Financial integration,

➤ People-to-people bonds.

Fig. 18

How the Belt and Road Initiative can develop Myanmar?

➤ New road, rail, and air Infrastructure provides the central **city of Kunming** better access, particularly ocean access, to the likes of Myanmar, India, and Europe.

➤ Deep water port facilities and **oil & gas pipeline at Kyaukpyu in Myanmar,** connecting Yunnan Province and have already seen the start of shipping direct from China to Kyaukpyu via the Malacca Straits. This has significantly reduced steam time as they can now bypass Singapore, but does not address the security and other issues associated with the Straits.

➤ The Kyaukphyu / Yunnan Province pipeline is indicative of how China is using infrastructure development within Myanmar to promote energy security.

➤ **Dawei port development** with related improved infrastructure linking it with Bangkok, again improving shipping and transport times.

➤ The opening of *the* **Chongqing rail route,** the cheapest of 5 railway routes from China to Europe, with this mode of transport being twice as fast as shipping and is a more effective method of moving hi-tech and automotive parts.

➤ Myanmar is strategically located between two economic giants – China and India, and offers access to a 2.3 billion consumer base across all its neighboring countries. Additionally, in the domestic market, opportunities abound for investors in the booming automotive, construction, and electronic sectors, with demand being largely met through imports currently.

Conclusion

China is expected to play a more constructive role in Myanmar's change through its industrial focus in Myanmar — from energy and minerals to infrastructure and labor-intensive agriculture. Strategic change is also feasible as more education and medical training for local staff from commercial ventures will boost China's soft power in the country and beyond.

Furthermore, the strategic interests of China in terms of securing its energy future, including the new Silk Road and bringing much needed development in rural areas, would see Myanmar as a central and key player.

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INDIA AND MALDIVES MEET

Context

The foreign minister of the Maldives visited India and met with Sushma Swaraj, his Indian counterpart, and Hamid Ansari, the Indian Vice President. Asim and Swaraj discussed a range of issues, including strategic perspectives for maintaining peace and security in the Indian Ocean region amidst China's efforts to increase its footprint.

Introduction

Since the last decade, India's interests have expanded into the Indian Ocean, the geo-strategic importance of the Maldives to India has increased commensurately. Not only has New Delhi remained dedicated to its assistance in the Maldives during bilateral disputes, but it has also evinced a pattern of escalating support.

In the past, India's developmental assistance to the Maldives has been driven by three key priorities;

➤ Maintenance of cultural and historical relations,

➤ Trade and economic access, and

➤ Finally, security interests, including the safeguarding of critical sea lines of communication.

Important Past Visits are:

➤ Special Envoy of the Prime Minister on Counter-terrorism had visited Maldives in mid-July 2016 this year.

➤ Defence Secretary made a trip to Male for the 1st India-Maldives Defence Cooperation Dialogue on July 17-18 this year.

Why this visit?

Maldivian visit to India comes amid a relative decrease in political instability in the Maldives. The country during the past year had seen a sharp period of political infighting after the incumbent government convicted and jailed Mohammed Nasheed, the country's former and first democratically elected president, on terrorism charges.

India threw its support behind Nasheed and the Maldives began to progressively swing out of New Delhi's orbit, moving instead toward China. (A constitutional amendment passed last summer in the Maldives had India worried

about China effectively purchasing Maldivian islands). So now once again, both countries eventually move towards restoring their ties.

What were the different issues discussed in recent visit?

➤ *Indian Ocean Security and Maldives China Ties:* Maldives emphasized that this visit was in line with its "India first" policy. Maldives shed the concerns over growing "closeness" with China.

➤ *Spread of the ISIS In Maldives:* In addition they discussed that shared concerns about terrorism have brought the two countries closer together after a period of drift. India disclosed a recent visit to Male, the capital of the Maldives, by Syed Asif Ibrahim, a former chief of the Indian Intelligence Bureau. India is specifically concerned over the spread of the Islamic State in the Maldives. Maldives has said that it estimates between 50 and 100 of its 300,000 citizens have travelled to Syria and Iraq to fight for the Islamic State.
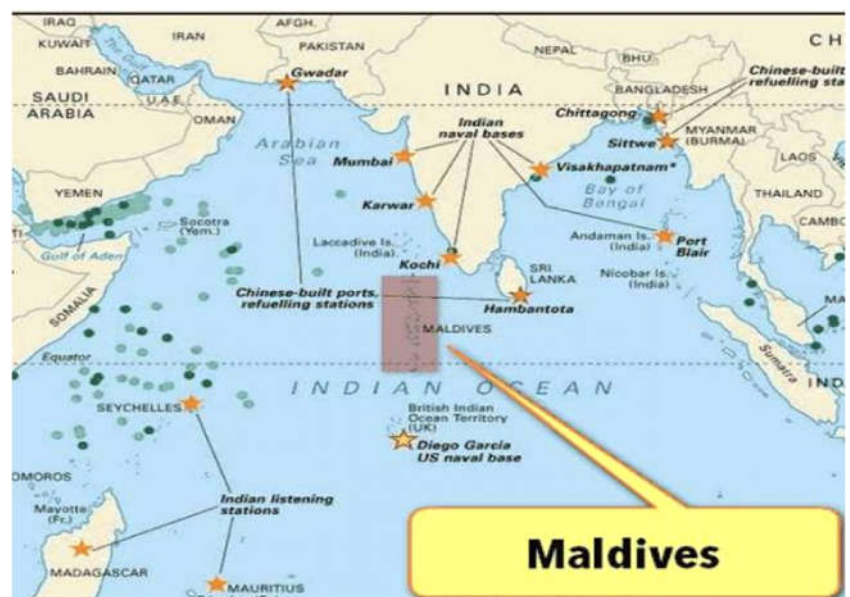

Fig. 19

➤ **Maldives Investment Forum:** Besides that the preparations for the Maldives Investment Forum which is to be held in New Delhi later this year was discussed.

What were the recent initiatives on Bilateral Front in past visits?

India and Maldives signed six agreements in the field of tourism, taxation, conservation, SAARC satellite and defence.

Action plan on defence cooperation

New Delhi is viewing its relationship with Male from the strategic and security prism, and the new action plan has been developed in the wake of growing Chinese influence in the island country. The defence action plan is an important component of the India-Maldives bilateral relationship and the shared strategic and security interests of the two countries in the Indian Ocean region.

The Action Plan envisages an institutional mechanism at the level of the Defence Secretaries to further bilateral defence cooperation.

Commonwealth Ministerial Action Group (CMAG) deliberations

India had played crucial role in helping the Maldives avoid action from the Commonwealth's human rights and democracy oversight body. India has shown steadfast leadership in protecting Maldives in the CMAG deliberations.

I-Haven Projects

India is ready to partner Maldives in its ambitious iHaven project and UTH projects.I-Haven is one of the most important projects in Maldives economic agenda, and is being developed under the new laws of the Special Economic Zone (SEZ).

The project has six main goals, developing an airport, a harbour, bunkering services, Real Estate, Shopping Malls, And Resorts In The Atoll.

How was the India-Maldives Relations in the past?

Indian Army's *'Operation Cactus'* foiled a coup in Maldives that was attempted by a pro-Eelam group in 1988. India maintains a naval presence in Maldives, at the request of the Maldives, since 2009.

Indian Coast Guard's Dornler was the first to land at the Ibrahim Nasir Airport with relief and supplies after the tsunami of December 26, 2004.

Maldives has pledged its support to India as a permanent member of an expanded UN Security Council.

On December 5, 2014, India dispatched "water aid" to the Maldivian capital of Male, after a fire destroyed the generator of its biggest water treatment plant.

GMR Issue

➤ Relations between India and Maldives came under a strain after Male had terminated the agreement it entered into with GMR in 2010 for the modernisation of the Ibrahim Nasir International Airport.

➤ Maldives government maintains the reason for cancellation of the project as "the contract was illegally awarded" by the then President Nasheed. The airport expansion project was subsequently given to the Chinese company, which will plough in US $ 800 million.

➤ GMR, meanwhile, has won an arbitration against the Maldives. The quantum of damages to be paid by the Maldives is yet to announced by the arbitration tribunal in Singapore.

What are the concerns over new Maldives-China ties?

➤ There were reports that China was looking to establish a base in Maldives after leasing out one of the islands under the liberalized leasing scheme brought in by the Malidivian Government, which was later denied by both Male and Beijing.

➤ The country's former President Mohamed Nasheed has more than once even commented on Maldives' 'pro-China' tilt.

➤ China is assisting Maldives in infrastructure and developmental projects, including a bridge between the island in which the airport is located, Hulhumale, and the Capital island, Male, which is about 10 minutes by a passenger ferry.

➤ Maldives is also part of China's Silk Road project, a move that has not gone down well in New Delhi.

The President's Office, has however, repeatedly clarified that China policy does not interfere with or diminishes the country's "special relationship" with India.

Why Indian Ocean Is Important To India?

Though India is predominantly a continental power, it occupies a central position in the Indian Ocean region. This fact greatly influences India's security environment.

Some of the important security considerations of India are:

➤ The accessibility of the Indian Ocean to the fleets of the world's most powerful states.

- Rising religious radicalism and extremism on the shores of the ocean and in its hinterland.

- The oil wealth of the Persian Gulf,

- The proliferation of conventional military power and nuclear weapons among the region's states and

- Smooth accessibility of key straits.

A number of countries of this region are afflicted with poverty, backwardness, fundamentalism, terrorism or internal insurgency. There are lingering territorial and maritime disputes and most of the conflicts since the end of the Cold War have also taken place in or around this region. In this kind of situation, it is only natural that India believes that their security would be best guaranteed by enlarging its security perimeter and by achieving a position of influence in the Indian Ocean region.

Recommendations for Indian Ocean Strategy

- **Firstly,** India's **maritime security** perimeter extends from the Strait of Malacca to the Strait of Hormuz and from the coast of Africa to the western shores of Australia. It would be only desirable for India that it takes a leadership role in the region and becomes the predominant influence.

- **Secondly,** India's goal in the region could be to ensure that present and potential role of external powers in the Indian Ocean does not jeopardize Indian security.

  In near future India's concern about the external powers seem related to China and the US though the recent development in India-US ties has moderated India's sensitivity to the US presence in the Arabian Sea. India now also seems to have moved away from the traditional rhetoric of nonalignment and the Indian Ocean as a 'zone of peace.' Malabar exercises have further boosted their confidence in each other, where Japan has also now become a regular participant.

- **Thirdly,** India is also concerned by the threat posed by Pakistan which has become the epicenter of world terrorism. The 26/11 terror attacks on Mumbai had originated from that country.

- The **fourth motive** of India in this region is to ensure its energy security. India is the fourth largest economy of the world which is almost 70 percent dependent on foreign oil and this dependence is only likely to increase in future. Moreover, India also has to protect its offshore oil and gas fields.

- **Finally,** there are also important commercial reasons to pursue a robust Indian Ocean strategy. India's other trade and commerce is dependent on the Indian Ocean. The maritime arc from the Gulf through the Straits of Malacca to the Sea of Japan is the equivalent of the New Silk Route and total trade on this arc is U.S. $1,800 billion. Besides, large number of Indians lives in the Gulf and Arab countries. Their remittances play an important role in the Indian economy.

Conclusion

Keeping these interests in view, India is pursuing a variety of policies aimed at improving its strategic situation. It is forging a web of partnerships with Maldives and other littoral states and major external powers to increase its influence in the region. These partnerships take the shape of trade agreements, direct investment, military exercises, aid funds, energy cooperation and infrastructure building.

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LATEST DEVELOPMENTS IN SCIENCE AND TECHNOLOGY

Context

Hereby, compiling the important recent development in the field of science and technology such as 4-D printing; Bio-CNG; DNA profiling and Scramjet engine.

A. 4-D PRINTING: FUTURE OF SHAPE-CHANGING MATERIALS

What is 4D Printing?

4D printing is a term used for self assembling materials. Self assembly means a material can change its shape after it is manufactured. For example, a thing is 3D printed and later once it is exposed to heat, the strand of material will become a sphere.

How does it work?

Researchers are combining different types of plastics and fibres to create 'smart' materials that can change shape when they come into contact with stimuli such as heat or water. Objects designed in this way can expand, fold or unfurl into pre-designed forms after being printed.

How is its different from 3D printing?

3D printing or additive manufacturing is a process of making three dimensional solid objects from a digital file.

In an additive process an object is created by laying down successive layers of material until the object is created. Each of these layers can be seen as a thinly sliced horizontal cross-section of the eventual object.

4D printing is advancement over 3D. 3D printed materials can be made more flexible and more useful by using structures that can transform over time in a pre-programmed way.

Who founded the concept of 4D Printing?

Skylar Tibbits, from the Massachusetts Institute of Technology (MIT), is pioneering the research in 4D printing with Stratasys, a digital manufacturing company.

What are its future applications?

4D printing is not commercially available today but in the near future self-assembly will bring a whole innovative world of manufacturing with minimum energy. As environmental, economic, human and other constraints continue to fluctuate, we will eventually need dynamic systems that can respond with ease and agility. 4D Printing is the first of its kind to offer this exciting capability of being dynamic, adaptable and tunable for on-demand performance.

Future application can be in the field of -

➤ **Textile Industry:** Suppose you are buying a dress online that takes shape in front of your eyes in your living room using a scan of the customer's body, the dress could be designed to fit perfectly. A computer model would then compress the design into the smallest possible space to fit inside a normal 3D printer. The customer would simply download the design, print it and unfurl it.

➤ **Army manoeuvres:** The U.S. Army has given a grant to Harvard University explore ways the military could use self-assembling objects, raising the possibility of shelters or bridges that spring into shape

➤ Further there is possibility of application in **Aerospace, automotive, building industries** etc.

B. BIO CNG

What is Bio-CNG?

CNG generated from agricultural waste is known as Bio-CNG.

How is it processed?

Biogas is a combustible mixture of gases consists mainly of methane (CH_4) and carbon dioxide (CO_2) and is formed from the anaerobic bacteria decomposition of organic compounds, i.e. without oxygen. The gases formed are the waste products of the respiration of these decomposer microorganisms and the composition of the gases depends on the substance that is being decomposed. The resulting bio-methane is subsequently brought to a high pressure stage. It is then known as bio-CNG (compressed natural gas), whose quality is similar to that of fossil natural gas.

Why do we need to process Bio-Gas?

Earlier, the industries used to flare the biogas into the atmosphere by burning it, which releases some elements like carbon dioxide and hydrogen sulphide into atmosphere harming the environment.

The idea of using agricultural residue for generation of CNG was considered after the problem of disposal of agricultural waste was surfaced as a major concern in the country as 600 million tonnes of agricultural waste is generated per year in the country. With very few uses of this waste, most of it gets wasted. For example, Bagasse which is generated after crushing of sugarcane is mostly used as dry fodder for the mills.

Where Is first Bio CNG Plant Inaugrated?

Recently, India's first bio-CNG plant is inaugurated in **Pirangut, Pune.** Plant is commissioned by city-based Primove Engineering Private Limited. The plant has been set up as a Proof of Concept (PoC) which can be replicated elsewhere.

OTHER BIO-CNG Operations

The Amul Dairy was the first in India's food industry to start a fully automated bio-CNG generation and bottling plant to utilize energy from its plant's waste.

Amul adopted medium pressure swing adsorption (MPSA) technology to convert biogas into bio-CNG. For every litre of milk that is processed at the dairy, one litre water (two million litre a day) is used for chemical cleaning of plant and machinery. This water has residual milk solids which earlier emitted 2,500 cubic metre of methane per day with 60 to 65% purity.

Now, the raw biogas from digesters is first collected in double membrane raw biogas balloon having capacity 1,000 cubic metre. From raw biogas balloon, it is transferred for purification.

How Is the Performance of Bio CNG?

There are examples of use of bio-CNG as automobile fuel in Europe but this will be the first time such a technology will be used in India. During the trial run, the Bio-CNG was tested in at least seven different kinds of vehicles which ranged from auto rickshaws to buses to test the fuel. Mileage for vehicles was the same or better than the ones achieved by using normal CNG.

The benefits are:

➤ It is approximately half the cost of gasoline and diesel – and less than other types of CNG fuel.

➤ It complies with engine manufacturers warrantees.

➤ Vehicle performance is similar to that of gasoline, diesel and NG fuels.

➤ It is the "greenest" vehicle fuel, resulting in significant carbon footprint reduction.

C. DNA PROFILING

What Is DNA?

Every cell of the human body from hair to blood, skin and tears, contains deoxyribonucleic acid (DNA). DNA contains genetic instructions for the development and functioning of human beings and it is generally associated with the long-term storage of information. DNA being present in every part of the body provides accurate information while identification.

What Is DNA profiling?

Scientists developed a technique called DNA fingerprinting in 1985 which later came to known as the DNA profiling. Modern-day DNA profiling is a very sensitive technique which only needs a few skin cells, a hair root or a tiny amount of blood or saliva to identify individuals.

Why do we need this technology?

DNA profiling is especially useful for solving crimes but can also be used to confirm if people are related to each other, such as for paternity testing.

DNA Profiling in Pathankot Operations

In the Pathankot Operations, NSG blowed away the building where terrorists were hiding. To identify them through their charred remains, the National Investigation Agency (NIA) attempted to determine the **DNA profile** of the terrorists.

The charred remains collected were sent for forensic examination. The tests conducted at the Central Forensic Science Laboratory (CFSL), Chandigarh, concluded that the burnt mass material belonged to two men.

What are the recent developments?

Recently, a study concluded that DNA Profiling could be replaced by **Hair Proteins.** Hair contains certain protein (mainly known as keratin) which is used for identifying purposes.

Proteins are chemically more stable and environmentally persistent than DNA. The hair protein analysis is proving to be more accurate than the DNA profiling tests. This method could be beneficial to various archaeologists and even investigators can more easily trace lineage and solve long-undiscovered mysteries.

D. SCRAMJET ENGINE

What Is Scramjet Engine?

A **scramjet** (*supersonic combusting **ramjet***) is a variant of a ramjet air-breathing jet engine in which combustion takes place in supersonic airflow. As in ramjets, a scramjet relies on high vehicle speed to forcefully compress the incoming air before combustion, but a ramjet decelerates the air to subsonic velocities before combustion, while airflow in a scramjet is supersonic throughout the entire engine. This allows the scramjet to operate efficiently at extremely high speeds.

Comparative Designs of:

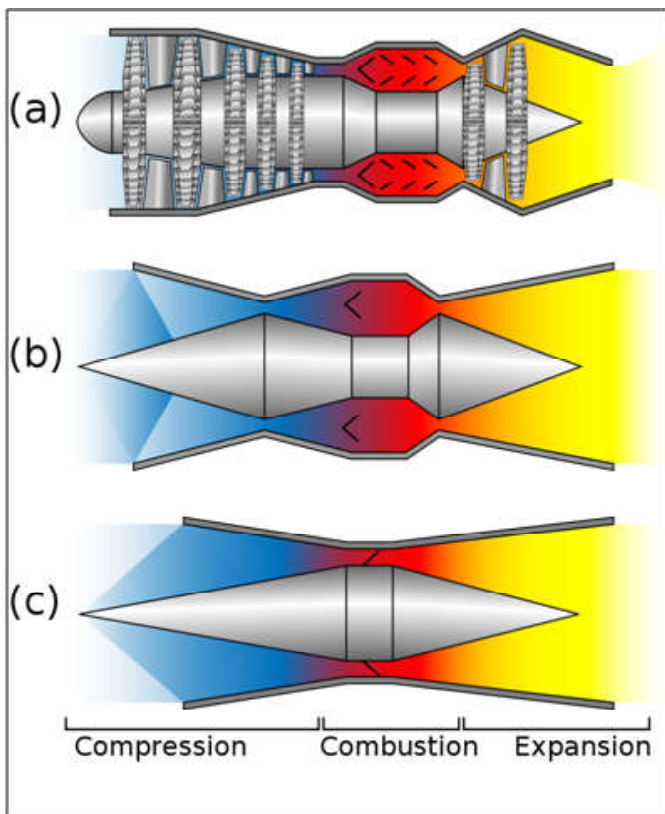▶ Turbojet Engine
▶ Ramjet Engine
▶ Scramjet Engine

Fig. 20

How does It work?

Scramjet engine designed by ISRO, uses hydrogen as fuel and the oxygen from the atmospheric air as the oxidiser. The scramjet engine is used only during the atmospheric phase of the rocket's flight.

Why Is It useful?

Scramjet engines will help bringing down launch cost by reducing the amount of oxidiser to be carried along with the fuel. Scramjet engine in flight is an important milestone in ISRO's endeavour towards its future space transportation system.

Things to know about ISRO's scramjet engine launch

With this, India became the fourth country to demonstrate the flight testing of a scramjet engines. This mission is a milestone for ISRO's future space transportation system.

India successfully tests its own scramjet engine in flight on board an Advanced Technology Vehicle (ATV) rocket. Two scramjet engines were tested during the flight from Sriharikota. The ATV rocket weighed 3,277 kg during lift-off.

The ATV vehicle, which touched down in the Bay of Bengal approximately 320 km from Sriharikota after a flight of 300 seconds, was successfully tracked during its flight from the ground stations at Sriharikota.

With this, the ISRO had successfully demonstrated its capabilities in critical technologies like ignition of air breathing engines at supersonic speed, air intake mechanism and fuel injection systems.

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