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INNOVATION & INDIA

- Let us take a look at India's ranking in the Global Innovation Index. Among around 140 nations, during the past five years, India's ranking has slipped from 66 (2013) to 76 (2014) to 81 (2015) and has now recovered from to 66 (2016 and 60 (2017), and most importantly to 57th in 2018.
- No one country has a monopoly on innovation. More than ever before, we have the chance now to retain our home-grown talent and utilize it to develop new industries that will change the world.

Invention or Innovation?

- It's important to distinguish between inventions and innovations. Invention is a subset of innovation. The power of innovation lies in new value creation on a commercial scale. When an invention is exploited successfully commercially, it becomes an innovation. Consider the electric bulb, great invention, but producing them in bulk, and serving millions of customers is what made it an innovation. Innovation can be defined as something that adds value to what you are already doing, in a unique, unprecedented way which has the potential to add value to the community/ stakeholders.
- India's challenge of not being able to make the journey from mind-to-marketplace can be addressed only by building a powerful national innovation ecosystem. The essential elements of such a national ecosystem should ideally comprise physical, intellectual and cultural constructs.
- Beyond research institutions, it should also include idea incubators, accelerators, technology parks, a robust intellectual property rights regime, balanced regulatory systems, strategically designed standards. Furthermore, academics who believe in not just 'publish or perish', but 'patent, publish and prosper' should form a crucial cog in the machine of this ecosystem. Scientists, who have the passion to become 'technopreneurs', potent inventor- investor engagement, 'ad'venture capital, and passionate innovation leaders are as important as a bold and innovative public procurement policy for and of innovation that we alluded to earlier.

Efficiency vs. Innovation:

- A major key to our success has been efficiency—the perfecting and scaling of existing systems. Just look at our dominance in the information technology (IT) services sector, which is now worth more than $150 billion annually.
- But it's not enough to know how to win at today's game, you need to be setting the rules for tomorrows. Call-centre support is being replaced by customer response systems fuelled by artificial intelligence.

- Progressive IT firms are transitioning from offering just “services" to full-scale “solutions," from social media and analytics to cloud-based support. These depend not merely on efficiency but on embracing the latest technology, from big data and machine learning to robotic processes.
- To keep pace, we must be re-inventing, challenging and rethinking the way we do business. That means venturing into unfamiliar territory. Step one for India in seizing the global tech stage is internalizing this elemental spirit of innovation.

Building Knowledge Societies:

- The possibility of access to `knowledge for everyone’ has vastly improved thanks to rapid advances that India has made in building digital infrastructure, that too in a way that access to information and knowledge is extremely affordable.
- Just a year ago, India was ranked 155th among 230 nations with regard to mobile data transmission. But today it has leapfrogged into the number one position leaving USA and China in the second and third position. What is even more important is that internet access has been made more affordable and accessible for a vast majority of the population thus opening p the avenues of access to knowledge to anyone, anytime and anywhere.

Need to move to `Right Education’ and the `Right Way of Education’:

- Right education, because exponential technology is very rapidly increasing information and knowledge and this, in turn, is creating the need for newly educated workforce with different demands on skills and competencies. Right way of education, because the digital disruption is creating new ways of learning!
- In this digital age, our education should change from our children using the `brain as storage’ to `brain as an intelligent processor’. With the internet becoming more and more accepted as an educational tool, classrooms should now able to expand beyond four walls.
- With Artificial Intelligence becoming more mainstream in the workforce, the ‘human touch’ of qualities like emotional intelligence, especially in four domains; self-awareness, social awareness, self-management and relationship management will form the cornerstone of tomorrow’s learning societies.

Embracing Risk and Failure:

- Failures are an essential ingredient for innovation—just look at the career trajectory of Apple Inc. founder Steve Jobs or even the travails of Tesla Inc. and SpaceX mastermind Elon Musk. So is risk. Creating a corporate culture that embraces both these elements, cultivates resilience, encourages creativity and fosters a growth mindset. And these are precisely the conditions for successful innovation.

- In India, we have traditionally been much more risk-averse, and for good reason. With little or no access to private risk capital—until recently—we built our businesses on savings and debt. And historically, there hasn't been a market for unconventional, experimental career roles with no foreseeable return on investment (RoI).
- We pride ourselves on looking for the safest, most secure options for our hard-won investments, often basing our decisions on the input of family and friends.
- Now, that's starting to change. The entrance of venture capital into our markets is allowing us to make bolder decisions aimed at fostering innovation.
- It's precisely this mindset that will enable us up to capitalize on the opportunities in front of us over the long term. For companies, this act of growing comfortable with risk—and pursuing forward-looking opportunities with potential for enormous payoff, even if they aren't a "sure thing"—is a critical step in the right direction.

A change in Thinking:

- The good news here is that innovation isn't just a buzzword. It's a skill, something that can be taught, nurtured and coached. Research shows that organizations that innovate consistently share three attributes: they have the willingness to innovate, the ability to innovate, and can pull it all together—i.e., they have the leadership to innovate.

Balancing the outcomes of Innovation:

- Just like a coin, even innovation has two sides and it is imperative that the global community works towards innovation-led inclusive and sustainable growth and not innovation-led irreversible destruction. So there must be a global dialogue and understanding on the intended and unintended consequences of new technology as also agreed controls from the humanistic angle and welfarist perspective, just as we set up a common global agenda in the Paris agreement on Climate Change. India should lead in such `responsible' innovation.

Let us look at the three key growth enablers for India: mobility, urbanisation, and agriculture:

- **Mobility:** Moving people and goods around, in an efficient and sustainable manner, is at the heart of any high growth economy. Clean, safe and convenient mobility will be soon within the reach of all Indians. This is enabled by the rapid progress in electric, autonomous and connected vehicles. The adoption of shared vehicle ownership model extends the reach of these technologies even to those at the bottom of the pyramid.
- **Urbanisation:** Large-scale movement of people from rural to urban regions is commonly observed in fast growing economies. Urbanisation leads to the emergence of smart cities that are powered by smart and connected technologies.

- Energy self-sufficiency of smart cities is enabled by distributed power generation, advances in renewables (especially solar PV), battery energy storage, etc. Digital technologies such as data analytics and IoT are keys to, among others, water resource management and solid waste management for these smart cities.
- **Agriculture:** A growing economy has to feed growing populations and keep its workforce healthy and fit. The shift from improving farm productivity to increasing the farmer's income is a crucial step. The deployment of precision farming, farm automation (including autonomous tractors), smart agricultural implements, etc., will improve the penetration of technology into traditional Indian agriculture.
- Disruptive technologies and innovative ideas will be at the heart of the new economic growth model. Growing economies like India can greatly benefit by proactively recognising the disruptive potential of new technologies and by investing in innovative ideas. To achieve this, India needs to provide the right institutions for innovation and knowledge transfer. To align the social and private benefit of innovation, collaborative mechanisms for innovation of ideas should be encouraged.

India and 'Innovation Diplomacy:

- A consistent policy focus on innovation seems to have helped India improve its ranking in the Global Innovation Index, from 81st in 2015 to 57th in 2018.
- Notably, this strong domestic policy focus is supplemented by the country's ongoing diplomatic efforts in forging strong economic ties with other nations, based on innovation - a strategy known as 'innovation diplomacy'. India's ongoing efforts in promoting bilateral investment and cooperation in the area of innovation had a strong impact in 2017. The theme of innovation, R&D and start-ups remained an important agenda point in almost all the bilateral visits of Prime Minister Narendra Modi and in other diplomatic engagements.
- The launch of the India-Israel Industrial R&D and Technological Innovation Fund in August and India's hosting of the Global Entrepreneurship Summit (convened by the US) in November reflected the serious intent of the Indian government with regard to innovation diplomacy.
- **The India-Israel Industrial R&D and Technological Innovation Fund** - the India-Israel Innovation Fund for short - encompasses an annual investment of $4 million from each country for five years, putting its total value at $40 million.
- The launch of the joint fund could potentially emerge as one of the masterstrokes of India's innovation diplomacy. To reveal its likely implications, it is critical to consider the famous Binational Industrial Research and Development Foundation (BIRD) programme, incorporated jointly by the US and Israel in 1977.

- **Binational Industrial Research and Development Foundation (BIRD)** - Under the ambit of BIRD, funding is provided for the joint development of new products and technologies by Israeli and US companies.
- The idea was that US companies would benefit from Israel's high- tech talent pool, and Israeli companies from access to America's vast domestic and global market. Since 1977, under the BIRD programme the cumulative sales value of products developed from its projects is estimated to be $10 billion, demonstrating the tremendous commercial success and sustainability of BIRD over the past five decades.
- It has also played a very important role in the growth of Israeli companies into global powerhouses - the type of development that Indian SMEs and start-ups are pushing for at the moment. Given the success of BIRD, one can only imagine the immense possibilities and market value that the India-Israel Innovation Fund could generate for both countries.
- **Global Entrepreneurship Summit** - Along similar lines, India's hosting of the Global Entrepreneurship Summit, together with Modi and President Donald Trump's increasingly warm relationship, could be seen as a significant signal from the US that it is ready to expand its economic relationship with India in the areas of joint product development and innovation commercialisation, like it did with Israel in 1977.

Why will the 'Innovation Diplomacy' work?

- India is the planet's sixth largest economy. It presents huge market potential for almost every company in the world. The country suffers from a dichotomy: on one side, it has huge unmet needs for affordable healthcare, safe drinking water, agriculture, and pollution and disaster risk reduction; on the other side, it has a growing pool of young technology enthusiasts and innovators. This uncommon phenomenon ideally positions Indian start-ups and companies to collaborate with their global counterparts under the umbrella of bilateral innovation funds, to develop effective technological solutions for addressing social issues, with the potential to scale up for global markets.

Healthcare in India:

- In India – Ayushmaan Bharat – An attempt to transform India's Healthcare Map:
- Innovative and path-breaking scheme in the history of public health in India; it may have a transformative impact if implemented in an effective and coordinated manner.
- **Aim:** To make path-breaking interventions to address health holistically, in primary, secondary and tertiary care systems
- **Objective:** Prevention + Promotion (Health & Wellness)
- Full proof mechanism while allowing States to accommodate the existing schemes, keeping
- the flavour of Digital India intact

Budget States:

- Rs 52,800 crores for the health ministry, up from Rs 47,352 crore during the previous year signifying an increase of 11% (yet as a percentage of the GDP, it is still among the lowest in the world).

Two Major Initiatives:

HEALTH AND WELLNESS CENTRE:

- Foundation of India's health system 1.5 lakh centres will provide – comprehensive health care, including for non- communicable diseases and maternal and child health services, provide free essential drugs and diagnostic services
- **National Health Protection Scheme:**
- Will cover over 10 crore poor and vulnerable families (approximately 50 crore beneficiaries) Coverage of up to ₹5 lakh a family a year will be provided for secondary- and tertiary- care hospitalization (50 crore beneficiaries)
- **Note: Health is a State subject.**

Innovative Agriculture:

- In a country where two-thirds of the population depends on agriculture for their livelihood, the importance of this sector cannot be overemphasised. It accounts for nearly 17 per cent of the country's GDP and feeds 1.3 billion people.
- Over the past few decades, agriculture has witnessed different phases of growth. The first phase, which is referred to as Farming 1.0, extended from 1947 to 1966 and was characterised by radical land reforms. The second phase was the Green Revolution which increased farm productivity and rid us of our dependence on foreign food aid. Farming 2.0 was a golden age in India's agriculture.
- India's farmlands today are at a critical juncture. Our population continues to grow, placing an ever-increasing strain on the sector. The country is also rapidly industrialising and there is massive migration to cities. Agricultural incomes are falling and the sector is in danger of being left behind.
- The need has arisen for another revolution: a new phase in Indian agriculture which will be defined by innovation and technology; an age where we will look to balance productivity and economics with social and environmental considerations. This age will usher in an era of unprecedented productivity and prosperity for farmers.
- This Farming 3.0 age will be all about disruptive innovations like Smart Farm Machinery, Micro Irrigation, Precision Farming, Digital Platforms and Partnering Stakeholders. Smart Farm Machinery is about producing more with less. Smart machines and technological breakthroughs have the potential to increase output, lower costs and boost farm incomes.

- **Micro Irrigation** frees the farmer from vagaries of seasonal monsoon while also conserving the limited water resources. With agriculture consuming about 80 per cent of the total renewable water resources, adoption of micro-irrigation practices will help conserve our precious water reserves and also boost yields and productivity.
- **Precision Farming** is an approach to farm management that uses information technology to access real time data about crops, soil, weather etc. to ensure crops and soil receive exactly what they need for optimum health and productivity.
- Digital platforms have the potential to put farmers directly in touch with the consumer. Middlemen will be frozen out of the system, and farmers will get fair price for their produce.
- The government is working with a few States to move APMCs — the Agricultural Produce Market Committees — to the national electronic platform, eNAM, for selling fruits and vegetables. Digitisation of agriculture also has the power to boost productivity by putting farmers in touch with each other and also with agri experts.
- Partnering stakeholders is all about collaborating with a wider ecosystem of partners and engaging them in devising solutions to the present and upcoming challenges of agriculture. This involves working with agricultural colleges, research institutions, scientists, commercial investors, grant-making organisations, key influencers, the government and the public at large.
- Farming 3.0 is changing the narrative around agriculture from subsistence to sustainability.
- A strong engagement with farmers, and investments in key technologies like micro- irrigation, crop care, advanced seeds and digital platforms will play an important role in this new revolution.
- Technology and innovation will lay the foundation for Farming 3.0, and help realise the vision of doubling farmers' income.

In India – Doubling of Farmers' Income:

- The Government has been reorienting the agriculture sector by focusing on an income-centeredness, which goes beyond just achieving merely the targeted production.
- The income approach focuses on achieving high productivity, reduced cost of cultivation and remunerative price on the produce, with a view to earn higher profits from farming.
- Initiating market reforms through the State Governments by amending the agriculture marketing regime.
- Encouraging contract farming through the State Governments by promulgating of Model Contract Farming Act.
- 22,000 Gramin Haats are to be upgraded to work as centers of aggregation and for direct purchase of agricultural commodities from the farmers.
- Launch of eNAM initiative to provide farmers an electronic online trading platform.

- Implementation of flagship scheme of distribution of Soil Health Cards to farmers so that the use of fertilizers can be optimized. So far more than 15 crore Soil Health
- "Paramparagat Krishi Vikas Yojana (PKVY)" under which organic farming is being promoted. North East is being developed as organic hub.
- A revised farmer friendly "Pradhan Mantri Fasal Bima Yojana (PMFBY)" have been
- launched. The scheme covers various types of risks from pre-sowing to post harvest and the farmers have to pay very nominal premium.
- Under "Har Medh Par Ped", agro forestry is being promoted for supplementing farm income, increase risk management and climate resilient agriculture as an important component of Integrated Farming Systems
- The Indian Forest Act, 1927 was amended to exclude bamboo from the definition of 'trees'. Henceforth bamboo grown outside forest area will not be regulated under the provisions of felling and transit rules.
- As a corollary the restructured National Bamboo Mission was launched for development of the value chain of bamboo as a measure to strengthen rural economy by linking the producer (farmer) to markets (industry).
- Launch of PM-Asha scheme which will ensure MSP to farmers for oilseeds, pulses and copra.
- Minimum Support Price (MSP) is notified by the Government for certain crops. Giving a major boost for the farmers income, the Government has approved the increase in the MSPs for all Kharif & Rabi crops for 2018-19 season at a level of at least 150 percent of the cost of production.
- Bee keeping has been promoted under Mission for Integrated Development of Horticulture (MIDH) to increase the productivity of crops through pollination and increase the honey production as an additional source of income of farmers.
- Rashtriya Gokul Mission has been implemented to enhance milk production and productivity of bovines and to make milk production more remunerative to the farmers.
- National Livestock Mission has been implemented to increase productivity and genetic improvement of livestock.
- Foreseeing high potential in fisheries sector, a Blue Revolution with multi- dimensional activities mainly focusing on fisheries production, both inland and marine is being implemented. The National Mission for Sustainable Agriculture (NMSA), on of the eight Missions under the PM's National Action Plan on Climate Change is anchored in the Ministry of Agriculture and Farmers Welfare. The revised strategy document for 2018-2030 was prepared for enhancing preparedness of the agriculture and allied sector towards the challenges posed by climate change.

New initiatives taken for increasing production and productivity of Nutri-Cereals from 2018-19 onwards: –

- Breeder seed production of Nutri-Cereals Creation of seed hubs
- Certified seed production
- Seed Mini Kits Allocation
- Strengthening/creation of Center of Excellence Publicity of nutri-cereals
- **Rashtriya Krishi Vikas Yojna (RKVY)** is an important scheme of the Government of India, Ministry of Agriculture and Farmers' Welfare (MoA&FW), aimed at strengthening infrastructure in agriculture and allied areas.

Pradhan Mantri Annadata Aay SanraksHan Abhiyan (PM-AASHA):

- PM-AASHA will provide MSP assurance to farmers: A reflection of Government's commitment to the "Annadata" Giving a major boost to the pro-farmer initiatives of the Government and in keeping with its commitment and dedication for the Annadata, the Union Cabinet has approved a new Umbrella Scheme "Pradhan Mantri Annadata Aay SanraksHan Abhiyan' (PM-AASHA).
- The Scheme is aimed at ensuring remunerative prices to the farmers for their produce as announced in the Union Budget for 2018.

Components of PM-AASHA:

- The new Umbrella Scheme includes the mechanism of ensuring remunerative prices to the farmers and comprised of
- Price Support Scheme (PSS),
- Price Deficiency Payment Scheme (PDPS)
- Pilot of Private Procurement & Stockist Scheme (PPPS).

CONTRIBUTING TO A KNOWLEDGE BASED REVOLUTION

Introduction:

- India, over the centuries has never had a dearth of great thinkers, scientists, engineers, innovators, philosophers and artists.
- Our philosophy, culture, fine arts, temples and sculptures over thousands of years also bear testimony to the same. Many like Sundar Pichai, Satya Nadella and other Indians are leaders in some of the largest and most innovative companies of the world like Google, Microsoft, etc.
- Access to an innovative ecosystem in these developed countries has allowed them to realise their aspirations and convert their dreams into reality. We need to ensure that our youth can also realise their true potential through the creation of a vibrant ecosystem of innovation and entrepreneurship in this country.

- A strategic national flagship initiative Atal Innovation Mission (AIM) has been set up under the auspices of the NITI Ayog. AIM's focus is to create and promote a world class innovation and entrepreneurial ecosystem.

A Holistic Framework:

- The Atal Innovation Mission has adopted a holistic framework to achieve its objective.
- At the school level there is a tremendous need for creation of an innovative, problem solving
- mindset in the students of high schools. These students are going to be the future of our country and we need to ensure that thousands of entrepreneurs and innovators blossom from our school education systems.
- At the university and industry levels, there are a growing number of start-ups thanks to several start-up initiatives in the country. But there is a growing need for world class incubators in various institutions of the country to foster and nurture start-ups enabling their success.
- Finally a cultural shifts in attitudes towards entrepreneurship is needed.
- We have traditionally been a risk averse society. Education and awareness of the immense
- opportunities for entrepreneurial ventures is needed.
- Incentivization of relevant product innovations with commercial and social impact through national challenges are necessary.
- These will trigger and incentivise entrepreneurial thinking and minimising the fear of risk taking.

Tinkering labs:

- The world is changing at a dizzying pace. Revolutionary technological advances are transforming the world and giving rise to new technologies and business innovations at an exponential rate.
- 3D printers are enabling real time conceptualization, design, prototyping and manufacturing.
- IoT or the Internet of Things are connecting sensor technologies to man, machine, devices, mobile and satellite technologies in every industry enabling precision agriculture, water cleansing and conservation, climate change controls, disaster prediction and management, driverless cars and advanced transportation systems.
- Big Data and Analysis, Artificial Intelligence is enabling complex data processing and decision making through advanced easy to use tools.
- Unless children in our schools have access to these technologies and get familiar with them, tinker with them, experiment with them, design solutions with them, prototype them, test them, allowing unbridled expression to their imagination and creativity, they will be left far behind.

Atal Challenges:

- India is the world's largest democracy with over a billion people, with each state having different issues and problems to solve both from economic growth as well as societal needs perspectives.
- It is important to expose the magnitude and impact of these problems to the future innovators of the country so as to enable them to understand the enormous positive impact of solving these problems.
- There is, therefore, an urgent need to incentivise relevant problem-solving innovations at local, regional and national levels across the country at schools, university and industry levels.
- The Atal tinkering challenges at a school level, the Atal new India challenges at industry levels, Atal small business innovation and research challenges at a national level will incentivise relevant problem solving.

Collaboration is the key:

- None of these initiatives are going to succeed without proactive collaboration with corporates, individual mentors, specialists and professionals who want to give back to society.
- Global partnerships can enable sharing of best practices. NGOs and multinational companies can collaborate on almost all these initiatives.
- Collaboration will be key to the success of these initiatives. AIM has, therefore, launched a Mentors of change - Mentor India Network across the country and plans to extend it worldwide.

Conclusion:

- India got left behind in the Industrial Revolution that swept the world in the last century. But India does have a unique opportunity to contribute in the knowledge based revolution that is sweeping the world today.
- That is why Atal Innovation Mission initiatives are so important and need to be embraced by all. The children and youth of our country deserve it. We all need to collectively make it happen.

YOUTH EMPOWERMENT SCHEMES AND INITIATIVES IN INDIA

- Today population of India is more than 130 crore and 62% of it is below the age of 59 years making India the youngest company in the world. The country's economy should be able to handle this increased labour force.

Key Highlights:

- National Manufacturing Policy estimates that MSME sector has the potential to provide employment to 10 crore youth of the country by 2022. According to the National Sample Survey Organisation 2015-16, the MSME sector has created approx. 11.10 crore employment opportunities. Under Deen Dayal Upadhayay Gram Kaushal Yojana, 5.73 lakh rural youth have been trained from 2014-15 to February 2018. Under the ongoing Pradhan Matri Yuva Udyamita Vikas Abhiyan (PM-YUVA) of Ministry of Skill Development and Entrepreneurship, 22,308 students have been enrolled.

NANO MISSION

Introduction:

- The Nano Mission is an umbrella programme of government of India for overall development in the field of Nano technology through studies, research and innovation.
- Nano technology deals with variety of applications in the Department of Science, telecommunications, food processing and environmental protection. Acknowledging its vast potential, the Department of Science and Technology (DST) launched a programme called Nano Science and Technology Initiative (NIST) in 2001. The Nano Mission is successor of this programme.

Objectives of the Nano-Mission:

- Basic Research Promotion
- Infrastructure Development for Nano science and Technology Research
- Nano Application and Technology Development Programmes
- Human Resource Development, International Collaborations
- The department of science and Technology is the nodal agency for implementing Mission.
- Improving Governance in Public Systems

Introduction:

- Public sector innovation involves creating, developing and implementing practical ideas that achieve a public benefit. These ideas have to be at least in part new and they have to be taken up for implementation rather than remaining simply as ideas. And, most important is that they have to be useful.

- The innovators working in various public systems should look out, interact and listen to both the persons who are delivering and receiving the services.

Definition of Innovation:

- An innovation in public systems can be defined as a process/policy intervention that
- Improves the public service delivery.
- Enhances the efficiency of governance structure i.e. simplifying procedures etc.
- Improves citizen satisfaction, Promote transparency and accountability.
- Reduce the time taken for service delivery.
- Reduces the cost without affecting the efficacy and efficiency.
- Leverages the use of technology.

TYPES OF INNOVATIONS:

Service Innovations:

- Service Innovations- intend to introduce a new service, product or improvement in the quality of an existing service or product. Bharat Interface for Money (BHIM) is a mobile application developed by the National Payments Corporation of India (NPCI) which enables e-payments directly through banks.

Service Delivery Innovations:

- Common Service Centres (CSCs) are the public utility services, social welfare schemes, healthcare, financial, education and agriculture services, apart from a host of Business to Citizen (B2C) services to citizens in rural and remote areas of the country.

Administrative/ Organizational Innovations:

- Electronic National Agriculture Market (e-NAM) is a Pan-India electronic trading portal launched in 2016 completely funded by the Central Government and implemented by small Framers' Agribusiness Consortium (SFACI). It created a national network of physical mandis which can be accessed online thus enabling buyers, situated even outside the State, to participate in trading at the local level.

Policy Innovations:

- National Policy on Biofuels (2018) was first drafted by the Ministry of New and Renewable Energy in 2009 but later was shifted to the Ministry of Petroleum and Natural Gas in 2017 and was finally launched in 2018.
- The policy encourages the use of biofuels by extending appropriate financial incentives under various categories which results in reduce import dependency, a cleaner environment, employment generation etc.

Systemic Innovations:

- Systemic Innovations employ new or improved ways of interacting with the citizens and engage them in service design which encourages a participative approach in governance.
- India Innovation Growth Program is a public, private partnership of the Department of Science and Technology, Government of India and Lockheed Martin Corporation. This initiative throws open a chance to the public to suggest innovative solutions to major societal problems.

Promoting Innovations in Public Systems:

Understanding Opportunities and Problems.

- Problems, failures and complaints makes innovation either possible or necessary.
- Attuned to new trends, customer demands, data or technologies and innovations that are happening elsewhere.
- Better understanding of how people live their lives, and how services are used to help improve them.
- Find new insights into what people need, to end up with a clearly defined problem.
- Generating and Sharing Useful Ideas
- Prioritise the areas of concern (e.g. health, education, infrastructure, water supply, sanitation, PDS etc.) which need to be addressed.
- Channelize data, information and knowledge into a usable form so that it can be fully exploited to support evidence-based decision making.
- Innovative Practices: High Potential for Adoption/Replication
- Ecological Sanitation (ECOSAN)
- As the country has set out on the Swachh Bharat Mission, one of the major attributes is to end open defection.
- ECOSAN, an initiative that is one of its kind, offers an economical and simple-to-use option in contrast to the convectional waste transfer methods where the human excreta and body wash water do not go waste.
- The toilet is in daily use and never smells. The urine is collected in a drum/pot outside the toilet for later use, and body wash water is used beneficially by diversion to the tress outside.
- ECOSAN toilets are much more helpful in flood-prone areas as it is completely sealed and would not result in overflow. They are highly useful in drought-prone areas for being a remarkable alternative in the sustainable use of water.
- ECOSAN toilets reduce health risks by avoiding contamination of drinking water by human waste; to prevent ground and surface water pollution, and to reuse the energy content within the human waste.

- Use of Plastic Waste in Road Construction
- The technological approach developed by Prof. Rajagopalan Vasudevan has been found to be very useful in utilising plastic waste on a large scale.
- The utilisation of plastic waste to improve the properties of the bituminous mix offers a very
- promising alternative with its bulk and eco-friendly usage.
- The plastic roads ensure enhanced loads carrying strength, water resistance, negligible
- maintenance cost and reduction of bitumen consumption by 10 percent.

Conclusion:

- It is fair to conclude that innovations in public systems are indispensable and it is both a continuous process as well as a result. It is also a specific area of high importance where tools, methods and approaches are in constant evolution to facilitate identification, documentation and replication of innovations.