Index - Yojana Summary - January 2019 (Innovation)

Introduction - Innovation

- Innovation has been at the heart of all progress of mankind - be it the discovery of fire, the wheel, weapons for hunting, the idea of agriculture - each one developed from an idea or observation.
- The lead in innovations has been taken in the field of science and technology. Innovations in health, like discovery of DNA profiling, stem cell research, organ donations, heart transplants etc. have actually been life saving.
- The Green Revolution was an innovation that helped convert India into a food sufficient nation from a food scarce nation.
- Space science is another area where innovations in satellites and launch vehicles have further boosted India's efforts to earn its rightful place in the comity of nations.
- The Ministry of HRD's initiatives like MHRD Innovation Cell (MIC), Atal Ranking of Institutions of Innovation Achievements (ARIIA), GIAN and SPARC are all aimed at promoting innovation in young minds. Similarly, programmes like MUDRA and ASPIRE have tried to create a spirit of entrepreneurship through innovative ideas among entrepreneurs. Financial inclusion initiatives like Jan Dhan Yojana and various innovative pension schemes are aimed at benefiting the common man.
- The Metro Rail is one of the most innovative modern transport systems and has made a huge difference to the public transport system.
- The innovative spirit in each one of us has to be nurtured from the very beginning. This calls for a reformation in the education system as also changing the mindset of parents and the society at large.

Scientific Innovations in the Service of Society

Historical perspective -
- Manifestation of various technological developments have resulted in various industrial revolutions since 17th/18th century onwards.
- By the mid-19th century, industrial progress had happened mainly in Western Europe and the North and Northeast of the United States. It was the period when the United States was emerging as a global industrial centre.
- In Asia, countries like Japan, and in the later part of the 20th century, South Korea contributed much towards the industrial revolution.

Features of Industrial Revolution -
1. **The First Industrial Revolution (1760-1840)** - It was a period which witnessed the emergence of steam engine, textile industry and mechanical engineering.
2. **The Second Industrial Revolution (1870-1914)** - The revolution was about emergence of railways and steel industry.
3. **The Third Industrial Revolution (1969-2000)** - Electric engine, heavy chemicals, automobiles and consumer durables made their presence felt during this period.

4. **The Fourth Industrial Revolution -** The digital revolution, since 2000 or a few decades prior. This is an ongoing phase of this industrial revolution which has also been called as Industry 4.0. Developments in the oil industry and the IT industry have led the initial phase of Industry 4.0. Science and Technology innovations are leading the progression of this Industrial Revolution.

Capitalising on Technology for Farmers' Welfare

The basic difficulties of farmers can be overcome only if integrated attention is given to pricing, procurement and public distribution. Compounding the difficulties of today, farmers are facing serious problems from climate change.

Innovations -
- The progress made by our farmers in improving production and productivity (wheat production in India going up from 7 million tonnes in 1947 to over 100 million tonnes in 2018) has been rendered possible due to public interaction between technology and public policy.
- Technology has been mainly in the field of designing plant architecture characterised by resistance to lodging and ability to transfer more of the photosynthesis to grain formulation.
- Ever since the publication of Mendel's Laws of Inheritance in 1865, many innovations have taken place in the effective use of genetic knowledge for improving productivity and profitability of crops.
- Breeding helps to develop strains with a higher yield potential. However, for achieving the higher yield, we need interaction between technology and public policy.
- It is important to understand the risks and benefits associated with the new technologies. Before taking the new technology to the field, it is important that they are assessed for their positive as well as potentially negative effects.
- What is important is not to condemn or praise any technology, but choose the one which can take us to the desired goal sustainably, safely and economically.

NCF Recommendations -
The National Commission on Farmers (NCF) made the following goals for ensuring sustainable agriculture and food security -
- To improve the economic viability of farming by ensuring that farmers earn a "minimum net income".
- To mainstream the human and gender dimension in all farm policies and programmes to give sustainable rural livelihoods.
- To complete the unfinished agenda in land reforms and initiate comprehensive asset and aquarian reforms.
- To develop and introduce a social security system and support services for farmers.
- To protect and improve the land, water, biodiversity and climate resources essential for sustained advances in the productivity.

- To foster community-centred food, water and energy security systems in rural India and to ensure nutrition security at the level of every child, woman and man.
- To introduce measures which can help attract and retain youth in farming by making it both intellectually stimulating and economically rewarding.
- To strengthen the biosecurity of crops, farm animals, fish and forest trees for safeguarding both the work and income security of farmer families.
- To restructure agricultural curriculum and pedagogic methodologies for enabling every farm and home science graduate to become an entrepreneur.
- To make India a global outsourcing hub in the production and supply of the inputs needed for sustainable agriculture.

Actions taken -

During the last four years, several significant decisions have been taken to improve the status and income of farmers -

- Designating the Ministry of Agriculture as Ministry of Agriculture and Farmers' Welfare.
- Issue of Soil Health Cards (SHC) to all farmers to promote the adoption of balanced nutrition.
- Allocation of both budgetary and non-budgetary resources for promoting micro-irrigation.
- Conservation and sustainable use of indigenous breeds of cattle through a Rashtriya Gokul Mission.
- Promoting online trade through electronic national agriculture market. The creation of Gramin Agriculture Markets (GrAMs) for direct sales to consumers in both retail and bulk form.
- Introduction of Agricultural Produce and Livestock Marketing Act, 2017 and Agricultural Produce and Livestock Contract Farming Services Act, 2018.
- Determination of Minimum Support Price (MSP) based on the recommendations of the NCF.
- Integration of protein rich pulses and nutri-rich millets into welfare programmes including Public Distribution System (PDS), mid-day meals, ICDS etc.
- Increase in the income of farmers through activities like agriculture, mushroom cultivation, bamboo production, agroforestry, vermi compost and agro-processing.
- Setting-up several corpus funds to complete ongoing irrigation production, modernised infrastructure in dairy cooperatives and strengthen the adoption of inland and marine aquaculture.

Conclusion -

New technologies are the basic raw material for productivity improvement. There are adequate opportunities for anticipatory research involving new technologies. We should capitalise on them to ensure the well-being of farmers and farming.

Space Programmes - Spin offs for Humanity

India has recently launched its largest and heaviest communication satellite into orbit. It weighs nearly 6 tons and has the capability to support high speed data transfer to remote parts of the country.

Background -
- Though the Indian space programme started nearly 20 years later than in developed countries, today it has emerged as one among six nations i.e. Russia, USA, Europe, China and Japan having total indigenous capability in building satellites for earth observation communication and scientific research.
- Indian launch vehicles like PSLV, GSLV have proven track record and cost effectiveness so that even developed countries are approaching ISRO for launching their satellites.
- Direct to home transmission of TV signals, connectivity to banks and financial organisations, telemedicine, tele-education and disaster warning system are a few examples of the benefits that we have derived from such innovations.

Opportunities -
Space is going to be the next frontier for human exploration and presence of humans in outer space and planets is going to be the next challenge.

Conditions for human space flight -
- Creating living conditions inside the module to support human life, providing oxygen, water and food as well as waste disposal for several days needs development of innovative technologies.
- Training of astronauts to face zero Gas as well as high acceleration levels during launch and re-entry needs thorough understanding of behaviour of human psychology and psychology as well as conditioning the astronauts by going through a series of simulated environmental tests. A branch medicine i.e. space medicine will emerge.

Reliable vehicles -
- PSLV and GSLV vehicles have demonstrated reliability of around 95 percent but not adequate to carry the manned capsule.
- At present, the only launcher available for the free world for human space flight is Russian Soyuz rocket.
- Though the GSLV MkIII recently developed by ISRO can take the manned capsule weighing nearly 10 tonnes to low earth orbit, improvement of reliability of the launch system is a must before it carries human on board.
- Providing oxygen and maintaining the temperature within reasonable limits, shielding the external radiation of charged particles and providing waste management onboard are other new developments.
- After completing the orbital mission, breaking the orbit, sending the module in precise trajectory in guided manner and managing re-entry heating load using appropriate ablatives and material which can withstand high temperatures require advanced materials and techniques.

Recovery system -
- ISRO has demonstrated a crew recovery experiment using which astronauts will be ejected from the launch system and brought back to earth in case of a mission abort.
- Developing space transportation system and enabling humans to stay in earth orbit for few days and bringing them back is only a small step forward. It will provide a platform for detailed observation of planet earth, scientific observation and studies of stars and galaxies conducting chemical or biological experiments under zero G condition to generate new molecules are some of the benefits.

Climate change -
- To address climate change and associated changes in weather, India has done well in making the use of earth observation satellites, IRS and pictures from meteorological satellites for meeting these requirements on a day to day basis. The recently launched hyper-spectral imaging satellite is going to be a powerful tool for monitoring natural resources and supporting agriculture in a big way.
- To provide data on cloud covered regions, radar imaging techniques will have to be perfected and a constellation of Radar satellites are to be deployed.
- Satellite images can strengthen the security system and for continuous monitoring of sensitive regions high resolution imaging from geo-stationary platform will have to be developed.
- Warnings on cyclone drought weather phenomena can be met using precision multi spectral images from geostationary satellites.

Digital connectivity -
- Geostationary satellites provide digital connectivity. The recent launch of GSAT11 is a clear example of how space is supporting the needs of the country in this area of high speed digital connectivity.
- Today, telemedicine is limited to remote consultation but the day is not far off when even telesurgery can be done using satellite connectivity.

Bringing down the costs -
- Today, space based services are efficient but expensive.
- If schemes are developed to recover and reuse the launch hardware considerable savings in cost can be achieved.
- Also, use of new propulsion systems using less expensive fuel like kerosene could bring down costs.

Conclusion -
Space research always has been fascinating and India has not lagged behind. Future challenges related to space exploration, space travel, tourism application programmes based on space assets spin off technology benefits etc are going to provide a lot of opportunity to the new generation. Those who are adventurous can plunge into it and reap the benefits.

Contributing to a Knowledge Based Revolution

With over 1.3 billion+ people, 1.4 million+ schools, 10,500+ engineering related institutions, 150+ million youth of India entering the workforce, 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.

Initiatives -
- Towards this end a strategic national flagship initiative **Atal Innovation Mission (AIM)** has been set up under the auspices of the NITI Aayog.
- AIM's focus is to create and promote a world class innovation and entrepreneurial ecosystem throughout the length and breadth of our country and to provide such an innovation ecosystem that will also transform our job seekers to job creators of the future.

A Holistic Framework -
- At the school level there is a tremendous need for creation of an innovative, problem solving mindset in the students of high school.
- At the university and industry levels, there is a growing need for world class Incubators in various institutions of the country to foster and nurture start-ups enabling their success.
- A cultural shift in attitudes towards entrepreneurship is needed. Education and awareness of the immense opportunities for entrepreneurial ventures is needed.

About Atal Tinkering Labs -
- Unless children in our schools have access to new 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.
- AIM has already launched the implementation of 5441+ Atal Tinkering Labs across 715 districts of the country. These span both government and private schools all of which will become operational in FY1819.

Atal Incubators -
- The Atal Incubators initiative is to create world class incubators to support the burgeoning number of startups in the country.
- AIM has already launched 101 incubators to date all of which would be operational by end 2019. These incubators will provide the necessary ecosystem of access to technology labs, hiring, training, mentoring, finance, venture capital networks and corporate networks.

Atal Challenges -
- There is an urgent need to incentivise relevant problem solving innovations at local, regional and national levels across the country - at school, university and industry levels.

- The Atal Tinkering Challenges at a school level, the Atal New India Challenges at Industry levels, the Atal Small Business Innovation and Research Challenges at a national level will incentivise relevant problem solving.
- 24 Atal New India Challenges stimulating product innovations in five sectors have been launched in areas such as drinking water and sanitation, urban housing and development, climate smart agriculture, rail safety and transportation which can have great benefit for the country.

Collaboration is the key -

- Corporates and SMEs can adopt ATLs and coach the students into problem solving, ideation, prototyping, triggering small innovations. Global partnerships can enable sharing of best practices. NGOs and multinational companies can collaborate on almost all of 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 expand it worldwide. Over 10000 mentors have already registered as mentors of change, and many corporates have adopted Atal Tinkering Labs.

Long Term Goals -

- AIM's future initiatives include establishment and promotion of Small Business Innovation Research and Development on a national scale for accelerating innovation on a large scale in small businesses/startups/MSME sector.
- AIM would also collaborate in Science and Technology Entrepreneurial Ecosystem Rejuvenation (AIM STEER) of innovations in major research institutions of the country like Council of Scientific Industrial Research (CSIR), Indian Council for Agricultural Research (ICAR) and Medical Research (ICMR) aligned to national socio-economic needs.

Innovation - Oriented initiatives in Higher Education

India for its 1.25 billion people offers higher or tertiary level education through nearly 800 universities, who are mostly governed by the University Grants Commission (UGC) and nearly 100 Institutes of National Importance (INIs) which were created through special acts of the Parliament or State Assemblies who directly report either to the Central or State Government. The latter group includes the famed IITs, IIMs, AIIMS etc.

In order to remain relevant and serve the society, engineering education needs a special outlook or approach different than conventional pedagogic style only consisting of lecture, discourse, monologue, text books, notes and examination leading to a degree without practical training for invention and innovation.

Science-Engineering-Technology -

Engineering education must build on relevant scientific theories and principles to address the issues of 'need' of the society; e.g. high strength material, greater thermal/electrical conductivity, affordable healthcare, sustainable energy resources, remedial measures for carbon footprint, efficient devices/machines etc.

MHRD initiatives -

1. **Research and Innovation: Startup India Initiative for HEIs -**
   a. To promote the culture of 'innovation', MHRD has launched MHRD Innovation Cell (MIC) and Atal Ranking of Institutions on Innovation Achievements (ARIIA) to systematically foster the culture of innovation in all higher education institutes (HEIs) across the country by encouraging and nurturing young students to explore new ideas that can result into innovative products and activities.
   b. The initiative envisages creation of 1000 Institute Innovation Centers (IIC) across the country.

2. **Global Initiative for Academic Network (GIAN)** - GIAN in Higher Education aims to connect the Indian academia with the international talent pool of scientists and entrepreneurs by inviting them to teach and participate in research in Indian HEIs.

3. **Scheme for Academic Research and Promotion by Collaboration (SPARC)** - SPARC is a new and logical follow up initiative of MHRD after GIAN. Under this scheme, 600 joint research proposals will be funded for 2 years to facilitate strong international research collaboration with leading foreign universities.

4. **Digital India e-learning** - The main objective of this virtual classroom initiative is to enable millions of youth outside the university campus to access best quality teachers and teaching courses in an easy paced manner without having to pay large admission/tuition fees or even qualify through JEE or other entrance examinations.

5. **Research and Innovation** - Under this initiative, 20 new Design Innovation Centres (DIC), one Open Design School (ODS) and a National Design Innovation Network (NDIN) are planned to be set up with interlinks.

6. **Uchhatar Avishkar Yojana (UAY)** - UAY promotes industry sponsored, outcome-oriented research projects with an outlay of Rs 475 crore for a period of two years beginning 2016-17. The objectives of UAY scheme are to promote innovation in IITs, connect with manufacturing industries, spur innovative mindset and promote collaboration and cooperation between academia and industry.

7. **Innovation in HEIs - IMPRINT** - Impacting Research Innovation and Technology (IMPRINT) aims towards the goal of translation of knowledge from research into viable technology (product or process). It is different from usual research initiatives because -
   a. It is meant not only for creation but for translation of knowledge into viable technology,
   b. It addresses not just one but all technology challenges faced by the nation,
   c. It relies upon a total inclusive model of crowdsourcing and involving all concerned stakeholders from Ministry to industry.

8. **IMPRINT II** - Core mandate of IMPRINT II has been -
   a. Develop products/processes and viable technologies for addressing the identified challenges in different domains.
   b. Formulate and develop focused translational projects against identified technology thrust areas by various stakeholder ministries.

c. Evolve new technology transfer models for enabling technology diffusion to industry and stakeholders.
d. Continuously monitor and refine the challenges and gaps in the various technology domains and collect feedback from stakeholder ministries/ industry.
e. Align the programmers and projects with the needs of various industry sectors and the States of India.
f. Facilitate building capability and competence in identified technology thrust areas in the various HEIs and universities.

Improving Governance in Public Systems

Definition of Innovation -
Public systems tend to adopt innovations which enhance service delivery, increase efficiency and ensure cost reduction. 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.
● Promotes transparency and accountability.
● Reduces the time taken for service delivery.
● Reduces the cost without affecting the efficacy and efficiency.
● Leverages the use of technology.

Types of Innovation -
1. **Service Innovations** - Intend to introduce a new service, product or improvement in the quality of an existing service or product.
   ○ *BHIM App* is one such example which enables e-payment directly through banks.
2. **Service Delivery Innovations** - Create a new or improved way of delivering specific public service to the citizens that aim at improving accessibility, targeting user needs more accurately, bringing in simplification of procedures etc.
   ○ *Common Service Centres* - They are the access points for delivery of essential 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.
3. **Administrative/Organisational Innovations** - They target to change the hierarchical structures and administrative routines in the Government.
   ○ *Electronic National Agriculture Market (e-NAM)* - It is a pan India electronic trading portal implemented by Small Farmers' Agribusiness Consortium (SFAC). It creates a national network of physical mandis which can be accessed online.
4. **Policy Innovations** - They bring about the systemic culture of nurturing fresh ideas.
   ○ *National Policy on Biofuels* - It encourages the use of biofuels by extending appropriate financial incentives under various categories which results in

reduced import dependency, a cleaner environment, employment generation etc.

5. **Systematic Innovations** - They employ new or improved ways of interacting with the citizens and engage them in service design.
   ○ *India Innovation Growth Program* - It is a public, private partnership of the Department of Science and Technology and Lockheed Martin Corporation. It throws open a chance to the public to suggest innovative solutions to major societal problems.

Promoting Innovations in Public Systems -

1. **Understanding Opportunities and Problems -**
   ○ Begins with a prompt or trigger including problems, failures and complaints.
   ○ Attuned to new trends, customer demands, data or technologies.
   ○ Emphasise better understanding of how people live their lives.
   ○ Find new insights into what people need.

2. **Generating and Sharing Useful Ideas -**
   ○ Prioritise the areas of concern.
   ○ Identify different types and sources of data, information and knowledge.
   ○ Channelise data, information and knowledge into a usable form.
   ○ Share information collected with wider sets of actors.

3. **Collaborating with Like-minded Stakeholders -**
   ○ Identify and assess the importance of key people.
   ○ Define whom to involve in designing a multi-stakeholder process.
   ○ Understand the role of multiple stakeholders who are likely to be involved in promoting innovation.
   ○ Describe the roles and responsibilities.
   ○ Sensitise/build the capacities of relevant stakeholders.
   ○ Create a knowledge repository.

4. **Documenting innovations -**
   ○ Concept and Types of Innovations.
   ○ Skills and Tools involved.
   ○ Learning based Monitoring and Evaluation System.
   ○ Processes and Linkages for scaling up.
   ○ Change in practices.
   ○ Use of new knowledge/new use of existing knowledge.

Future Challenges -

● Resource mobilisation.
● Departmental silos and lack of convergence mechanism.
● Fading away of the innovations due to a change in the personnel.
● Lack of institutional memory.
● Transfer of ownership.
● Lack of domain expertise.
● Internal animosity between different wings of Government/Organisation.

Innovative Practices -

1. **Ecological Sanitation (ECOSAN) -**
   - ECOSAN offers an economical and simple-to-use option in contrast to the conventional waste transfer methods where the human excreta and body wash water do not go waste.
   - ECOSAN toilets are much more helpful in flood-prone areas as it is completely sealed and would not result in overflow.

2. **Use of Plastic Waste in Road Construction -**
   - 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.

3. **Urban Greening Activities by Kochi Metro Rail Limited -**
   - Kochi Metro Rail Limited (KMRL) is in the process of adding greenery to the infrastructure being created, thereby contributing to the enhanced green cover in and around Kochi.

4. **Mother Tongue Based-Multilingual Education (MTB-MLE) -**
   - MTB-MLE is an approach to address the educational challenges faced by the indigenous population. In this approach, children start learning in their mother tongue in early grades with a gradual transition to a regional language and an international language.

5. **Establishment of Vision Centres -**
   - Establishment of Vision Centres in rural villages with tele-ophthalmology connectivity with Base Hospitals is an effective model to reach patients who otherwise do not have access to quality eye care.

Conclusion -

CIPS, being a national body established by the Government of India in 2010 as an autonomous centre at ASCI, Hyderabad with a mandate to promote innovations in public systems, is working with Central Ministries, State Governments, Union Territories and Not-for-Profit organisations to actively promote and disseminate practices which have resulted in enhanced service delivery, increased efficiency and cost reduction.

Transforming Public Transport in India

Given the rapidly changing demography of urban space, the cities need an innovative public transport system that operates on non-pollutant resources and meets the specific mobility needs of large populations.

The Metro Rail which offers solutions to the issues that are not dealt by the traditional transport systems could be the perfect choice of public transport.

Delhi Metro - Technology Survey -
- Since the inception of its operations in 2002, the DMRC has been continuously improving the quality of services and added several new features to the equipments used for day-to-day operations.

- For instance, the trains used by Delhi Metro in its Phase-III expansion are equipped with unattended train operation mode, which enables the possibility of operating trains without drivers.
- The Delhi Metro introduced the highly sophisticated 'Communication Based Train Control (CBTC)' system which enables headway improvement to about 90 seconds.
- In simple words, the CBTC system facilitates higher frequency of train operation, which subsequently helps transporting more people in busy hours.
- Other effective innovations include the installation of automatic screen doors on platforms which help maintain better crowd management.
- The LED screens installed inside the train coaches help commuters identify the destinations easily.

New features -
- There is a change in the look of the front cab of the train.
- LED based lighting is used inside the trains.
- The display panels inside the trains are LED based, where graphics, public information messages and advertisements also will be aired if necessary.
- The dynamic route maps have been changed to LCD technology for better understanding.
- The noise levels inside the trains have been reduced further from the present limit of 68 dB to 65 dB.
- Higher number of grab rails and grab handles have been provided for the convenience of the standing passengers.
- Broader gangways between the coaches provide more convenience to the commuters.

Energy Efficient Techniques -
- According to a study conducted by Central Road Research Institute, around 3,90,971 vehicles were taken off the roads after Metro started operating in Delhi.
- This in turn helped reduce around 5,53,203 tonnes of CO_2 from environment every year.
- In fact, DMRC became the first railway project in the world to win carbon credits.
- In order to bring down the energy consumption levels, the Delhi Metro developed its own solar power generation plants on rooftops of stations and depots. Currently, the DMRC is producing around 25 Megawatts of solar power annually and is aiming to raise the capacity to 50 Megawatts in future.

Creating awareness -
- Numerous social campaigns to raise awareness on use of escalators, lifts, automatic fare collection (AFC) gates and usage of smart cards were carried out.
- DMRC also organised community interaction programmes to engage the residents near construction sites and to listen to their grievances and suggestions.

Conclusion -

Unlike other public transport systems, the Delhi Metro is highly punctual. On average, 99 percent of the train trips are recorded on time and redefined the punctuality norms to 59 seconds. In future, we are going to see more successful metro projects like Delhi Metro.

Improving Competitiveness in SMEs

Given the paramountcy of the sector, it is critical to ensure that our SMEs remain competitive both nationally and globally. Indian SMEs face a formidable challenge in this regard.

The Ministry of MSME, apart from providing them financial subsidy and incentives to buy machinery, file trademarks, and gain access to tools, training, and expert advice, runs various schemes and programmes to support the technological and other innovations in Indian SMEs.

Initiatives -

1. First and foremost is the huge allocation of Rs 3,794 crore in the current FY Union Budget, for enhancing the financing and innovative capacity of the MSME sector.
2. Pradhan Mantri **MUDRA** Yojana is another milestone with a provision of Rs 3 lakh crore for the sector.
3. Reduction in tax rates to 25 percent made by the Government during the last financial year, again, has proved to be a positive step.
4. Budget allocation of Rs 550 crore for setting up ultra-modern technology centres.
5. A grant of Rs 415 crore for the promotion of Khadi Udyog, is also going to help the growth of this sector.
6. A scheme for promotion of innovation, rural industry and entrepreneurship (**ASPIRE**) was launched in 2015. The most important component of this scheme is setting up 100 livelihood and 20 technology related incubators.
7. With a view to generate employment opportunities in rural as well as urban areas of the country.
8. Prime Minister Employment Generation Programme has been allocated Rs 1,800 crores under the current FY budget.
9. Another boost provided by the Government for the growth of MSME sector is the **CGTMSE** (Credit Guarantee Fund Trust for Micro and Small Enterprises) to provide financial assistance ot these industries without any third party guarantee/or collateral.
10. The Revamped Scheme of Fund for Regeneration of Traditional Industries (**SFURTI**) launched clusters (including coir) with coverage of 44,500 artisans (approx) in the first phase, has further been infused with Rs 125 crore in 2018-19 budget.

Conclusion -

The efforts of the Government have started bearing positive results and showing remarkable improvement and India has succeeded in attaining 57th rank in 2018 Global Innovation Index.