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KURUKSHETRA SUMMARY

AN INITIATIVE BY THE PRAYAS INDIA

THE PRAYAS IAS

PROMOTING INNOVATION





Summary of Kurukshetra

May 2021

Theme: Promoting Innovation

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Promoting a Culture of Innovation and Entrepreneurship

- One of the oldest civilisations in the world, the Indian civilisation has been one of the most active contributors to the global science and technology arena. Be it the idea of zero, decimal system, binary digits, wootz steel, plastic surgery, cataract surgery, Ayurveda, defence to just name a few.
- India is considered one of the major scientific centres in the world which have excelled in the fields of mathematics, warfare, geometry, astronomy, medicine, space science, physics, chemistry, botany, etc.
- Science and technology plays a pivotal role in the development of a nation, be it economic, social, or overall development. India has one of the strongest networks of Science and technology institutions and a sizeable pool of highly skilled manpower.
- India is the youngest country in 2020, with 64 percent of the population in the working-age group. This provides a huge opportunity for the young, ambitious, and increasingly, educated youth to become job creators rather than being job seekers.
- Robotics and artificial intelligence are driving next-generation productivity and automation.
- The Internet of Things (IoT) links cutting edge sensor technologies to conventional industries.
- Big data and analysis as well as artificial intelligence enable electronic commerce and complex decisions thanks to advanced and userfriendly tools. All these technologies are accessible today and are affordable.
- There is a need to make sure that these students realise their true potential. There is a need to address issues such as the need to update curricula, which are generally considered inadequate, communications to use them effectively in technical writing, institutional prevention strategies to increase the visibility of research conducted by scientists and the financing of entrepreneurial activities.
- The Indian government has already actively identified the problems and is implementing the appropriate reforms. The results are visible in the ranking of India to facilitate business

India as the Innovation Nation: Gathering Momentum

- The last few years have seen innovation in India reach a tipping point.
- India, as a country, is surrounded by challenges that demand innovating non-linear solutions for challenges which need to be addressed such as poverty, education, healthcare and the environment.



- The Government of India is taking major steps to create and promote an ecosystem of innovation and entrepreneurship nationwide. One such significant intervention is the flagship initiative Atal Innovation Mission.
- Innovation plays a key role in the economic development of any nation, and the various technological changes contribute considerably to the development of under-developed countries.
- The growth can be achieved through a high level of technology

Changing Trends and Challenges

- Rapidly Evolving Ecosystem – all the ecosystem stakeholders want high growth and quick adaptability to consumer changing requirements.
- Focus on Futuristic Deep Techs – to derive high value, the focus has been shifted towards next-gen technologies like genetic engineering, IoT, 5G, quantum computing, etc.
- Digitisation and Democratisation of Information – As more and more users have starting using digital technologies, a huge volume of data is being generated.
- Requirement for Specialised Manpower – the requirement of the workforce is shifting from having non-skilled labour to someone specialized in next-gen technologies. There is an acute shortage of people having the desired skill set.

Impact of Changing Trends in the field of Science and Technology

- Business
 - Many companies have introduced new technologies trying to fulfil existing and unserved demands by disrupting across the complete product value chain.
- Government
 - Governments and organisations need to start to work with the end-users, i.e., businesses and civil society.
- People
 - With the increasing use of technology by the business, some fundamental issues on data privacy have started to key in how the data is used by them. This in turn is forcing to redefine moral and ethical boundaries.

Important Aspects for Attaining Success

- Adaptive Mindset



- Being digital
- Building corporate relationship and strategic partnership
- Being flexible and Agile

Atal Innovation Mission

- There are a growing number of startups in India thanks to the several startup initiatives in the country both from the private sector as well as the government - but there is a greater growing need for new greenfield incubators across the various fine academic and other institutions of the country to provide the necessary support system in many ways to startups to enable their success - from access to technology labs, mentoring networks, to access to venture capital, financial, hiring networks, etc
- Recognising this need, the Government of India has setup the Atal Innovation Mission (AIM) to promote a culture of innovation and entrepreneurship in the country. AIM's objective is to develop new programmes and policies for fostering innovation in different sectors of the economy, provide platform and collaboration opportunities for different stakeholders, create awareness and create an umbrella structure to oversee innovation ecosystem of the country.
- Atal Innovation Mission (AIM) is Government of India's flagship initiative to create and promote a culture of innovation and entrepreneurship across the length and breadth of our country.
- AIM's objective is to develop new programmes and policies for fostering innovation in different sectors of the economy, provide platforms and collaboration opportunities for different stakeholders, and create an umbrella structure to oversee the innovation & entrepreneurship ecosystem of the country
- The activities being carried out under the Atal Innovation are as under
 - Atal Tinker Labs (ATL) – At School Level
 - ATLs enable students from grade 6 to grade 12 to have access to and tinker with innovative tools and technologies like 3D printers, robotics, miniaturised electronics, do it yourself kits; thus stimulating a problem-solving innovative mindset to solve problems in around the community they are in.
 - Atal Incubators – at Universities, Institutions, Industry level
 - To date AIM has selected close to 70 universities /institutions/private players to establish world class incubators, each of which will foster creation and nurturing of 50 world class Startups every four years



- Atal Community Innovation Centres – Serving Unserved and Under-Served Regions/Communities of India
 - AIM is setting up Atal Community Innovation Centres with a unique partnership driven model wherein AIM would grant up to Rs. 2.5 crores to an ACIC subject to a partner proving equal or greater matching funding.
- Atal New India Challenges (ANIC) – Stimulating Product and Service Innovations with National Impact
 - AIM has launched over 24 Atal New India Challenges in partnership with five different ministries and departments of central government.
- Applied Research and Innovation for Small Enterprises (ARISE)-to stimulate MSME industry innovation
 - AIM has launched 15 ARISE (Applied Research and Innovation for Small Enterprises) Challenges along with five partnering Ministries including Indian Satellite Research organization, Ministry of Defence, Ministry of Housing and Urban Affairs, Ministry of Food Processing Industries and Ministry of Health.
- Mentorship and Partnerships – collaborating with Public, Private sector, NGOs, Academia, Institutions
 - Atal Innovation Mission initiatives are key to further promoting the culture of innovation and giving expression to the innovative and entrepreneurial ideas of startups to enable development of one of the most Innovative Nations of the world.

Conclusion

- With one of the fastest-growing startup ecosystems - over 30,000 startups and 250 incubators—India can surely position itself as one of the leading innovative nations of the world over 30,000 startups and 250 incubators—India can surely position itself as one of the leading innovative nations of the world
- With 22 percent of its population still below the poverty line, 44 percent of its economy still agri-based, many districts still combating unacceptable percentages of infant mortality and maternal mortality, and only a mere 13 percent of women entrepreneurs, India needs to ensure that rapid economic progress encompasses societal progress.
- To summarise, India did get left behind in the industrial revolution that swept the world in the last century. But India does have a fantastic chance to contribute to the world in the knowledge-based revolution that is sweeping the world today.



India: Growing Market of Innovations

- The dimensions that innovation has achieved across the lengths and breadths of human race, is a success story in itself.
- With the need to create a sustainable world in the times when the natural resources are depleting at an extremely dangerous rate and the population is increasing rapidly, innovation becomes all the more a necessity.
- India today is home to around 17 percent of the world population, only next to China, with a growing economy and huge entrepreneurial potential waiting to be tapped.
- Entrepreneurship is adopting innovation as the economic model which is sustainable for the foreseeable future. Therefore, there is a huge market for innovations.
- India has unleashed the power of innovation to and improve the living conditions for the billions of people.
- Today, the society is run by the vast information and data in the cyberspace, which has an over all effect on the life of every organism in this world.
- With every innovation, technology is becoming independent and efficient, having an impact on social structure, breaking the walls of economic and social differences as well as creating medical technologies to overcome the issues, which we find no answer to today, thus furthering the progress of the society.
- However, these innovations have the impact making ability across the value chain of any product or service being offered. Be it in the product development, the marketing reach out, the branding or the last mile reach in the logistics sector, all of these qualify for being called an innovation.
- The Global Innovation Index (GII), every year ranks the world economies based on their innovation capabilities.
- In this sphere, India has shown a lot of improvement over the last three years jumping from 57th rank among the 131 participating nations to 48th rank in 2020.
- The ability to adapt to the changing markets remain to be at the core of the industries today, which anticipate the technologies and demographic trends. As such, it has become inevitable to offer cutting edge technologies at affordable prices.
- However, the thin line between affordability and aspiration must be maintained.
- One of the most innovative industries we have these days is the telecom industry, where both the service providers as well as the manufacturers of the mobile phones have been riding the horse of innovation.



- This clearly indicates that the change is inevitable and the building block for the modern world.
- Post the economic reforms of 1991, the growth of Indian origin companies going multinational increased manifold, and one of the main pillars of this growth has been Innovation.
- “Jugaad”, or “frugal Innovation” as you may know it is informal innovation to a large extent has driven the rural economy, based on agriculture and its allied sectors.
- The frugal innovations or the grassroots innovations are usually the products created by the economically downtrodden people at individual levels based on the local knowledge, who are not formally connected to any institution.
- The frugal innovations in India have been an extremely important factor in promoting the culture of innovation in the rural spaces and small markets.
- As such the need to promote innovation, which serves the poor must be pivotal to this entire process specifically in our country.
- Since, a large part of the economy in India is in informal sector, it became important that the innovative ability of this informal sectors is catered to and provided the required support for growth and development. Therefore, organisations such a National Innovation Foundation, have done tremendous work.
- The organization was setup in March 2000, under the aegis of Department of Science and
- Technology, Government of India. The mandate of the organization has been to strengthen the grassroots technological innovations and traditional knowledge, across the country.
- NIF succeeded in commercializing products across the countries in six continents.
- However, one of the major barriers to innovation, is the financial barrier.
- The diffusion of the various innovations that already exist and have scale-up potential to reach the mainstream also remain to be a challenge. But the non-availability of institutional support to create prototypes of the products and the financial requirements often push these to the idea warehouses.
- Considering the federal nature of the country, what needs to be acknowledged is that there are certain imbalances in the eco-system created among various states.
- In Jammu and Kashmir, to strengthen the role of industries in promoting the culture of innovation, two Centers for Invention, Innovation, Incubation & Training (CIIT) in Jammu
- & Kashmir in collaboration with Tata Technologies have already been set-up.



- Make in India, an initiative by the Government of India was launched on August 15, 2014 by the Hon'ble Prime Minister to encourage companies to manufacture in India, which have boosted not only the manufacturing capacities of the country but also has had a huge impact on the building the innovative culture.
- This is of course, in addition to the boost it has given to the jobs and economic growth in country.
- There are also many other schemes, such as that of NITI Aayog, DST, BIRAC, MEITY which promote the establishment and scaling up of incubation centers, that nurture innovative start-up businesses in their pursuit to become scalable and sustainable enterprises.
- This now, coupled with the approval of Foreign Direct Investments under the Automatic route including innovation/Research and Development, shall play an important role in strengthening the entire ecosystem.
- Today, India also has major multinational companies having established their research and development centers in India, with few of them biggest across the globe.
- However, much more needs to be done before we compete with the developed countries and have our aspirations to figure in the top ten countries in the Global Innovation Index.
- One of the major indicators of the growing innovation culture is the patent filing, in which though there has been an increase over the last several years, the country still lags behind.
- As on date China and United States are the two countries leading the number of patent filings.
- Out of the many challenges that appear, the need to bring together the industrial experience and the academic research together for building new products remains at the top.

The way ahead

- The potential of innovation, in every sector, private and public is immense, however, for the government sector, it will provide an opportunity to deal with the public welfare in much focused and result oriented experiences.
- To overcome the cultural challenges, such as risk aversions and the fear of failures loom larger on the mindset, and the social issues which the society is still grappling with will have to be dealt with extreme caution.
- With each passing day, the innovators are multiplying not only in India but across the globe, which is both impressive and heartening.



- The scaling up of these innovations would need a large population, who have the purchasing power as a market and what better country is there then India, right now.
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Innovating Healthy Lifestyle

- Healthy lifestyle should be an integral part of everyone's daily routine particularly in the wake of current pandemic.
- During the early phase, dietary patterns of the masses underwent drastic adverse changes leading to deterioration of their nutrition and health status - both at the individual, state and the national/international levels.
- There was an increased prevalence of all forms of malnutrition - be it under-nutrition, micronutrient malnutrition or over-nutrition. It is envisaged that the closure of schools/online classes, greater confinement to home and lack of outdoor physical activity will aggravate childhood obesity or increase the risk.
- Further, the drastically changed lifestyles caused by lockdowns, quarantining and unexpected crisis, in many cases, have caused negative emotions.
- Due to unhealthy diets, people are already facing high rates of morbidity, mortality and disability including double/triple burden of malnutrition. COVID-19 and malnutrition being inter-linked; malnourished individuals are at a greater risk of infection while COVID-19 increases the risk of malnutrition - both biologically and socio-economically.
- Good nutrition is imperative before, during and after any infection - especially the febrile infections; and this is true even for COVID-19.
- Food products fried in such oils will have much higher total fat and many fold higher TFA content compared to the food items fried in early frying cycles.



- Hence, innovative approaches are needed to generate awareness among the masses regarding the trans fat linked deleterious health effects along with the innovative strategies for curbing TFA formation during frying procedures - both at the household and the commercial levels.
- Diet related parameters
 - In the case of diet, the most important aspect is eating a variety of foods—both within and across the food groups so as to ensure adequate intake of important nutrients. Simply by adding variety and bringing about dietary diversity, our diets tend to attain a nutrient balance.
 - POSHAN Abhiyaan is a right step by our Government for improving food and nutrition security of the masses; however, for its success, the community needs to be empowered to reap the benefits. It is a Jan Andolan – by the people, for the people.
 - Effective, customised, easy to comprehend messages are needed to convey the importance of eating right using locally available, seasonal and easily accessible nutrient-rich foods.
 - Thus, there is an ample scope for innovating appropriate messages in local/regional languages as well as in developing effective communication techniques/technologies.
 - Access to safe drinking water provides protection against infectious diseases which in turn exacerbate under-nutrition. Here too, innovative technologies/ approaches are needed to improve potable water accessibility to ensure adequate fluid intake by the masses.
- Novelty of Coronavirus disease with an absolute lack of curative measures or vaccination forced people to revisit the traditional remedies.
- Age-old preparations (Kadhas etc.) using immunityboosting herbs and spices have been/are being consumed.
 - Based on Ayurvedic principles, the Ministry of AYUSH released a set of immune boosting guidelines and recommended several Ayurvedic kadhas (herbal tea/decoctions) made using basil, cinnamon, black pepper, dry ginger, giloy etc.
 - AYU SAMVAD - one of the largest public awareness campaigns in recent times taps Ayurveda for solutions to fight COVID-19 pandemic; and is operationalised by the All India Institute of Ayurveda, Ministry of AYUSH.
- Food and Agriculture Organisation (FAO) has proposed several innovative technologies to improve food production, distribution and consumption; and thus, transforming our food systems for betterment.



- As life slowly returns to normalcy, possibly people may go back to their unhealthy eating habits; therefore, it is crucial that the healthy food habits including the practice of home cooking (adopted during the current phase) are carried forward.
- Appropriate actions are needed to improve the food environment which include effective restrictions on marketing of unhealthy foods/beverages.\
- Bio-fortification is a feasible and cost-effective approach of delivering micronutrients to populations having limited access to diversified diets and various micronutrient interventions/supplements or commercially fortified foods. Therefore, newer avenues of bio-fortification need to be identified and worked on.
- Establishment of Home/terrace gardens needs to be promoted. In addition to happiness and pleasure, such practices will encourage the intake of fresh fruits/vegetables.
- Further, during this COVID-19 pandemic, numerous emotional and mental health issues have emerged due to the ‘normal’ people being exposed to ‘extraordinary situations’.
- Therefore, innovative ways for promoting Yogic lifestyle is need of the hour. Yogic practices aim at aligning individuals’ bio-rhythm with that of the nature, thereby improving their overall health.
 - The Morarji Desai National Institute of Yoga (Ministry of AYUSH, GoI) is the nodal agency for developing and promoting of yoga culture across the country.
 - Since last few years, although emphasis is being given and we annually celebrate the International Yoga Day (21st June) but concerted efforts are needed to universalize the practice of yoga/meditation.
- Quality sleep for appropriate duration is rather important for physical and mental health.
 - Here too, some innovations are needed to regulate the sleep-wake schedule for improving the quality of sleep such as sirens for putting off the light after a scheduled time or increasing the electricity tariff at late night or some other effective commune actions.
- Increased outdoor physical activity, including dedicated sports periods in schools/colleges is need of the hour.
- Periodic health check-ups are important for screening and early detection of the disease/disorder so that timely action can be taken. Existing health issues – particularly the NCDs, are known to increase the individual’s susceptibility to COVID-19.
- Innovative start-ups can be launched for the production of ready-to-eat healthy food-items; and for their convenient, smart and biodegradable packaging for transportation/ storage.



- Further, there is a need for innovating strategies to minimise disruption of food supplies so that people, particularly the needy, have an easy year round access to healthy diets.



COVID-19 Crisis



MINISTRY OF AYUSH
GOVERNMENT OF INDIA

Ministry of AYUSH recommendations, based on Ayurvedic literature and scientific publications, for preventive health measures and boosting immunity with special reference to respiratory health.

Measures for Enhancing Immunity

- Drink warm water throughout the day.
- Daily practice of Yogasana, Pranayama and Meditation for at least 30 minutes.
- Spices like Haldi (Turmeric), Jeera (Cumin), Dhaniya (Coriander) and Lahsun (Garlic) recommended in cooking.

Ayurvedic Immunity Enhancing Tips

- Take Chyavanprash 10gm (1tsf) in the morning. Diabetics should take sugar free Chyavanprash.
- Drink Herbal Tea/Decoction (Kadha) made from Tulsi (Basil), Dalchini (Cinnamon), Kalimirch (Black Pepper), Shunthi (Dry Ginger) and Munakka (Raisin) - once or twice a day. Add jaggery (Natural Sugar) and/or fresh Lemon Juice to your taste, if needed.
- Golden Milk- half tea spoon Haldi (Turmeric) powder in 150 ml Hot Milk - once or twice a day.

Immunity Boosting Measures for Self-Care

Simple Ayurvedic Procedures

- Nasal Application**– Apply Sesame Oil/Coconut oil or Ghee in both the nostrils (Pratimarsh Nasya) in morning and evening.
- Oil Pulling Therapy**– Take 1 table spoon Sesame or Coconut Oil in mouth. Do not drink, swish in the mouth for 2 to 3 minutes and spit it off followed by warm water rinse. This can be done once or twice a day.

Actions During Dry Cough/Sore Throat

- Steam inhalation with fresh Pudina (Mint) leaves or Ajwain (Caraway Seeds) can be practiced once in a day.
- Lavang (Clove) powder mixed with Natural Sugar/Honey can be taken 2-3 times a day in case of cough or throat irritation.
- These measures generally treat normal dry cough and sore throat. However, it is best to consult doctors if these symptoms persist.



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Conclusion

- The United Nations Decade of Action on Nutrition and the 2030 Sustainable Development Goals (SDGs) are a once-in-lifetime opportunity to cost effectively improve the diets, eliminate malnutrition, reduce death and disability from NCDs, and promote sustainable development.
- The new Recommended Dietary Allowances (RDA-2020), recently brought out by the Indian Council of Medical research (ICMR) mandate diet and lifestyle changes for all.
- In the wake of current crisis, it is all the more pertinent that we adopt & follow a nutritionally sound, healthy and happy lifestyle.

Ensuring Employment Growth Through Innovations

- It is the universal assumption that support for innovation for entrepreneurship development is the sine-qua-non for accelerating the economic development of any country.
- Innovation is production or adoption, assimilation, and exploitation of a value-added novelty in economic and social spheres; renewal and enlargement of products, services, and markets; development of new methods of production and the establishment of new management systems. In fact, it is both a process and an outcome.
- In the present age of Information and Communication Technology (ICT), the technological advances have been constantly innovating the Indian job sector, giving rise to millions of new jobs.
- New-age jobs are envisioned to spawn in emerging technology areas such as the Internet of Things (IoT), Artificial Intelligence (AI), Machine Learning (ML), big data, blockchain, Augmented Reality (AR) and data science, among others.
- The new jobs call for skilled professionals adept at handling digital tools, which most Indian enterprises apparently lack at present.
- The logistics industry is rapidly transforming by leveraging digital technologies like AI and ML, thereby pushing employees to upskill themselves every now and then to stay relevant in their jobs. When speaking of healthcare, the sector is already doing miracles by integrating robotics with medical practices.



- This upgrade has brought significant improvement in the precision scale and ramped up the success rate of surgeries.
- The future is set to be a completely connected world. This will again need professionals who can handle such innovative technologies and bring concepts alive in the real world, giving customers innovative offerings like never before.
- Currently, not only private but also public sector banks are associating with fintech companies to enhance their traditional mechanism and replace it with digital technologies to cater to the digital-first customers.
- Currently, not only private but also public sector banks are associating with fintech companies to enhance their traditional mechanism and replace it with digital technologies to cater to the digital-first customers.
- Various Government Ministries/Departments viz. Ministry of Education (MoE), Department of Science and Technology (DST), Department of Bio-technology (DBT), NITI Aayog and Ministry of Electronics and Information Technology (MeitY) have launched schemes for promotion of innovation.
 - Make in India launched by Central Government in 2014 to attract foreign investors and Industrialists to manufacture here in India, represents a comprehensive and unprecedented overhaul of outdated processes and policies, especially a complete change of the government's mindset – a shift from issuing authority to business partner.
 - Ministry of Electronics and Information Technology (MeitY) has approved a Technology Incubation and Development of Entrepreneurs (TIDE 2.0) Scheme being implemented by its Innovation and IPR Division.
 - Another scheme being implemented by them is Multiplier Grants Scheme (MGS) with a view to encourage collaborative Research and Development between industry and academics/ Research and Development institutions for development of products and packages.
 - Further, Department of Science and Technology launched a NIDHI programme in 2016 (National Initiative for Developing and Harnessing Innovations) under which programmes for setting up of incubators, seed fund, accelerators and 'Proof of concept' grant for innovators and entrepreneurs have been launched. Under NIDHI, PRAYAS (Promoting and Accelerating Young and Aspiring innovators & Startups) programme has been initiated in which established Technology Business Incubators (TBI) are supported with PRAYAS grant to support innovators and entrepreneurs with grants for 'Proof of Concept' and developing prototypes.



- Another milestone, Atal Innovation Mission (AIM), The Atal Incubation Centres (AICs) scheme supports setting up of green field incubation centres that nurture innovative start-up businesses in their pursuit to become scalable and sustainable enterprises.
- It becomes worthwhile here to discuss the impact of innovations on the growth of employment in our country. Six sectors illustrate the potential for new employment markets in this decade. Healthcare, business-services, leisure and hospitality, construction, manufacturing, and retail. They have a potential to generate up to 80 percent new jobs.
- Upskilling and Reskilling however must be the new mantra to meet the blues.
- No doubt, India has a reservoir of scientific talent but we do not have the deep pockets and the enabling ecosystem that drives most of the innovation in the West. India spends less than one percent of its GDP on research and development, lower than most of its global peers.
- Real innovation has an inherent element of high risk, which Indians are averse to. Even today, neither venture capitalists (VCs) nor the market, value innovation in India because there is no attractive exit route for them.
- Some other barriers to innovation are: Skill deficiencies because of absence of in-house preparing, Excessive government regulation in Industry, Inability to move past first advancement and add to a manageable model for consistent Innovation, Failure to keep a pace with technological advancement.
- On the other hand, the on-going transformation in the job sector has also raised concerns for Indian masses, especially among the labour community. It is observed that robotic automation has emerged as their biggest worry as it significantly replaces low-skilled jobs.
- What India needs urgently, is the comprehension that in today's knowledge-driven economy, innovation is the primary driver of progress. India's ability to generate wealth and create social good will come to naught unless we monetise innovative ideas by unshackling our entrepreneurial spirit. For innovation to flourish, ideas must be funded and taken to market.
- What actually required is, a national innovation ecosystem that puts in place a financing cycle-academia generating ideas, especially those based on science and technology, which are incubated to proof of concept through governmentsponsored seed and incubation funding and then taken to market through business interventions backed by venture funding.
- The government must enable and support innovative startups and businesses that think locally but have the potential to make enormous global impact.



- By encouraging technopreneurs to grow from small and medium enterprises to large industrial scale operations, India will be able to create a compelling opportunity to take innovative ideas to global markets. In doing so, we will be able to garner a large share of the global value chain and combine both 'Make in India' and 'Innovate in India' to deliver an AatmaNirbhar Bharat.
- An active collaboration between the government, the private sector and civil private sector and civil society to understand the likely impact of innovations likely impact of innovations and technological changes and technological changes and to respond with
- and to respond with corresponding adjustments to the business, policy and educational landscape will be crucial.

Innovation: Key Towards Making Youth and Women Empowered

- Innovation holds the key to economic empowerment.
- It is essentially a multi sector approach where the improvement in living standards is an outcome of the symbiotic relationship across sectors.
- Benefits of innovation cuts across society, culture, countries, religion, caste and creed.
- In recent times, Information technology has been a major transformation. It has created opportunities for new production techniques, for opening up of new markets and also new business models.
- In 1957, Professor Solow introduced a new concept of technological change. He opined that technological change is the key factor that enhances the productivity of labour and capital which in turn leads to higher economic output or growth.
- Later, Professor Romer in his model brought in concepts such as Research and Development (R&D) and human capital as the main factors of technological change.
- Both Research and Development and human capital are identified as key enablers for innovation and economic growth.
- One of the major benefits of innovation is its impact on economic growth. Rather, innovation results in virtuous cycle of growth.
- Innovation is catalysed through an innovative ecosystem which provides the environment for innovation and technological advancement. The innovation ecosystem runs on material capital and human capital. While material capital is the infrastructural support, human capital is the talent pool that is deployed.



Technological Innovation: A crucial force that Drives Economic Growth

- It is a proven fact that technological innovation is a key factor that drives economic growth.
- Technological innovation i.e. innovation driven by modern and new technologies aims at improving productivity and improved delivery of goods and services to the common people.
- However, technological innovation is often accompanied by long gestation period.
- Another important aspect of such innovation is its inclusivity i.e. the benefit is being enjoyed by the entire population.
- Innovation creates disruption, rather, short term disruption. These disruptions are initially discouraging since they challenge the existing system, which results in obsolescence of old business models. Loss of jobs may also occur at initial stages as adaptability to such technology takes time. However, the long term benefits of such disruption is unprecedented.

India and Innovation

- World intellectual Property Organisation (WIPO) has recently released the ranking of Global Innovation Index 2020 (GII 2020).
- India has occupied 48th position and is among the list of 50 most innovative countries. In 2019, India had occupied 52nd position in the same index.
- India has been identified as one of the leading innovation achievers in the Central and Southern Asian region. The report also mentions that India has shown a consistent improvement in its innovation ranking in the last five years
- Indian Institute of Technology (Bombay and Delhi) and the Indian Institute of Science Bengaluru have been recognised as top 3 universities.
- India spends around 0.7 percent of its GDP in Research and Development. This figure is very low when compared with other countries like China, Germany and United States.
- This report also shows that around 56 percent of Research and Development spending in India is being done by the Government and around 37 percent by the private sector. Further, the report also shows that there are only 156 researchers per million population in India which is abysmally low.

Innovation and Youth

- India has one of the youngest population in the world. Since 2018, India's working age population has grown relative to its dependent population. This demographic dividend is expected to continue till 2055-56.



- However, there are challenges as well. The most important challenge is to provide gainful employment to the vast young population. To ensure gainful employment opportunities for the youth and prevent jobless growth, it is imperative to explore and open up other avenues for employment. This is only possible with innovation.
- The skill sets of youth needs to be enhanced and improved before they start searching for jobs, as such a step would improve their employment opportunities.
- Not only in enhancing career opportunities, innovation play active role in providing promising career in business and entrepreneurship for common people, especially for youth. Innovative tools, especially mobile technologies, digital innovations, fintech has helped to develop entire new business models.

Innovation and Women Empowerment

- As per United Nations analysis, the economic impact of achieving gender equality in India is substantial.
- Women spend 90 percent of their income on their families, and economically empowered women boost demand, have healthier and better-educated children, and raise human development levels.
- In the recent report on Global Gender Gap Index 2021, India has secured an overall rank of 140 out of 156 countries.
- In economic participation and opportunity parameter India's rank is even worse and it stands at 151.
- The power of innovation in transforming the lives of women in the developing world and particularly in India is immense. In the latter half particularly in India is immense. In latter half of previous century and in the first two decades of the present century, the world has experienced dynamic change in technologies, economies and societies.
- Innovation through emancipation of new ideas, newer products and practices is a powerful force which bring in social change.
- The current fusion of commitment, determination and shifting paradigms provides a never before prospect to unleash innovation to achieve women's empowerment and gender equality goals, which have otherwise proved difficult to realize.
- Through innovation, women empowerment gets addressed by the linkages they happen to create. A striking example of the same is introduction of cell phones and their penetration in rural economy.



- Virtuous circles of change and positivity can be enhanced by women's use of a simple technology; a shift in social attitudes about what is possible for women; or increased access for women to employment opportunities, financial opportunities, education and entrepreneurship.
- Also, innovations address women's mobility and their rights to health, work, civic participation and financial prowess in a positive way. Innovations advance women's economic resilience and support women in overcoming livelihood barriers and produce a more equitable flow of financial and non-financial opportunities.

Initiatives taken by Government of India to Promote Innovation

- The decade that went by i.e. 2010-2020 was identified as the decade of innovation. National Innovation Foundation is an autonomous body under Department of Science and Technology to strengthen grass root technological innovations.
- Atal Innovation Mission housed in NITI Aayog promotes innovation and entrepreneurship across the country.
- NITI Aayog has so far published two editions of India Innovation Index, the latest being India Innovation Index 2020 which ranks Indian States and union Territories on the basis of their innovation ecosystem.
- However, there is still a long way to go, as the investments in science, technology, and innovation are yet to achieve the desired outcomes. The government has already taken major policy initiatives with a strong objective to promote innovation across all sections of the population to have an inclusive growth and sustainable development.
- The main aim of the policies that have been undertaken is to offer the citizens of the country especially the youth and women a vibrant innovation ecosystem where they can thrive.
- The efforts undertaken by the country to provide an innovation driven economy will go a long way in cementing India's position from a regional power to an emerging world leader.



Rural India's Innovation Pipeline

- Around two-third of the population and 70 percent of the workforce lives in rural areas.
- To fast-track the process of innovation in rural India, the Indian Council of Agricultural Research (ICAR) is setting up a Farmers Innovation Fund, and Innovation Centres across villages in the country to tap into the myriad innovations that are emerging from India's village economy.
- Such centres, and the Fund, would support a range of innovative work including further development in the forty-five kinds or types of organic farming that have been designed by farmers in the country in different locations. Such breakthrough work also includes research in nano-pesticides and non-fertilisers to support organic farming.
- ICAR is also supporting more than one hundred startups in processing and marketing rural produce and has brought in the energies of more than five thousand young men and women to work on such projects.
- There are more than five thousand six hundred agricultural startups in the country. These include everything from processing and marketing companies to firms specialising in agritech and others working on redefining farm machinery, or weather monitoring technology, cold chains, and warehousing.
- As the use of new technologies like artificial intelligence flows in, new ideas of combining a host of existing technologies to create a unified India Agricultural Platform (IAP) is emerging.
- As an example of what can be achieved using an IAP, India AI describes a farmer logging into the IAP platform (securely using retina scan), and the platform, using the digital Aadhaar identification system, geolocation and other such data metrics is able to evaluate the credit potential of the farmer, connect the farmer to state and private credit agencies, and facilitate the loan – the entire process completed digitally without the agriculturist having to travel to various offices to pitch their case
- An IAP brings together all the benefits of artificial intelligence and data analytics to help “tactical and strategic decision making, leveraging multi-year, multi-source information, aggregated from the farms to state/national levels.



- In essence, a platform like the IAP is likely to be the new frontier in fuelling rural innovation because it will transform the use of technology in agriculture like Aadhaar changed the identification process in the country, and UPI (united Payments Interface) transformed digital payments. Such a system would help farmers scale in a far more systematic fashion than current processes.
- There is a new energy in the Indian countryside as the mindset about the ‘rural’ is transforming swiftly in the country. The old rural urban divide is being bridged as more and more people look beyond major cities to fulfil their dream of a better, more wholistic and healthy life.
- The lockdowns from the COVID-19 pandemic have also further propelled this reimagination as many escaped the confines of the city to work from rural areas and discovered innovations waiting to be unfolded.
- Even leaders of major businesses like Sridhar Vembu of Zoho Corp have shown that a billion-dollar tech major can be run while living in a village. Vembu was awarded the Padma Shri in 2021.
- All of this is leading to a sea-change in rural areas as villages re-discover their latent potential for innovation and entrepreneurial energy.