

The Innovating States-RSTV Indepth

Anchor: Smriti Rustogi

What's in the news?

NITI Aayog with the Institute for Competitiveness as the knowledge partner has released the India Innovation Index (III) 2019.

Background:

- Innovation today is recognised as an important vehicle to realise the goal of a new India and the government of India has made innovation a priority to realise this goal of new India.
- The India Innovation Index was launched in 2017 by NITI Aayog, Department of Industrial Policy and Planning (DIPP) and Confederation of Indian Industry.
- Developed on the lines of Global Innovation Index, India Innovation Index attempts to create an extensive framework for the continual evaluation of the innovation environment across the country.

Innovation in India:

- India is strongly committed to the 2030 agenda including the Sustainable Development Goals. The country is trying to achieve it with research and innovation in various areas.
- In 2016, India launched **Atal Innovation Mission**.
 - The Atal Innovation Mission (AIM) is a flagship initiative set up by the NITI Aayog to promote innovation and entrepreneurship across the length and breadth of the country.
 - AIM's objectives are to create and promote an ecosystem of innovation and entrepreneurship across the country at school, university, research institutions, MSME and industry levels.
 - AIM is setting up state of the art Atal Tinkering Labs (dedicated innovation workspaces) in schools across all districts across the country.
- One of the significant areas where India is banking on innovation to make an impact is the development of renewable energy infrastructure.
- Innovative measures have also helped India's space program make huge stride. India is not only launching the satellites of other countries but has also launched a student

satellite – **Kalam Sat**. India has also made historical advances with the launch of Chandrayaan-2.

- In 2017, PSLV-C37 successfully carried and deployed a record 104 satellites in sun-synchronous orbits.
- India has launched 239 satellites for 28 different countries as of October 2018. All satellites were launched using the ISRO's Polar Satellite Launch Vehicle, expendable launch system.
- Artificial Intelligence is expected to more than double the rate of Innovation and employee productivity in India by 2021.
- While only 1/3rd of organisations in India have embarked on their Artificial Intelligence journey, those companies that have adopted this technology expect to increase their competitiveness by 2.3 times in 2021.
- The dawn of mobile technology, data availability, explosion of open source software provides Artificial Intelligence, a huge playing field in the banking sector as well.
- Taking a leap in the automobile sector, India is popularising e-vehicles due to multiple reasons such as eco-friendliness, cheap fuel, lower maintenance expenses etc. The central government has also taken many initiatives to give a boost to electric vehicles.
- There has been a greater push for innovation in the last 5 years. There are about 15000 start-ups out of which, about 5000 are deep technology based start-ups.
- The department of Science and Technology recently launched a mission in cyber physical systems that creates human resources in the country, infrastructure and intensive R&D in the areas of Artificial Intelligence , machine learning, robotics, sensors etc.
- India's scientific publications are growing at 14% every year compared to the global average of 4%.

India Innovation Index (III) 2019:

- The report examines the innovation ecosystem of Indian states and Union Territories.
- The aim is to create a holistic tool which can be used by policymakers across the country to identify the challenges and strengths while designing policies and strategies for economic growth, for various regions.
- The index presents the latest findings and highlights the regional catalysts and caveats for promoting innovation readiness.

- The report offers a comprehensive snapshot of the innovation ecosystem of 29 states and seven union territories. It also includes a section on state profiles covering 33 indicators looking at the different facets of innovation in India.

How is India Innovation Index 2019 calculated?

- The India Innovation Index 2019 is calculated as the average of the scores of its two dimensions - Enablers and Performance.
- The Enablers are the factors that underpin innovative capacities, grouped in five pillars: (1) Human Capital, (2) Investment, (3) Knowledge Workers, (4) Business Environment, and (5) Safety and Legal Environment.
- The Performance dimension captures benefits that a nation derives from the inputs, divided in two pillars: (6) Knowledge Output and (7) Knowledge Diffusion.
- It performs three functions:
 1. Ranking of States and Union Territories based on their index scores.
 2. Recognising the opportunities and challenges.
 3. Assisting in tailoring Government policies to foster innovation.

The states have been bifurcated into three categories:

1. Major states.
2. North-east, and hill states.
3. Union Territories/City States/Small States.

Significance of India Innovation Index:

- Ranking exercise has spurred competition and greater innovation among the states.
- In the words of Rajiv Kumar, Vice Chairman NITI Aayog, a breakthrough in innovation can be achieved through:
 1. Revamping the science and technology establishment.
 2. Cutting short, the distance between the lab and the land.
 3. Breaking the mistrust between the public and the private sector.

Key highlights of the report:

- The report ranks **Karnataka** as the **most innovative major state** in the country.
- Tamil Nadu, Maharashtra, Telangana, Haryana, Kerala, Uttar Pradesh, West Bengal, Gujarat, and Andhra Pradesh are the remaining top ten major states respectively.

- **Sikkim** and **Delhi** are the **most innovative among North Eastern and Hill States, Union Territories and City States** respectively.
- Among the **North Eastern states**, **Manipur, Arunachal Pradesh** and **Tripura** are the top three states.
- Among the **Union Territories**, **Lakshadweep, Delhi** and **Goa** were the top three regions.
- Delhi, Karnataka, Maharashtra, Tamil Nadu, Telangana and Uttar Pradesh are the most efficient states translating inputs into outputs.
- **Karnataka is the best investment destination** in terms of attracting investments, followed by Maharashtra and Haryana.
- **Bihar, Jharkhand and Punjab** are found to be the **least attractive states**.

Analysis:

- Karnataka's number one position in the overall ranking is partly attributed to its top rank in the Performance dimension. It is also among the top performers in Infrastructure, Knowledge Workers, Knowledge Output and Business Environment.
- Among the category of major states, Maharashtra performs the best in the dimension of Enablers. This implies that it has the best enabling environment for innovation, even though the state comes in at the third position in the overall innovation index.

Issues:

- The index shows that the innovation ecosystem of the country is strong in southern and western parts of India. In fact, three of the top five major states are from southern India. Delhi and Haryana seem to be an exception to this rule and seem to be doing well on the Index. Thus, there seems to be a west-south and north-east divide across the country.
- In India, the R&D expenditure is at 0.72% of GDP, out of which 80% comes from the Public Sector.
- Both the public as well as the private sectors mostly fail to pay attention to R&D and innovation.
- Also, at present only a few policies exist for innovation even in the most innovative states and union territories.

India on Global Innovation Index:

- The 12th edition of the Global Innovation Index was released in New Delhi. It is for the

first time that GII was released in an emerging Economy.

- India is fast making its mark in the world, in Innovation securing 52nd spot in the Global Innovation Index and being one of the few middle income economies to achieve this.
- According to the Index, India has improved in four of the seven GII pillars including knowledge and technology outputs, market sophistication, human capital and research, Institutions.
- However it has lost a few spots in business sophistication infrastructure and creative outputs.
- World Intellectual Property Organisation, co-publisher of GII said “India’s improvement this year is largely due to its relative performance and less so due to new GII or methods.”
- India has outperformed on innovation relative to its GDP per capita for 9 years in a row.
- The country ranks 2nd among middle income economies in quality of universities and scientific publications.
 - IITs in Bombay, Bengaluru and Delhi occupied 8th, 9th and 10th ranks respectively among the top 10 universities in the middle income countries.
- India performed best in the ‘knowledge and technology output pillar’.
- It maintains top position in Information and Communication Technology services exports where it ranks first in the world.
- India also stands out in the GII ranking of the world’s top science and technology clusters, with Bengaluru, Mumbai and New Delhi featuring among global top 100 clusters.

Way forward:

As per the India Innovation Index 2019,

- The broad level learnings and some policy imperatives at the national level includes:
 - Increasing the spending on research and development.
 - Improving the capability of top ranked educational institutions in the country to produce greater innovation outputs.
- There is also a need for greater coordination and collaboration between the industry and educational institutions for enhancing innovation capability.

- A collaborative platform consisting of all the stakeholders of innovation - innovators, researchers, and investors from the industry should be developed.
- This will help in strengthening the industry-academia linkages and will ease the process of technology transfer by providing a platform for innovators to showcase their inventions.
- At the state level, broad level key learning includes:
 - Forming policies at the state level that seek to improve the innovation and entrepreneurial ecosystem.
 - The industrial policies at the state level should focus more on innovation.
- Cluster development programs are also an area in need of greater coordination and can benefit from a more open collaborative approach.