DEEP TECH START-UPS - GS III MAINS

Q. What are deep tech start-ups? Why is it significant in India? How does the recent draft National Deep Tech Policy address the issues faced by it? (15 marks, 250 words)

News: *National deep tech policy in final stage of consultation: DPIIT Secretary*

What's in the news?

- A national deep tech policy, which seeks to provide a comprehensive framework to address the challenges faced by high-end technology startups, is in the final stage of inter-ministerial consultation.

Key takeaways:

- As per a draft of the national deep tech startup policy released last year, the policy aims to make substantial contributions to India's GDP by boosting high-tech exports, enhancing economic competitiveness, and fostering self-reliance.
- It also underscores the positive impact of deep tech in improving the living standards of society, addressing critical areas such as food security, healthcare, water management, energy, transportation, and tackling the challenges of climate change, sustainability and national security.

Deep Tech Startup:

- Deep tech, or deep technology startups refers to those startups whose business model is based on high tech innovation in engineering, or significant scientific advances.
- **Eg. Startups in the fields like Artificial Intelligence, advanced materials, blockchain, biotechnology, robotics, drones, photonics, and quantum computing are called deep tech startups.**

Shallow tech is a relatively simple technological advance moving a business from a non-digital business model to a digital one.
Example: A bookshop now offering e-books for digital download.

Potential of the Deep Tech Start-up Ecosystem in India:

1. **Economic Growth:**
   - 13% of the total startups in India are tech startups. According to a NASSCOM report, they are growing at a rate of 53% in the last 10 years.
   - Artificial intelligence will contribute 450 billion $ to the Indian economy by 2025.

2. Commercialization of Technology:

- Deep tech entrepreneurship is also creating new avenues for science and technology (S&T) discoveries in the public sector labs and educational institutions to reach the industries and thus the market.
- Eg. New drone technology can be used to deliver medicines, spray fertilizer etc.
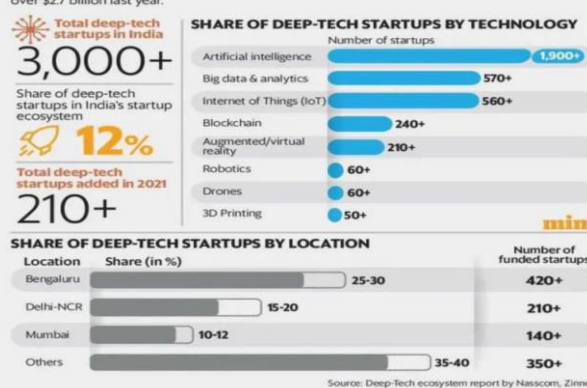
3. Employment Creation:

- According to NASSCOM, around 5000 people have been provided employment in 14 deep tech startups.
- The employment creation is expected to increase by 2 times in headcount by 2026.

4. Hub of Innovation:

- Deep tech startups in India can be a powerhouse of innovation. These innovations can become an important thrust to the industry 4.0.

Deep-tech startups flourish

India's deep-tech startups, which deal in advanced technologies such as artificial intelligence (AI), blockchain, Internet of Things (IoT) and more, grew at a compound annual growth rate of 53% last year, said a report by the National Association of Software and Services Companies (Nasscom) last week. The country now has over 3,000 deep-tech startups, which have raised over $2.7 billion last year.

Total deep-tech startups in India
3,000+
Share of deep-tech startups in India's startup ecosystem
12%
Total deep-tech startups added in 2021
210+

SHARE OF DEEP-TECH STARTUPS BY TECHNOLOGY
Number of startups

Technology	Number of startups
Artificial intelligence	1,900+
Big data & analytics	570+
Internet of Things (IoT)	560+
Blockchain	240+
Augmented/virtual reality	210+
Robotics	60+
Drones	60+
3D Printing	50+

SHARE OF DEEP-TECH STARTUPS BY LOCATION

Location	Share (in %)	Number of funded startups
Bengaluru	25-30	420+
Delhi-NCR	15-20	210+
Mumbai	10-12	140+
Others	35-40	350+

Source: Deep-Tech ecosystem report by Nasscom, Zinnov

Issues Facing Deep Tech Start-ups:

1. Funding Issues:

- The main issue of the deep tech startups are funding issues.
- **Only 11% of the total funds to the overall startups were provided to the tech startups.**

2. Lack of Talented People:

- According to the NASSCOM report, around 55% startups are facing the issue of talented workforce.
- Lack of talented workforce leads to a situation where only 40 % of the total vacancies are filled.

3. Lengthy Paperwork:

- Many startups are concerned that government grants in the country take six to seven months at the minimum and involve a lot of paperwork.

4. Lack of Definition:

- Defining the 'deeptech' classification is very challenging. "If there are financial incentives linked to being a deeptech startup, that can create its own issues of misuse."
- Because a lot of incremental technologies are also being painted as the deeptech in India and it also leads to omission of some eligible companies.

5. High Cost of Patent Filing:

- The Patent Cooperation Treaty filing is an expensive endeavour and deeptech founders are concerned about the lack of support in filing patents in international markets.

6. **Difficulty Patent Identification:**
   ● The difficulty in identifying high profile patents as well as inefficient evaluation and prioritization of publications and research result in missed commercialisation opportunities.

Significance of Deep Tech Policy:

1. **Resolve Funding Issues:**
   ● The new policy provides fiscal incentives such as tax rebates to the investors if they allocate a certain percentage of their corpus to deep tech startups.
   ● The policy provides a minimum grant of ₹2 crore at the proof-of-concept stage and a minimum of ₹3 crore grant at the prototype stage.
   ● It recommended that a **deep tech capital guidance fund** should be created to provide funding support.
   ● It also recommended the issuance of **Technology Impact Bond** to garner investments.

2. **Centre for Commercialization:**
   ● The **Centre for Deep Tech Translation** to assess Indian research (publications, patents, etc.) for potential commercialisation.

3. **Platform for Knowledge Sharing:**
   ● The new policy has recommended the creation of a common platform of knowledge sharing.
   ● This platform will facilitate the transfer of talented workforce from the universities to the industries.

4. **Frontier Scientific Infrastructure**:
   ● This common infrastructure facilities will provide necessary infrastructure support to the companies which are doing R&D and testing their models.

5. **Deep Tech Investor Meet Platform:**
   ● The recommended deep tech investor meet platform can facilitate the meaningful partnership between investors and startups owners and thus long-term sustainability.
   ● Funding sensitisation programmes can provide startup investors with diversity in their funding sources.

WAY FORWARD:

1. **Startup 2.0:**
   ● It is a correct time for the government to support the deep tech startups by establishing Startup India 2.0.
   ● This phase should focus mainly on deep technologies.

2. **Deep Tech Fund of Funds**:
- The government must lay much more emphasis on the aforementioned sectors in the existing SIDBI Fund of Funds.
- Industries also incentivised to increase and channel their research funds towards financing deeptech startups.

3. **Market Creation:**
- The government should enable mass procurement of indigenously developed technologies.
- This can be initiated across the Ministries such as defence, smart cities and health.

4. **Government-Private Partnership:**
- Setting up of a dedicated 'deep tech capital guidance' fund in which the government, private limited partners and foreign investors anchor certain commitments to a new fund or an existing fund in the form of fund of fund (FoF) structure can be a better option to minimize the funding issues.

5. **Proper Identification of the Start-ups:**
- The proper identification of start-ups companies truly qualify as deeptech will reduce corruption and misfunding issues.

6. **Attracting Investors:**
- Government should create a special exchange where shares of deeptech companies could be listed for smaller investors to partake in these companies.
- Other measures include expanding the list of alternative investment funds and investors exempted from Angel Tax for deep tech startups can be a better way to attract the investors.

Further Reference - National Deep Tech Start-up Policy