



# THE AGRITECH STARTUPS IN INDIA, AND THEIR SIGNIFICANCE IN THE AGRICULTURAL SECTOR

## PART I: INTRODUCTION: WHAT IS AGRITECH

India is considered an agricultural state; about 60-70% of Indian households depend on agriculture, and this sector contributes to 17-18% of the country's overall Gross Domestic Product (GDP). It is significant to note that the Indian agricultural sector contributed around 20.19 percent of the GDP in 2020–21. The significant demand for innovation, research, and development (R & D) in agriculture, and allied sectors and the requirement of the last-mile delivery to farmers have inculcated new a word in the dictionary of the Indian agriculture ecosystem i.e. Agritech. AgriTech is an amalgamation of conventional agriculture in the fusion with modern technologies to efficiently generate sufficient revenues to support livelihoods, and a sustainable ecosystem.

## PART II: SIGNIFICANCE OF THE AGRITECH IN INDIA

### What is the need for Agricultural Entrepreneurship-?

1. The new agricultural regime requires organizing user/producer groups, linking farmers to markets, engaging in research planning and technology selection, enabling changes in policies, and linking producers to a range of other support and service networks.
2. Plastic waste is a cause of concern. Rising diesel price is also a cause of worry. From the perspective of providing clean and green energy, the AgriTech stakes can be of much help to consider the climate change obligations.
3. Several countries like Israel, China, and the United States of America (the USA) have transformed agriculture practices in their country with the use of technology like hybrid seeds, precision farming, big data analytics, artificial intelligence, geo-tagging and satellite monitoring, mobile apps, and farm management software can be applied at every stage in the agriculture process to increase productivity and farm incomes
4. AgriTech has the immense potential to address the proximate challenges faced by conventional agriculture and change the face of Indian agriculture. Upsurge in internet usage, increase in smartphone penetration, the emergence of startups, and various government initiatives in rural areas are facilitating technology adoption in the farm sector.



## THE AGRITECH STARTUPS IN INDIA

### How the AgriTech Entities are relevant for India-?

1. In this era of the unicorn business ecosystem, AgriTech startups have become a ray of hope in Indian agriculture, and a gateway to innovation in this sector. AgriTech Startups are providing relevant and innovative solutions to a number of challenges faced all across the agricultural value chain.
2. A new wave of budding entrepreneurs and emerging startups in the country are leading the way in disrupting the conventional agriculture system with innovative ideas and affordable solutions.
3. These startups have become the missing link between the farmers, input dealers, wholesalers, retailers, and consumers connecting each of them to each other and providing strong marketing linkages and quality products on time.
4. In a bid to double the farmer's income by 2022, the Government of India is continuously looking for ways to boost agricultural production, food processing, and marketing avenues through the
5. Integration of the latest technologies and innovations; thus creating a huge scope for food and AgriTech startups in the country.

### AGRITECH START-UPS AND OPPORTUNITIES IN INDIA

#### The Role of Governmental Schemes and Policies in the Development of AgriTech:

1. With the objective of promoting innovation and agri-entrepreneurship, the Ministry of Agriculture has implemented a programme called 'Innovation and Agri-Entrepreneurship Development' under the umbrella of Rashtriya Krishi Vikas Yojana (RKVY-RAFTAAR) in the year 2018-19, to provide financial and technical support for nurturing agri startups including agritech startups using digital techniques to a total of 799 start-ups in the field of agriculture and allied sectors.
2. The government has been a catalyst in the growth of the AgriTech sector. It has established the National Center for Management and Agricultural Extension in Hyderabad (MANAGE).
3. The government is also planning to grant Rs. 2,000 crore or US\$ 270 million for computerization of the Primary Agricultural Credit Society (PACS), with the primary aim of benefitting cooperatives through digital technology.
4. The Agricultural Technology Management Agency (ATMA) has also been initiated, which facilitates retrieval of data and data entry from web-based portals via a regular mobile phone (without using the Internet). The agency is operationalizing more than a dozen services of innovative technologies.





## THE AGRITECH STARTUPS IN INDIA

5. In addition, there have been many favorable government policies and initiatives such as PM-KISAN, PM-AASHA and PM-KMY, Aatmanirbhar Bharat, among others that are uplifting farmers and benefiting stakeholders across the value chain. It seems that agritech is now uniquely poised for disruption via technology.
6. The Budget 2022 had also sought to spur the usage of drones in the farming sector. It has been noted that the government aims to promote the use of Kisan Drones for crop assessment, digitization of land records, and spraying of insecticides and nutrients.
7. In 2020, the Reserve Bank of India (RBI) directed banks to treat loans up to ₹50 crore to agri-startups under priority sector lending.
8. The International Crops Research Institute for Semi-Arid Tropics (ICRISAT) has initiated the applications from agritech start-ups under the NIDHI-Seed Support Scheme (NIDHI-SSS), wherein the shortlisted start-ups will receive a financial support of up to ₹50 lakh, which will be called seed fund, and the fund will enable them to accelerate their commercialization activities.

### PART III: THE STATUS OF AGRITECH STARTUPS IN INDIA

**The Current Status:** In her Budget speech in the year 2022, the Finance Minister Ms. Nirmala Sitharaman had proposed setting up a blended capital fund under co-investment model to finance AgriTech startups. Moreover, As per the to the Economic Survey 2022 , about 75 startups, and new age companies mobilized ₹89,066 crore in April-November 2021 through the initial public offering (IPO), which is highest in a decade. However, the share of agri-startups in this is negligible, which needs to be changed.

**Prevailing Start-ups in India:** - India has over 1,000 AgriTech startups coming in up to address the problems of Indian agriculture such as supply chain management, use of outdated equipment, improper infrastructure, and farmers' unable to access a wider range of markets with ease and enhancing the sector's marketing infrastructure has been developed in India which tackles this issue and has the potential to change the face of Indian agriculture sector and eventually raise farmers' incomes.

**Roles of Such AgriTech Start-Ups:** - Many AgriTech startups in India are mainly in the marketplace segment, where e-commerce companies provide fresh and organic fruits and vegetables procured directly from farmers. Very recently many startups have come up providing innovative and sustainable solutions for farmer's problems. Startups have



## THE AGRITECH STARTUPS IN INDIA

provided solutions such as biogas plants, solar-powered cold storage, fencing, and water pumping, weather prediction, spraying machines, seed drills, vertical farming, etc.

Examples of AgriTech Start-Ups - Startups such as DeHaat, Ninjacart, Fasal – Climate Smart Precision Agriculture Solution, Agrowave, BharatAgri, BigHaat, Bijak, Gramophone, Krishify, Cropin and many others have revolutionized the field. The sector has been flourished due to the increased rural Internet penetration and use of innovative new technologies that offer timely information and agricultural solutions at a fraction of cost.

Significant Achievement: - An AgriTech Start-up named Jaksh Gravity Agro and Energy, established in the year 2019 by the young and dynamic school pass out students, is known for its unique technique for mushroom farming that has not only empowered rural women but also boost the rural economy. The start-up, with its spread in more than five states, has the other objectives, such as converting plastic into diesel, and producing vermin-compost from the biodegradable waste to promote organic farming. With these remarkable techniques, the stakeholders can find the forever solution for the stubble that creates huge pollution every year in the NCR Region.

### PART IV: CHALLENGES IN THE AGRITECH START-UPS

1. Challenges from the perspective of Agriculture: - The agriculture sector is still plagued with grave problems like resistance to adopting modern machineries and technologies, climate change, water stress, poor quality soil, lack of warehouse/ storage facilities, fragmented farm holdings, lack of land data, poor marketing infrastructure, pricing manipulation and unavailability of trained labour.
2. Challenges from the perspective of AgriTech Entities: - Many AgriTech firms are grappling with their own set of issues. These include rigid business models that are at times difficult to scale up, lack of insights and expertise on the subject matter which is essential in network build-up, resistant farmers unwilling to adopt technology; glaring gaps in the supply chain management, poor last-mile connectivity especially at grass-roots level as well lack of investments to drive the businesses.

### PART V: ROAD AHEAD

1. The challenges- conventional as well as modern- have, in fact, created an opportunity for startups to push for innovative, tech-friendly solutions. Cloud computing is one





## THE AGRITECH STARTUPS IN INDIA

such application that farmers can effectively use for crop management via software-as-a-service (SaaS) application.

2. Also, different new apps are being designed and launched to specifically collect data, which is a huge boon for the field teams. Similarly, Internet of Things (IoT) has the potential to connect different devices across a vast network thereby providing valuable data-based insights.
3. Likewise, AI-backed mobile technology like smart phones and tablets are playing a big role in the monitoring and evaluation process in the pre-harvest management system.
4. Deploying remote sensing tools like drones, GPS, satellite imagery, field sensors, smart irrigation systems, tracking gadgets like RFID and many such advanced technologies would help improve operational planning and accelerate real-time decision-making based on the farm and farmer's requirement.
5. Another important tool that is being utilized for precision agriculture is data analytics. Many agri-businesses are deploying it to cut costs, improve the revenue stream and increase yield productivity.
6. The participation of several other stakeholders, such as NABARD, SEBI, etc. can be of much help by way of providing capital from the banks and hand-holding of agri-startups. Moreover, the government also needs to ensure 'ease of funding' for agri-entrepreneurs through progressive policy regime to attain the intended objectives.

### PART VI: CONCLUSION

Conclusively, it can be said that the AgriTech entities, in the form of startups, have a crucial role to play in helping farmers harness technology, which will increase crop yield and inadvertently double the income of farmers. Despite the prevailing challenges, the AgriTech startups can provide meaningful solutions to build a smart agricultural value chain, be it in terms of a product (machinery, equipment, seeds, etc.), service (improving crop quality, providing effective supply chain) or even an application. With the infusion of technology in the sector, agriculture is set to make big gains and move towards Atmanirbhar Bharat with the technological evolution in it.

