

APPOLO STUDY CENTRE

ONE PACS ONE DRONE

TRANSFORMING COOPERATIVE SECTOR THROUGH TECHNOLOGY

- To make the dream of 'Sahakar se Samriddhi' a reality, Primary Agricultural Credit Societies (PACS) must be strengthened.
- The Ministry of Civil Aviation, under the leadership of the Prime Minister of India announced the liberalised Drone Rules 2021 with a vision to make India a global drone hub by 2030.
- In order to boost the manufacturing of drones in India, the Central Government approved production-Linked Incentive (PLI) scheme for drones and components worth Rs. 120 crore and putting import bans, paving the way for the domestic manufacturing sector.

A CASE FOR PROGRESSIVE FARMING & DRONE TECHNOLOGY

Ozarde village in Wai taluka in Satara district in Maharashtra is dominated by progressive farmers. The village occupies 2500 acres of land. Mahatma Gandhi Ozarde Primary Agriculture Cooperative Society operates at the village level to cater to the credit needs of farmers in rural areas. The PACS started in 1962 to provide crop loans to the farmer members of villages. The society has supported farmers in adopting innovative agriculture practises such as greenhouses, polyhouses, nurseries, exotic vegetables, sugarcane, strawberry, and turmeric cultivation. It has been set up as a multipurpose cooperative society with diversified businesses. The regional state government audited the society as 'A'. The society has been computerised since 2003. The PACS adopted drone technology for the farmers' community. The PACS purchased the equipment at a cost of Rupees three lakhs fifty thousand in 2021 with a warranty of three years from a Hyderabad company, Flymore. The company also has a supporting office in Kolhapur. The drone has a tank of 10 litres with rechargeable lithium batteries and is capable of spraying the field up to a height of sixty feet. It takes about seven to 10 minutes to spray 1.5 acres of land. A set of batteries used in the drone cost Rs fifty thousand. PACS has three reserve battery sets. It was observed that there had been no need for maintenance for the drone in a year. Drones have helped the farmers' community by spraying the fields with fertilisers, pesticides, and tonics. The technical person for drones has been trained and assigned to run the remote. The drones are provided for rent at a rate of Rs 800 per acre. This has helped in creating revenue for the PACS through the rents given by the farmers' community. The society also provides drones to other farmers who are not

members of the society and facilitates two farmer members to operate the drones. The benefits of drone technology helped in the transformation of PACS towards viability.

- Signed between the Ministry of Cooperation, the Ministry of Electronics and Information Technology (MeitY), NABARD, and CSC e-Governance Service India Limited on 2 February 2023.
- The intention is to enable PACS to function as Common Services Centres (CSC). With PACS becoming multipurpose, more than 300 services will be made available to the rural population, especially to small villages situated in remote corners of the nation.
- PACS are the primary institutions of the cooperative movement and after linking with more than 20 services, more employment opportunities will be created in rural areas.
- In this sequence, it can be strengthened by providing each PACS with a Drone under the initiative of 'One PACS One Drone (OPOD)'.
- It will strengthen the economic condition of PACS and promote the entry of new entrepreneurs in this field.

Drone Policy

- A drone is an unmanned aerial vehicle (UAV). It is an aircraft without any human pilot, crew, or passengers on board UAVs are a component of an unmanned aircraft system (UAS), which includes adding a ground-based controller and a system of communication with the UAV.
- The flight of UAVs may be operated under remote control by a human operator as a remotely piloted aircraft (RPA), or with various degrees of autonomy, such as auto pilot assistance, up to fully autonomous aircraft that have no provision for human intervention.
- The Drone Rules 2021 were announced with a vision to make India a global drone hub by 2030.
- In order to boost the manufacturing of drones in India, the Central Government approved Production-Linked Incentive (PLI) scheme for drones and components worth Rs 120 crore and putting import bans, paving the way for the domestic manufacturing sector.
- It is expected that the drone component industry will attract \$ 500 billion of investment in the next few years.
- In a major step to promote precision farming in India using drone technology, the Ministry of Agriculture and Farmers Welfare has issued guidelines to make drone technology affordable to the stakeholders of the Agriculture Sector.
- The guidelines of the Sub-Mission on Agricultural Mechanisation (SMAM) have been amended which envisages granting up to 100% of the cost of a drone or Rs 10 lakh,

whichever is less, as a grant for the purchase of drones by the Farm Machinery Training & Testing Institutes, ICAR Institutes, Krishi Vigyan Kendras (KVK), and State Agriculture Universities for taking up large scale demonstrations of this technology on the farmers' fields.

- The Farmer producer Organisations (FPOs) would be eligible to receive a grant of up to 75% of the cost of the agriculture drone for its demonstration to the farmers.
- In order to provide agricultural services through drone application, 40% of the basic cost of the drone and its attachments, or Rs 4 lakh, whichever is less, would be available as financial assistance by existing Custom Hiring Centres (CHC), which are set up by Cooperative Society of farmers, FPO, and rural entrepreneurs.
- The CHCs or Hi-tech Hubs that will be established by the Cooperative Societies of farmers, FPOs, and Rural entrepreneurs with financial assistance from SMAM, RKVY, or any other scheme can also include Drones as one of the machines along with other machines in the projects of CHCs/Hi-tech Hubs.
- The Department of Agriculture & Farmers Welfare (Ministry of Agriculture and Farmers Welfare), after deliberation with all the stakeholders in the drone sector, has brought out a publication on Standard Operating Procedures (SOPs) for the use of drones in pesticide and nutrient application.
- It provides guidelines and instructions for the effective and efficient use of drones while ensuring the safety of operations.

Why Drone in Agriculture Sector?

- The Indian agriculture sector is going through significant challenges such as low yield, soil erosion, a lack of irrigation facilities, inefficient use of inputs, unscientific use of chemical fertilisers, imbalanced NPK ratio in fertilisers, lack of post-harvest management structure, access to financial services, etc.
- Fourth Industrial Revolution technologies can play a major role in addressing these challenges.
- The Ministry of Electronic and Information Technology (MeitY) report highlighted that digital tech based agriculture can unlock a further value of \$ 65 billion by 2025.
- The impact of digital agriculture on the Gross Domestic Product (GDP) will be even larger.
- Drones are one such technology that is gaining prominence in the agriculture sector. Land mapping, agrochemical and liquid fertilisers spraying (such as nanourea / nano DAP/ Sagarika etc.), seeding, crop yield assessment, and drone-based analytics are the most prominent uses of the drone.

- The preliminary results have been promising. Spraying of Agrochemicals & liquid fertilisers has the potential to be actively used as it saves the cost of inputs by 25-90%, minimises skin exposure by 90%, and improves crop yield.
- Mapping is the second major use case, with the potential to drive precision agriculture and minimise land disputes.
- It has been noticed that farm mechanisation has increased with the highest adoption in northern states like Uttar Pradesh, Punjab, and Haryana (70-80% overall and 80-90% in rice and wheat).
- However, this is still low when compared to other countries like China (more than 70%), Brazil (more than 75%), and the United States (more than 95%).
- The low levels of mechanisation (less than 50% in India) add to the inefficiencies during the harvest and post-harvest stages, which is one of the reasons for the low productivity of crops.
- With the introduction of drones in the agriculture sector, it is possible to increase the productivity of crops while minimising the input cost.
- Indian agriculture is prone to frequent pest attacks. Spraying pesticides/fungicides/liquid fertilisers, etc. through drones can solve the problem of pest infestations and their effects on crops.
- Drones are poised to be an effective tool to support farmers in reducing their operating costs, while at the same time optimising their input use.
- There are multiple uses for drones, including surveying, seeding, spraying, pollination, etc., that are at different stages of technology and business model maturity.

One PACS One Drone: Action Required & Benefits

- The Government has decided to establish multipurpose PACS across the nation. Providing each PACS with one drone will strengthen its economic condition.
- It would be a great help for PACS if the Government provides a grant of 75% of the cost of agricultural drones purchased by PACS, as given to FPOs by the Ministry of Agriculture and Farmers Welfare, Government of India.
- Drones can help transform Indian agriculture, boost agriculture GDP by 1-1.5% create at least 5 lakh new jobs and support the country in ushering in a new digital era of prosperity.
- Rural entrepreneurs associated with PACS, who have passed class 10th or its equivalent from a recognised board and have pilot licences from institutes specified by the Director General of Civil Aviation (DGCA) would be eligible to fly the agricultural drone.

- The Guidelines on the Development of Entrepreneurs for Drone Spraying of Liquid Fertilisers published by the Department of Fertilisers, Ministry of Chemicals and Fertilisers, Government of India, have included a commercial cost calculation for Agriculture Spray Drone, which states that the net annual profit for the entrepreneurs and members associated with PACS would be in the range of approximately Rs 5 to 6 lakhs.

Conclusion

- The implementation of drone technology in agriculture is still a big issue.
- Some of the corporate farming institutions or large farmers-on progressive farmers have shown an interest in using drones in agriculture.
- Through this initiative of ONE PACS ONE DRONE, the benefits of the technology can reach even small and marginal farmers.
- Indian cooperatives can play an important role in the socio-economic growth of rural India by budding young entrepreneurs and providing employment to rural youths in their native places.
- This initiative will set an example in Transformation of Cooperative Sector through Technology.

World's Largest Grain Storage Plan in Cooperative Sector

The Union Cabinet on May 31, 2023 approved the constitution and empowerment of an Inter-Ministerial Committee (IMC) for facilitation of the "World's Largest Grain Storage Plan in Cooperative Sector" by convergence of various schemes of the Ministry of Agriculture and Farmers Welfare, Ministry of Consumer Affairs, Food and Public Distribution and Ministry of Food Processing Industries.

In order to ensure time, bound and uniform implementation of the Plan in a Professional manner, Ministry of Cooperation will implement a pilot project in at least 10 selected Districts of different States/ UTs in the country. The pilot project would provide valuable insights into the various regional requirements of the project, the learning from which will be suitably incorporated for the country-wide implementation of the Plan.

Implementation

An Inter-Ministerial Committee (IMC) will be constituted under the Chairmanship of Minister of Cooperation, with Minister of Agriculture and Farmers Welfare, Minister of Consumer Affairs, Food and Public Distribution, Minister of Food Processing Industries and Secretaries of the concerned Ministries as members to modify guidelines/implementation methodologies of the schemes of the respective Ministries as and when need arises, within the approved outlays and prescribed goals, for facilitation of the 'World's Largest Grain Storage Plan in Cooperative Sector' by creation of infrastructure such as godowns, etc. for Agriculture and Allied purposes, at selected 'viable' Primary Agricultural Credit Societies (PACS).

Funding of the Plan

The Plan would be implemented by utilizing the available outlays provided under the identified schemes of the respective Ministries. Following schemes have been identified for convergence under the Plan:

a) Ministry of Agriculture and Farmers Welfare:

1. Agriculture Infrastructure Fund (AIF),
2. Agricultural Marketing Infrastructure Scheme (AMI),
3. Mission for Integrated Development of Horticulture (MIDH),
4. Sub Mission on Agricultural Mechanization (SMAM).

b) Ministry of Food Processing Industries:

1. Pradhan Mantri Formalization of Micro Food Processing Enterprises Scheme (PMFME),
2. Pradhan Mantri Kisan Sampada Yojana (PMKSY).

c) Ministry of Consumer Affairs, Food and Public Distribution:

1. Allocation of foodgrains under the National Food Security Act,
2. Procurement operations at Minimum Support Price.

Benefits of the Plan

- The Plan is multi-pronged-it aims to address not just the shortage of agricultural storage infrastructure in the country by facilitating establishment of godowns at the level of Primary Agricultural Credit Societies (PACS), but would also enable PACS to undertake various other activities, viz
 - Functioning as Procurement centres for State Agencies/ Food Corporation of India (FCI);
 - Serving as Fair Price Shops (FPS);
 - Setting up custom hiring centers;
 - Setting up common processing units, including assaying, sorting, grading units for agricultural produce, etc.
- Further, creation of decentralized storage capacity at the local level would reduce foodgrain wastage and strengthen food security of the country.

- By providing various options to the farmers, it would prevent distress sale of crops, thus enabling the farmers to realise better prices for their produce.
- It would hugely reduce the cost incurred in transportation of foodgrains to procurement centres and again transporting the stocks back from warehouses to FPS.
- Through 'whole-of-Government' approach, the Plan would strengthen PACS by enabling them to diversify their business activities, thus enhancing the incomes of the farmer members as well.

Priority Sector Lending Certificates: An Alternate Mechanism to Bridge the Gap in Priority Sector Lending Target

Priority Sector Lending Certificates (PSLCs) are instruments that enable commercial banks to achieve their priority sector lending targets without actually disbursing loans to sectors outside their comfort zone. PSL certificates allow banks sitting on surplus loans to a priority sector to sell certificates to banks that haven't met their targets, pocketing a sizeable fee for this trade. The said loans however do not change hands. It means they have to be settled by the bank. Which have distributed them to the borrowers.

While most of the banks almost always meet the overall target of priority sector lending, keeping up with the sub-targets sometimes becomes difficult for banks with limited expertise in certain sectors. Not even this, some banks are sceptical about operating out of their niche, fearing poor loan judgements and dents to their profits and rise in NPAs. Earlier, in the event of a shortfall in any specific category, banks had to make good this shortfall by either buying out such priority sector loans (in full) from other banks or had to pay a penalty to the Rural Infrastructure Development Fund (RIDF) operated by the NABARD.

Priority Sector Lending Certificates Scheme

Reserve Bank of India on April 7, 2016 launched the Priority Sector Lending Certificate Scheme. The purpose of the scheme is to enable banks to achieve the priority sector lending target and sub-targets by purchase of these instruments in the event of shortfall and at the same time incentivize the surplus banks; thereby enhancing lending to the categories under priority sector.

Key characteristics of the scheme are following:

- Scheduled Commercial Banks (SCBs), Regional Rural Banks (RRBs), Local Area Banks (LABs), Small Finance Banks and Urban Cooperative Banks who have originated PSL eligible category loans subject to such regulations as may be issued by the Bank are the buyers and sellers of the PSLCs.
- The seller are selling fulfilment of priority sector obligation and the buyer are buying the same. There is no transfer of risks or loan assets.
- The PSLCs are being traded through the CBS portal (e-Kuber) of RBI.
- There are four kinds of PSLCs:

- **PSLC Agriculture:** Counting for achievement towards the total agriculture lending target.
- **PSLC SF/MF:** Counting for achievement towards the sub-target for lending to Small and Marginal Farmers.
- **PSLC Micro Enterprises:** Counting for achievement towards the sub target for lending to Micro Enterprises.
- **PSLC General:** Counting for achievement towards-the overall priority sector target.

Mission on Advanced and High Impact Research (MAHIR)

MAHIR is joint initiative of the Ministry of Power and the Ministry of New and Renewable Energy with a view to quickly identify emerging technologies in the power sector and develop them indigenously, at scale, for deployment within and outside India. 'Mission on Advanced and High-Impact Research (MAHIR)' aims to facilitate indigenous research, development and demonstration of the latest and emerging technologies in the power sector. By identifying emerging technologies and taking them to implementation stage, the Mission seeks to leverage them as the main fuel for future economic growth and thus make India a manufacturing hub of the world.

MAHIR has been planned for an initial period of five years from 2023-24 to 2027-28. The Mission will follow the technology life cycle approach of idea to product.

Priorities of MAHIR

- The Mission will serve as a catalyst for national priorities such as achieving Net Zero emissions and promoting initiatives like Make in India and Start-up India.
- It will contribute towards achieving the United Nation's Sustainable Development Goals (SDGs).
- MAHIR will work towards Industry - Academia - Government collaboration to create an ecosystem for innovation and translation of implementation in the power sector.
- MAHIR will work with premier institutions such as IITs, IIMs, NITs, IISERs and Universities on the one hand and public & private power sector start-ups and established industries on the other, with government acting as an enabler for creating an innovation ecosystem.

In last nine years, the Indian Power Sector has transformed into a vibrant and a financially viable sector. Given that Indian economy is going to grow at more than 7% in coming years, the electricity demand is going to increase at close to 10%. In addition, India is aiming for energy transition following Prime Minister's vision of LiFE. This requires not only massive investment but also a transformational approach driven research and innovation.

Objectives of MAHIR

The key objectives of the MAHIR are as follows:

- To identify emerging technologies and areas of future relevance for the Global Power Sector and take up indigenous end-to-end development of relevant technologies.
- To provide a common platform for Power Sector Stakeholders for collective brainstorming, synergetic technology development and devise pathways for smooth transfer of technology.
- To support pilot projects of indigenous technologies (developed especially by Indian Startups) and facilitate their commercialization.
- To leverage foreign alliances and partnerships to accelerate research and development of advanced technologies and to build competencies, capabilities and access to advanced technologies through bilateral or multilateral collaborations, thereby facilitating exchange of knowhow and technology transfer.
- To seed, nurture and scale up scientific and industrial R&D and to create vibrant & innovative ecosystem in the Power Sector of the country.
- To make our nation among the leading countries in power system related technologies & applications development.

Areas Identified for Research

1. To begin with, the following eight areas are identified for research:
2. Alternatives to Lithium-Ion storage batteries,
3. Modifying electric cookers / pans to suit Indian cooking methods,
4. Green hydrogen for mobility (High Efficiency Fuel Cell),
5. Carbon capture,
6. Geo-thermal energy,
7. Solid state refrigeration, Nano-technology for EV battery,
8. Indigenous CRGO technology