



Boosting Farm Mechanization Efforts

This editorial is based on [“Skills shortage hampering farm mechanisation”](#) which was published in the Hindu on 13/04/2023. It discusses the issues with India's Farm Mechanization Efforts and steps that need to be taken.

For Prelims: [Farm Mechanization](#), [National Council of Applied Economic Research](#), [Micro, Small, and Medium Enterprises](#), [Krishi Vigyan Kendras](#), [Public-Private Partnerships](#), [Indian Council of Agricultural Research](#)

For Mains: Challenges with India's Farm Mechanization Efforts, Government Policies & Interventions

According to a recently released white paper by the [National Council of Applied Economic Research \(NCAER\)](#), the farm machinery industry in India faces significant challenges in meeting the demands of small and marginal farmers.

The **farm machinery industry is characterised by both demand and supply-side challenges**. Farm mechanisation in India, at 40-45%, remains low compared to the rest of the world; in the US it is 95%, Brazil 75%, and China 57%.

Despite low levels of farm mechanization in India, skills shortages and a lack of awareness among farmers about technology and machinery management pose significant obstacles to progress.

What is the Farm Machinery Industry?

- The Farm Machinery Industry is an **industry sector that produces and supplies a range of machinery**, equipment, and tools used in agriculture and farming activities such as ploughing, planting, harvesting, and more.
- These machines are **designed to improve productivity and efficiency in farming operations**, and the industry encompasses both small-scale and large-scale farming equipment.
 - Some examples of products offered by this industry include tractors, combine harvesters, irrigation systems, tillers, and more.

What are the Challenges with the Farm Machinery Industry?

- **Skills Shortage:**
 - The **shortage of skills is a pressing issue** that creates a low-equilibrium trap for the industry.
 - At the bottom of the industry pyramid, **village craftsmen represent the largest group**, primarily catering to Indian farmers by supplying, repairing, and maintaining farm machinery.

- **Lack of Adequate Information:**
 - There is a **lack of adequate information and awareness** amongst farmers about the technology and the management of machinery.
 - Consequently, their selection of machinery is poor, often making it a wasted investment.
- **Lack of Skilled Personnel:**
 - The **Micro, Small, and Medium Enterprises (MSMEs)** face a **shortage of skilled personnel. Semi-skilled workers, lacking proper equipment**, often fabricate agricultural tools and machinery. The absence of qualified supervisors in small-scale fabrication makes it challenging to ensure quality. Moreover, finding qualified personnel for testing machinery is also difficult.
- **High Capital Cost:**
 - Farm machinery is **expensive, and farmers may not have the resources to invest in new equipment**. This can lead to a lack of access to the latest technology and reduced efficiency in farming operations.
- **Rapidly Changing Technology:**
 - Farm machinery technology is **evolving rapidly, and manufacturers must continually invest in research** and development to keep up. This can be challenging for smaller manufacturers who may not have the resources to innovate quickly.
- **Dependence on Weather Conditions:**
 - Farm machinery is **highly dependent on weather conditions** and adverse weather can cause delays and disrupt farming operations. This can result in lost productivity and reduced profitability.
- **Maintenance and Repair:**
 - Farm machinery **requires regular maintenance and repairs** to keep it running efficiently. This can be costly and time-consuming, especially for smaller farmers who may not have the resources to maintain their equipment properly.
- **Environmental Concerns:**
 - There is growing concern over the environmental impact of farming, including the use of fossil fuels in farm machinery. Manufacturers are under pressure to develop more sustainable and environmentally friendly equipment.

What Should be the Way Forward?

- **Training Young Farmers/Owners/Operators:**
 - Tractor training centres, **Krishi Vigyan Kendras**, and industry **should be made responsible for training young farmers/owners/operators** on how to select, operate and service farm machinery.
 - They **should also provide information on developments in mechanisation including** the availability of new and better farm equipment for different applications.
- **Strengthening Front-line Demonstration:**
 - **Front-line demonstration of farm machinery should be strengthened** and handheld training to users of new-generation farm machinery may encourage the extension and adoption of farm power.
- **Address Skilling Shortages:**
 - The **Agricultural Skills Council of India should work at the district level to address skills shortages** on the demand side.
 - **Public-private partnerships** with Custom Hiring Centres may be especially useful, and **Indian Council of Agricultural Research (ICAR)** institutes can offer short courses that address skills shortages on the demand side.
 - **Industrial Training Institutes (ITIs)** can be leveraged to address the skill gaps in repair and maintenance, and service centres at the regional and State levels may be promoted in the private and industrial sectors.
- **Provisioning available Technical Knowledge and Skills:**
 - The **District Industries Centre should work with local industrial clusters** so that ITIs can provide relevant courses with the latest available technical knowledge and skills.
 - **Dual vocational skilling programmes will greatly benefit industrial clusters** located in tier-II and tier-III cities, and MSMEs should also leverage the Apprentices Policy of the Central Government.

Drishti Mains Question

What are the key challenges hindering the successful implementation of farm mechanization efforts in India, and how can they be addressed?

UPSC Civil Services Examination Previous Year's Question (PYQs)

Mains

Q. Assess the role of National Horticulture Mission (NHM) in boosting the production, productivity and income of horticulture farms. How far has it succeeded in increasing the income of farmers? **(2018)**

Q. What are the challenges and opportunities of the food processing sector in the country? How can the income of the farmers be substantially increased by encouraging food processing? **(2020)**

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