Making India a Global Power House in the Farm Machinery Industry

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Background and Objectives

Farm machinery comprises farm equipment[2] used at various stages of farm operations like soil working and seed bed preparation, seeding and planting, hoeing, plant protection and harvesting and threshing. Increased farm mechanisation can help improve agricultural productivity and yields. Farm mechanisation in India is marked by 'tractor-isation' (ICFA, 2017). India's farm equipment market is 7 per cent of the global market, with more than 80 per cent of the value contribution coming from tractors. There is a mismatch between what the organised farm machinery sector produces and what small marginal Indian farmers need. Moreover, they cannot afford to buy expensive farm equipment.

The twin objectives of this study were to recommend to policymakers key strategic actions to foster the growth of the non-tractor farm machinery industry in India and turn it into a global production hub, and to improve the match between the needs of Indian farmers and Indian farm machinery producers in terms of the price, quality, size and efficiency of the machinery.

How We Measure the Farm Machinery Industry

Industries are identified by dedicated industrial classification (NIC) codes. Unfortunately, there is no specific code for the farm machinery industry. Products associated with farming machinery are spread across multiple NIC codes, and they do not completely represent the farm machinery sector. Therefore, we used 7-digit product classification codes (NPC) and clubbed the relevant codes together to form the industry.[3] It forms 0.6 per cent of overall manufacturing gross value added (GVO). Approximately, tractors form 70 per cent of the overall farm machinery industry. It is a pyramid-shaped industry with large-scale manufacturers at the top, followed by small-scale manufacturers and village-level craftsmen at the bottom (Agriculture Today, 2018).

What Is the Problem?

The Government of India set a target to reach average farm power availability (FPA) of 4kw/ha by 2022 (NABARD, 2018). Singh and Singh (2021) estimated that FPA was at 2.761 kw/ha in 2020–21 and 59.4 per

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[2] Each of the field operations mentioned can be done by manual labour or other non-machine power using implements. Here we are referring to machine power only.

[3] NIC is a classification system used to track activities undertaken by a business. NIC code is used by Government Departments in India to classify businesses and are required while registering industries under Udhyam Portal or under the Ministry of Corporate Affairs (MCA). National Product Classification is a mode of classifying products with codes. Product classification works via a system of assigning codes to products depending upon the characteristics of the product. NPC codes are used for GST rates fixation.

cent of this power came from tractors.[4] The level of farm mechanisation in India remains relatively low compared to the rest of the world at 40–45 per cent compared to that of the United States (95 per cent), Brazil (75 per cent) and China (57 per cent).

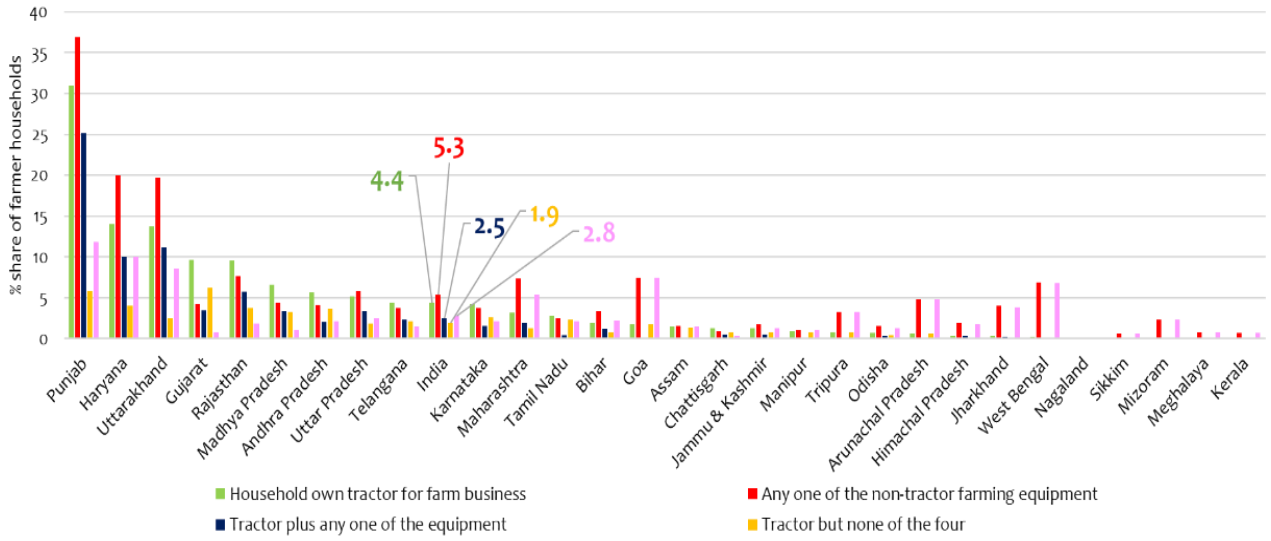
There is a supply-demand mismatch between Indian producers of farm machinery and consumers of farm machinery i.e., farmers. This mismatch arises due to challenges both on the demand (domestic and external) and supply sides.

Demand-side Challenges

Limited domestic demand

Ownership of tractors is limited to a few States in India like Punjab, Haryana and Uttarakhand. Only 4.4 per cent of cultivator households owned tractors in India (Figure 1) and 5.3 per cent owned either power tillers or crop harvesters (power-driven)/combine harvesters or threshers or laser land-leveller as on June 2018 (MoSPI, 2021a). A relatively larger share of farmers (63.5 per cent) rented machinery (MoSPI, 2021b), but the data does not distinguish between power and non-power farm machinery. This makes the data difficult to interpret farm machinery usage patterns. Even the farm machinery rental market is not inclusive of small and marginal farmers in the sense that farm machinery is largely owned by large farmers and there are barriers to entry for the smaller farmers (Kishore, Saini and Alvi, 2022).

Figure 1 : Percentage share of cultivator households that owned farm machinery, as on June 2018



Source: Bhandari et al. (2023).
Note: The AIDIS Survey 2019 probed farmer households about ownership of tractors as well as (a) power tillers/power-driven ploughs, (b) crop harvesters (power-driven)/combined harvesters, (c) threshers, other power-driven machinery and equipment, and (d) laser land-levellers.

The use of farm machinery in India is relatively low because of the large number of small and marginal farmers (though with State-level variations) with small and

[4] The power availability per hectare in year 2020–21 is 2.761 kW. Of this power availability per hectare from tractor, power tiller, diesel engine, electric motor, animal and human is 1.64kW (59.38 per cent), 0.03kW (1.02 per cent), 0.39kW (14.028 per cent), 0.54kW (19.57 per cent), 0.084kW (3.025 per cent) and 0.080kW (2.98 per cent), respectively.

fragmented land holdings, the practice of subsistence agriculture, diverse soil conditions and cropping patterns, lack of access (especially timely access) to farm power, the cost of the equipment, the tedious process of acquiring farm equipment under a subsidy and farmers' credit constraints. Farmers also lack information and guidance on the selection of machinery, so they waste money buying the wrong machinery. Government subsidies are able to reach small and marginal farmers in a limited fashion (see Box 1); therefore, they cannot buy farm machinery either for self-use or for leasing purposes. Credit constraints also limit their ability to rent equipment.

Box 1: International Comparisons of Demand-side Initiatives

A direct subsidy is given to small farmers across the world to buy farm equipment, e.g., in China, Turkey, Brazil, Japan, Germany, France and India. In Vietnam and Thailand, farmers are given subsidised loans to buy equipment.

The rental market is common across many countries. Barring Brazil, all countries have policies on the hiring of farming equipment. Farmer awareness and training programmes are carried out in India and the US. In Thailand, farmers are provided low-cost machines, ensuring that the machinery is of good quality in terms of maintenance costs and price, and ensuring that machinery is appropriate for use in rural areas. Low/ liberal credit is given to all farmers for buying, e.g., Brazil, France, Japan, Turkey and India.

The implementation of the subsidy policy turns out to be inconsistent on the ground in India. There is little macro evidence yet to show that subsidies encourage ownership of farm equipment. However, anecdotal evidence on the ground suggests that increased subsidy does drive up farm mechanisation.

A variety of factors affect the probability of ownership of farm machinery in India – age and education of the head of the household, possession of a bank account by any one of the family members, possession of a Kisan Credit Card (KCC), geographical terrain, farmers' training, size of land area, the social capital of the household, the distance from the household to the market and extension service, agricultural wages and the presence of irrigation (Aryal et al., 2021; Ghosh, 2010; Sarkar, 2020). Other factors also may affect farm mechanisation like feminisation of the agricultural workforce (40 per cent of the agricultural workforce are women in the Periodic Labour Force Survey data (PLFS 2020–21), aspirations of rural youth, increasing cropping intensity and contract farming (ICFA, 2017; PwC and FICCI, 2019).

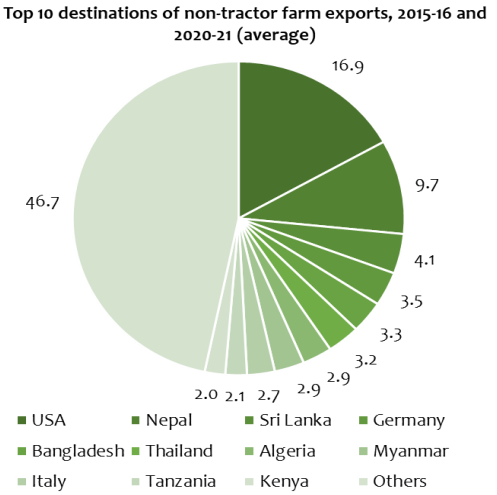
External Demand shows lopsided patterns

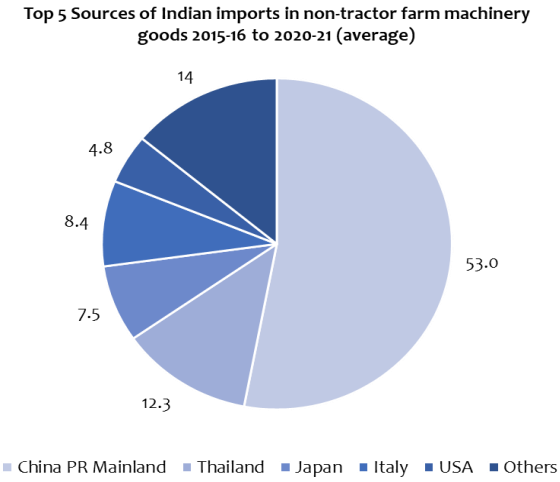
India has a very high trade surplus in farm machinery, but the decomposition shows that it is dominated by tractors. On average, tractor exports formed 85 per cent of total farm machinery exports between 2015–16 and 2020–21 but formed only 25 per cent of total farm machinery imports for the same period. Trade in non-tractor farm machinery forms less than one per cent of total merchandise trade. Although India is both exporting and importing non-tractor farm machinery, exports form a relatively small proportion of total farm machinery exports (though it has been increasing over the years) and imports form a relatively high proportion of total farm machinery imports (though the share has varied over the years). Its largest exports are 'parts of other agricultural and horticultural machinery of hdg no 843280', rotary tillers, etc. In contrast, its largest imports are combine-thresher-

harvesters (in which India has no revealed comparative advantage), 'appliances for horticultural/ agricultural work', etc. In sum, farm machinery exports are driven by the export of tractors, and farm machinery imports are driven by non-tractor farm machinery.

Further, the direction of trade is lopsided where 53 per cent of non-tractor farm machinery imports are sourced from China, but the export markets are relatively more diversified (Figure 2). India has a revealed a comparative advantage (i.e., it can produce products at a relatively lower opportunity cost) in certain non-tractor farm machinery such as ploughs, disc harrows, 'agricultural and horticultural machinery' and threshing machinery parts. Also, India's trade in this sector is characterised by high intra-industry trade, i.e., trade within the same industry group. Import restrictions may be misplaced.

Figure 2: Destinations and sources of exports and imports of non-tractor farm machinery, 2015-16 to 2020-21





Source: Bhandari et al. (2023).
Note: Values in US$ million for HS codes 8432+8433.

Supply-side Challenges

The Indian farm machinery industry is rendered uncompetitive in terms of scale, innovation and prices. The usual macro factors such as ease of doing business and inconsistent regulations make it a challenging environment for the industry. Further, it faces a shortage of skilled workers. There is little sustained collaboration between academia and industry, and in the academic institutes dedicated to farm mechanisation few of the new innovations/inventions are commercialised.

Limited R&D

Despite the non-tractor farm machinery sector being a highly competitive industry, there is little incentive or appetite for R&D on the part of firms. Medium-to-large firms form a relatively small proportion of the overall industry and are the only ones that are likely to do R&D. Interviews with industry stakeholders suggest that the non-tractor farm machinery sector is dominated by small producers that survive by copying successful products cheaply or assembling cheap imports.

The R&D programmes in India have so far mainly served the rice-wheat cropping system. The range of the equipment is not wide enough to facilitate diversification of agriculture. Equipment including tractors and prime movers for mechanisation of hill agriculture and production of fruits and vegetables is not commonly available. There is little innovation in fields such as irrigation, plant growth and post-harvesting.

Last but not least, there is little academic-industry collaboration. India has no system for the exchange/transfer of new design or technology developed by research institutes with manufacturers/fabricators or feedback on market requirements from manufacturers to research institutes. In the absence of adequate interaction with research organisations and industries, R&D groups and industries in India are not able to incorporate new developments and improvements in their designs and products. Instead, manufacturers use their own wisdom for innovations based on market feedback.

While academics in India are able to generate patents, they are unable to commercialise them. In India, government reports discuss the farm machinery being produced, but none are available in the market.

OECD (2018) shows that India lags behind other countries in terms of R&D. All countries support R&D, i.e., investment in R&D and a machinery testing agency to check the quality of machinery produced, namely, Australia, Brazil, China, France, Finland, Germany, India, Japan, Thailand, Turkey, United States and Vietnam. Turkey has built a relatively healthy ecosystem for academia-industry collaboration (Box 2). Yet another model is industrial doctorates where a private sector employee can work on the company's industrial problem while being registered at an academic institute.

In order to enable and strengthen academia-industry linkages, the Principal Scientific Adviser set up a programme to establish Science and Technology clusters around the country in 2020 but there are none for farm machinery

Box 2: Turkey R&D Eco-system

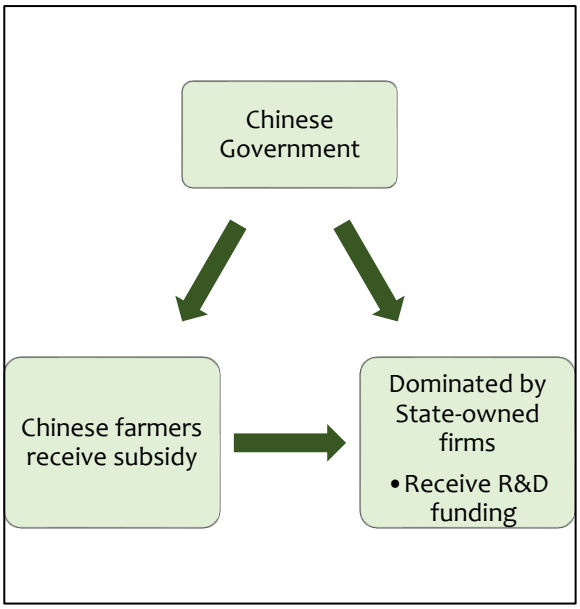
Developed countries are key examples of how constructive industry-academia collaboration can be but they can be difficult to replicate. One emerging country that we can look at for motivation is Turkey, which has used a variety of methods to encourage this collaboration.

Some of the key mechanisms from Yalçintaş, Kaya and Kaya (2015) are:

- Revolving capital: Faculty are allowed to participate in projects subject to universities keeping a part of their fees. However, this was perceived to be not enough because faculty in Turkey run into the same problem as Indian ones, i.e., they are not allowed to contribute towards commercial activities.
- Technoparks: Faculty and institutions working in technoparks are exempt from a variety of taxes.
- Technology Transfer Offices (TTOs): These act as an interface for academics and industrialists where both can seek help. Industrialists can approach TTOs for help and the TTOs try to match project needs to specific academics.
- R&D support programmes: R&D projects are co-funded by universities and private partners. This is especially beneficial for small and medium enterprises.
- Development agencies in Turkey are local agencies that also call for participation in projects where academics can participate.
- Industries can use academic lab facilities (Temel and Glassman, 2013).

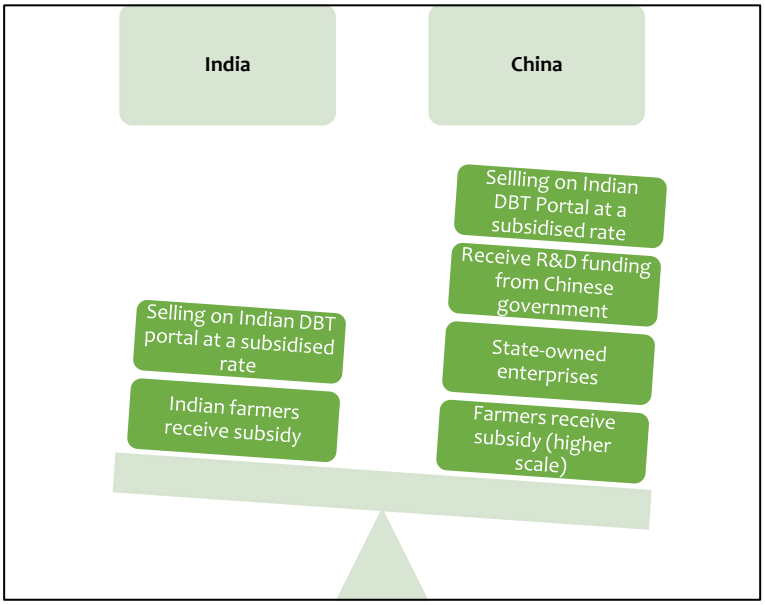
The first step is to create an atmosphere of trust and awareness between the stakeholders (Temel and Glassman, 2013) and enable various mechanisms that encourage collaboration. Temel et al. (2013) also point out that collaborations have to reach a scale for firms to benefit from it.

Figure 3: Chinese Government Support for its Farm Machinery Industry



Source: Bhandari et al. (2023).

Figure 4: Advantages to Indian vs. Chinese Farm Machinery Industry



Source: Bhandari et al. (2023).

Evidence from China suggests that the impact of R&D incentives is mixed and mostly garnered by large firms. The Turkish experience suggests the same (Box 2).

Disadvantage India

India mainly imports non-tractor farm machinery from China (Figure 2). In India, the central and state governments subsidise farmers' purchases of farm machinery via Direct Benefit Transfers. Since there is no requirement for local value-add, dealers sell Chinese farm machinery on India's DBT portals. Thus, Chinese farm machinery manufacturers get support from both China and India, leaving the Indian ones at a disadvantage (Figures 3 and 4). However, Tong et al. (2020) show the uneven impact of government subsidies on product quality in farm machinery in China. And even our analysis shows that globally Chinese farm machinery does not necessarily have the least revealed comparative advantage in these products.

Ease of Doing Business

Our field interviews with firms suggest that constraints on the ease of doing business continue to plague firms. Firms do not get repayments on time, logistics is a constraint and policies on the ground are implemented ineffectively. While these problems are not unique to this industry, the nature of the products, i.e., heavy machinery, affects the inventories and working capital of firms, which, in turn, affects small firms that are dependent on larger firms for business. Another related point is that firms have to enrol for different states' websites and pay an Earnest Money Deposit (EMD) for enrolment to supply machinery at subsidised rates in each State.

Firms incur large costs for the testing of equipment; the testing centres are located at a distance and transportation costs are high. In addition, there are problems with the results. Often, the same machine is repeatedly tested for several dimensions, and the validity of the test is for a relatively short duration. Further, interviews with firms

revealed that the testing reports can be faulty; these are binary reports that state whether the machinery has been accepted or rejected but the details are missing. Last but not least, there is a shortage of the skilled personnel needed for testing equipment.

Shortage of Skilled Workers

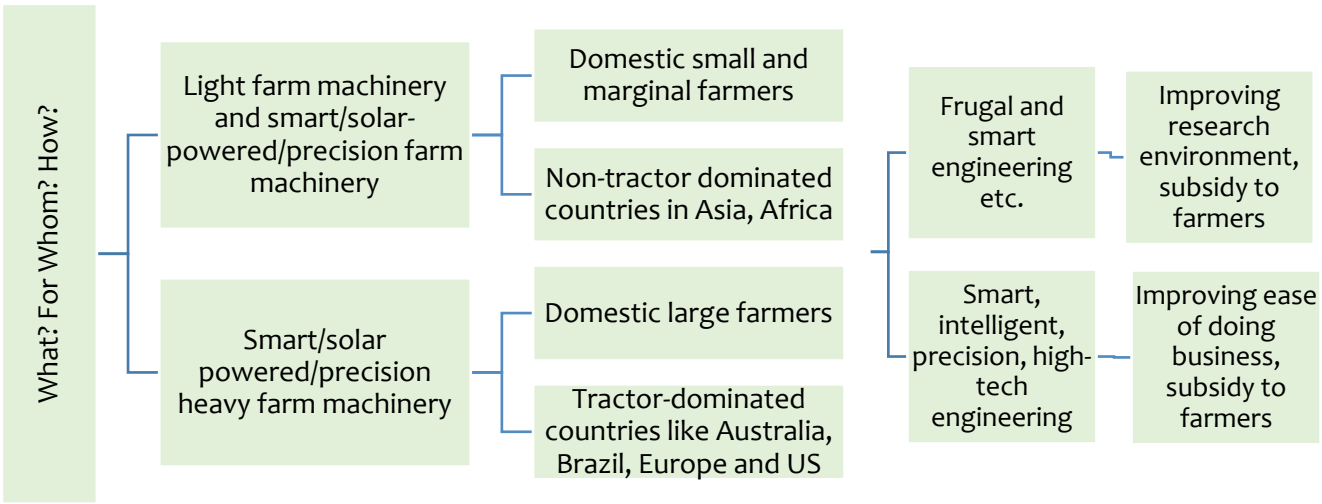
Fabrication of agricultural tools and machinery is often done by semi-skilled workers without proper tools. In the case of small-scale fabricators, there is no qualified supervisor to look after quality parameters.

Action Plan to Address Demand-side and Supply-side Challenges

India is caught in a low-equilibrium trap. The main policy challenge is how to turn the current situation into a virtuous cycle where both the Indian non-tractor farm machinery industry and small & marginal farmers benefit. India needs a vision for the next 15 years to translate itself into a production and export hub for non-tractor farm machinery. Policies should address current challenges and act as accelerators to convert India's dual farm machinery market into an advantage by producing a range of equipment that caters to all types of farmers around the world. Figure 5 proposes such a framework of what to produce, for whom to produce and how to produce.

The Action Plan is divided into two sections–policies that address current challenges and policies that will act as accelerators to make India into a production hub. Both are designed around the above framework.

Figure 5: What to Produce? For Whom to Produce? How to Produce?



Source: Bhandari et al. (2023).

Addressing Domestic Demand-side Constraints

Role of Central and State Governments

- Central and state governments can subsidise farmers on a consistent basis for the next 15 years for farm mechanisation to reach desired levels.
- Subsidy should be given not only for procurement but also for renting heavy farm machinery like harvesters and transplanters.
- Farmers need to be provided with long-term credit to buy machinery. Eligibility criteria for machine subsidy programmes requiring a farmer to have at least 1 acre of land (or any type of land ceiling or any

other criteria) should be removed (Kishore, Saini and Alvi, 2022). This will ensure that small and marginal farmers can also participate in the rental market, both as farmers and as entrepreneurs.

- There should be a uniform DBT model, i.e., choose one model of DBT, either as an in-kind subsidy or direct transfer of cash benefits to farmers.
- The process of applying for subsidy and receiving it should be streamlined, simplified and digitised as done in Odisha. The Odisha DBT portal is an example for the rest of the country (Kishore, Saini and Alvi, 2022).
- The suggestion by Kishore, Saini and Alvi (2022: p.42) is re-emphasised: "Banks and the concerned state government can coordinate to offer loans to farmers against a farm implement once an application is approved. This can help farmers reduce their upfront costs and ensure that they do not borrow from money lenders at high costs."
- Institutional loans should be provided to small & marginal farmers who qualify for a farm machinery subsidy. Kishore, Saini and Alvi (2022) suggest that it should be made part of the subsidy reforms.

Role of State Departments of Agriculture

- Farm machinery dealers should be informed and sensitised before the onset of a farm mechanisation subsidy scheme.
- Private Custom Hiring Centres (CHCs) need to be made financially viable and improved to provide year-round services in terms of record maintenance, reporting, and accounting. State agro-industry corporations should provide CHC stations at the district/ *tehsil* level.
- State Directors of Agricultural Engineering, State Agricultural Universities (SAUs), State Agro-Industries Corporations, Farm Machinery Training and Testing Institutes, Indian Council of Agricultural Research (ICAR) institutes, Krishi Vigyan Kendras and farm machinery producers through their dealers should be made responsible for training and demonstrations to young farmers/ owners/ operators on how to select, operate and service farm power units and machinery.

Role of State-level Banking Committees

- Bankers need to be sensitised to farmers, the various farm mechanisation schemes and CHCs. This needs to be done from the head office to the branch level, from induction programmes to other training sessions.
- The process of obtaining a bank guarantee and collateral security for CHCs needs to be simplified.

Role of State Skill Departments

- State Departments of Skills need to work with Departments of Agriculture at the State-level to address skill shortages.
- The Agricultural Skills Council of India (ASCI) should work at the district level to address skilling shortages on the demand side; public-private partnerships (PPPs) with CHCs may be especially useful. ICAR institutes can offer short courses that address skills shortage on the demand side and ITIs can be leveraged to address the skill gaps in repair & maintenance.
- Service centres at the regional and State levels may be promoted in the private and industrial sectors. This will facilitate the need for each farmer to own machinery and learn skills to operate the individual machines. Each centre can also rent out machines with the associated package of service (the equipment and skilled manpower to deploy the machine efficiently and effectively). Such service enterprises will also create jobs for skilled youth in that region.

Addressing Current Supply-side Challenges

Role of the Ministry of Agriculture, the Ministry of Commerce and Industry and the Office of the Principal Scientific Adviser to the Government of India (PSA).

Promote R&D in non-tractor farm machinery

- There is no platform for collaboration between academia, industry and government bodies to foster innovation in farm machinery. Agricultural universities and ICAR institutes that have sufficient manpower and facilities for R&D in mechanisation should be identified and assigned the responsibility for R&D in different agro-economic zones.
- Technoparks can be established in the proposed Enterprise and Service Hubs or existing clusters where institutions, private firms and individual faculty can work together on specific research projects. Testing centres for farm equipment should also be established in existing and future clusters. Since a significant share of exports go to the East, especially Bangladesh, Nepal, etc., India should open a technopark in the eastern border region. A dedicated export-promoting zone will help cater to both domestic and international demand.
- An interface for academics and industrialists can be set up through Technology Transfer Offices (TTOs) by the Department of Science and Technology (DST) institutes (ICAR/SAU).
- Industries can use academic lab facilities. This will be especially useful for MSMEs.
- R&D projects should be co-funded by universities and private partners.
- The Start-up India scheme should be implemented at ICAR institutes and universities. Incubation cells to encourage entrepreneurship should be developed in these institutes. This will also help universities and research institutes with additional sources of funding.
- Industries can collaborate with private universities to set up strong academic-industry collaboration.
- Commercialisation of new ideas can be financed through the Technology Development Board under the DST or via ICAR/ Ministry of Agriculture.

Role of Ministry of Commerce and Industry

- Regulatory best practices need to be implemented. Payments need to be made on time. A clear and transparent communication strategy needs to be adopted. Logistics needs to be improved especially for transporting heavy machinery.
- While India already hosts multinationals in this arena, foreign multinationals should be encouraged to make India an export hub for South Asia and Southeast Asia. Foreign multinationals should be encouraged to include Indian manufacturing in Global Value Chains (GVCs) especially since India has a comparative advantage in machinery parts.

Role of the Ministry of Commerce and Industry and Ministry of Agriculture

- It should be mandated that farm machinery that is sold under government subsidy on government DBT portals should be compatible with the Government of India's revised public procurement norms about 'Preference to Make in India'. State governments should also adopt Central Government public procurement norms. No other import restrictions or controls are recommended.
- Coding, testing, specification standardisation and performance requirements, and regulations should be developed in line with global benchmarks.
- Mandate and standardise performance characteristics of the farm machinery

products and not technology/ specifications for meeting performance.

- Follow automobile models of testing such as establishing PPP models for testing and homologation, e.g., Automotive Research Association of India.
- Small-scale industries should be encouraged and incentivised to employ personnel trained at Industrial Training Institutes (ITIs) in manufacturing/ production and diploma holders/ graduates in agricultural engineering for supervisory roles.

Role of Ministry of Agriculture and Ministry of Skill Development and Entrepreneurship

- It is strongly recommended that District Industries Centres should work with local industrial clusters so that ITIs can provide courses with the latest available technical knowledge and skills. This may include upskilling of faculty, interaction of industry executives with faculty & students on a regular basis, upgrading the syllabus and laboratory facilities, and internships & job placements. During NCAER field research in Karnal, we found that the local farm machinery industrial association was in the process of acquiring the appropriate machinery to train youth and provide facilities to local firms.
- Dual vocational skilling programmes will greatly benefit industrial clusters located in Tier II and Tier III cities. MSMEs should also leverage the Apprentices Policy of the Government of India. This may be a win-win situation for youth. Opportunities for re-skilling and upskilling also need to be provided.

Role of Ministry of Statistics and Programme Implementation

- The National Statistical Organisation should recognise the farm machinery industry as a separate one; all the codes that are spread over several industries should be brought together in one place.
- The NPC used to define the sector are product codes that are based on operations in general but products have been developed based on specific crop operations. The codes need to be updated accordingly and consistently used across both enterprise and farmer surveys.
- Farmer surveys need to capture not only ownership of farm machinery data but also rental data, which is a more precise measure of FPA in the country.
- The HS codes can signal two different products. It is recommended that the harmonised codes are cleaned up. This would be important if the sector is to be scaled up.

Role of State Governments

- A Directorate of Agricultural Engineering should be established at the block level in each State to overcome the shortage of agricultural engineers at the district level.

Accelerators

Principal Scientific Adviser's Office needs to encourage innovation in the non-tractor farm machinery sector

- Future R&D programmes should focus on the development of farm machinery and power units for the appropriate size of equipment for small, medium and semi-medium farmers, as well as precision and protected agriculture that is region-specific (hill agriculture and farm operations with nil/very poor penetration of mechanisation), crop-specific (horticulture, cash and plantation crop) and addresses the recovery and management of crop residues.
- Although nascent, since India is doing R&D on solar-powered farm equipment, this can be encouraged specifically for R&D,

production and marketing both at home and abroad. This will also encourage sustainable farming and reduce farmers' dependence on expensive fuel.

- Similar to the Bayh-Dole Act of the US, India needs to enact a law that enables universities, non-profit research institutions and small businesses to own, patent and commercialise inventions developed under government-funded research programmes within their organisations.
- In applied engineering, it is necessary to change the terms of tenure, promotions, salary increments and appraisals and make them dependent on how many inventions they are successfully able to commercialise.
- Faculty should be allowed to participate in projects subject to universities keeping a part of their fees.
- India can set up a non-tractor farm machinery Science & Technology Cluster under the PSA S&T Cluster programme.
- However imperfect, research-linked incentives (RLI) may be used to encourage innovations in light farm machinery, solar-powered equipment and smart/precision farming for the next five years, where the firms invest 15 per cent of their annual turnover in R&D. The RLI should also be linked to quality parameters similar to Brazil.
- Encourage local innovations
    - Both research and entrepreneurship eco-systems should be created and encouraged in ITIs. They may also partner with farm machinery firms to invent and innovate non-tractor farm machinery.
    - District-level patent offices need to be opened and strengthened or the patent offices of state agricultural universities need to cater to the needs of local communities to enable patenting and commercialising of local innovations.
    - Corporate partnerships can also help local innovations similar to the Maruti Suzuki Innovation programme in the auto sector.
    - We need to create more farmer-engineers in India. Farmers with engineering knowledge may be able to create wonders for small farmers and firms in India. In the process, we will also encourage opportunity entrepreneurs.

Ministry of Commerce and Industry needs to improve marketing and promote exports

- India has a comparative advantage in tractors, ploughs, disc harrows, etc. Better marketing and promoting exports of tractor-mounted equipment is needed.
- Companies should try to sell economical packages of tractors with tractor-mounted equipment.
- MSMEs should be mentored and supported to participate in international trade fairs.
- MSMEs can be hand-held to produce YouTube videos of their equipment to promote them online. Extension activities of promotion, branding and packaging may be provided to them.
- Since India is now again making bilateral trade agreements, technology transfers can be made part of those agreements to enable the transfer of technology. Further, bilateral trade agreements can be leveraged to sell Indian non-tractor farm machinery products abroad in developed countries.

Achieving Scale

- As mentioned earlier India has a current comparative advantage in few of the non-tractor farm machinery products and there is a presence of intra-industry trade

in some sub-sectors. India should leverage this advantage by further scaling up and becoming a part of global value-chains by addressing current challenges. India can also try and achieve scale in solar-powered equipment.

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