

Towards Sustainable Agro-Mechanization in Bangladesh

Addressing Fiscal Barriers



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Executive Summary

This report provides an incisive analysis of the structural challenges of the fiscal position of the government in form of taxation and tariffication, hindering the agro-mechanization sector in Bangladesh. The study explores a novel perspective of facilitating business within a competitive market—examining the intersection of taxation, trade policies, and sector-specific dynamics through the lens of both local challenges and global best practices. The dual reliance on imported machinery and constrained local manufacturing creates a structural imbalance because of the tariff non-neutrality arising in the market outcome that limits growth and business potential in Bangladesh.

A key finding of this study is that the agro-mechanization sector in Bangladesh faces tariff de-escalation or tariff inversion. The disparity in tariff policies – raw materials essential for local manufacturing face high tariffs, whilst finished machinery imports enjoy minimal duties—subjects to the higher inelastic demand for the raw materials from the local producers. The inelastic demand attributes to the imperfect competition structure of the raw materials in Bangladesh. This imbalance of tariff on agro-mechanization sector not only disadvantages domestic producers but also inhibits the sector's ability to scale and compete. Furthermore, fragmented policy implementation—exacerbated by bureaucratic inefficiencies—undermines the effectiveness of well-intentioned measures like the National Agricultural Mechanization Policy 2020. Unlike existing literature, this study integrates a comparative analysis of regional peers, such as China and India, to illustrate actionable policy frameworks that have spurred mechanization and strengthened local manufacturing ecosystems.

To address these challenges, the report proposes a holistic reform strategy. Central to this is the recalibration of tax and tariff structures to create a more equitable environment for local producers. Since reducing VAT on essential inputs and lowering tariffs on raw materials is a matter that goes beyond the agro-mechanization sector reforms due to the imperfect competitive market of raw materials for the entire country, the study recommends alternative strategic actions for sourcing raw materials such as targeted subsidies, bonded warehouses, etc. The study also underscores the need for robust coordination system, followed by South Korea and Germany, across government agencies to harmonise fiscal and industrial policies. Complementary recommendations include introducing rigorous quality standards for imports and locally produced machinery, enhancing access to training and

technology for manufacturers, and leveraging regional trade agreements to boost export competitiveness.

What sets this study apart is its comprehensive, evidence-based approach that bridges macroeconomic insights with granular, sector-specific realities of the local production markets. By conducting extensive stakeholder consultations, including Key Informant Interviews and Focus Group Discussions, the study identifies the nuanced impact of fiscal policies across the agro-mechanization value chain.

This study delves deeply into the systemic impediments within Bangladesh's agro-mechanization sector, specifically addressing bureaucratic inefficiencies, distortions in tax burdens, and a fragmented fiscal structure. The study also identifies the struggles local manufacturers face in accessing tax breaks, often due to flawed standards and additional financial burdens imposed by misclassified transactions. This creates a cumulative effect where local producers face higher costs and decreased competitiveness.

This evidence-based approach provides an actionable roadmap for reform, including simplifying tax exemption processes, strategically determining subsidy share between allocated by the government to agro-mechanization, recalibrating tariff structures, and ensuring that subsidies support both farmers and manufacturers effectively. For computing the benefits associated with selecting optimal subsidy share, we have used a computational model of welfare distribution. It further underscores the importance of engaging institutions like BITAC in quality assurance and advocating for the introduction of tailored HS codes to promote sector-specific benefits.

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Acronyms

AIT	Advance Income Tax
AMMA	Agricultural Machineries Manufacturing Association, Bangladesh
ASEAN	Association of Southeast Asian Nations
AT	Advance Tax
BADC	Bangladesh Agricultural Development Corporation
BAU	Bangladesh Agricultural University
BDT	Bangladeshi Taka
BEIOA	Bangladesh Engineering Industry Owners' Association
BFRI	Bangladesh Fish Research Institute
BIRRI	Bangladesh Institute of Rice Research Institute
BITAC	Bangladesh Industrial and Technical Assistance Center
CD	Customs Duty
CPD	Centre for Policy Dialogue
EC4J	Export Competitiveness for Jobs
EPCG	Export Promotion Capital Goods
EPZ	Export Processing Zones
FGD	Focus Group Discussions
FY	Fiscal Year
GDP	Gross Domestic Product
GST	Goods and Services Tax
HS	Harmonized System
KII	Key Informant Interviews
LDC	Least Developed Countries
MSP	Machine Service Providers
NBFI	Non-Bank Financial Institutions

NBR	National Bureau of Revenue
NGO	Non-Governmental Organisations
NSW	National Single Window
NTS	National Tax Service
RAS	Recirculatory Aquaculture System
RCEP	Regional Comprehensive Economic Partnership
RD	Regulatory Duty
RMG	Readymade Garment
SD	Supplementary Duty
SME	Small and Medium-sized Enterprises
TDS	Tax Deducted at Source
TIN	Tax Identification Number
TTI	Total Tax Incidence
UNO	Upazila Nirbahi Officer
VAT	Value Added Tax
VDS	VAT Deducted at Source
WCO	World Customs Organization

1. INTRODUCTION

1.1 Background of the Study

Bangladesh has undergone significant phases of agricultural mechanization, with land preparation, irrigation, threshing, and pesticide application being the most mechanised activities, with over 90 per cent of these operations now mechanised. However, planting and harvesting remain under-mechanised, with less than 10 per cent adoption of mechanised solutions (LightCastle Partners, 2023). As the country experiences rapid industrial growth and economic transformation, agriculture, which once contributed nearly 50 per cent of the GDP in the 1970s, now accounts for only 11 per cent (Finance Division, Ministry of Finance, 2024). Despite this, 41 per cent of the labour force remains employed in agriculture. With urbanisation progressing, this labour force is expected to decrease to 20 per cent by 2030, making the modernisation of the agricultural sector crucial for maintaining productivity (LightCastle Partners, 2023). Agro-mechanization, through the adoption of machinery, is essential to compensate for the shrinking workforce and has already seen significant progress in areas like land preparation and threshing, although seeding and harvesting continue to lag behind.

The agro-machinery sector in Bangladesh is characterized by a dual reliance on domestic manufacturing and imported machinery. Whilst local manufacturers produce simpler machines like threshers and power tillers, the majority of advanced machinery is imported, primarily from China, making up about 70 per cent of the market (LightCastle Partners, 2023). Local manufacturers face significant competition from imported products, which are often perceived to be of better quality, further reinforcing the dominance of imports. However, reasonable debates can be found over the quality of domestically produced agro-machineries compared to the imported ones since some products are arguably best produced in a local setting.

Tax and tariff policies play a crucial role in shaping the competitiveness of the sector. Currently, Bangladesh imposes higher tariffs on raw materials used by local manufacturers whilst maintaining lower tariffs on finished imported machinery ('Light engineering sector's dev stressed for growth', 2025). This disparity stifles domestic production by making locally produced machinery more expensive, preventing manufacturers from scaling their operations and innovating. However, one trade-off with the adverse local production is the abundant supply of agro-machineries to the end consumers, farmers at a cheaper price and mechanising the farming process (Robin, 2023).

The National Agricultural Mechanization Policy 2020 outlines efforts to support the sector through reduced import duties and tax exemptions. Whilst these policies aim to promote mechanization and domestic production, challenges in implementation, such as bureaucratic inefficiencies, continue to hinder the local industry's growth (MoA, 2020). Despite these efforts, the policy provisions have not fully translated into practical benefits for local manufacturers. One important reason might be attributed to the fact that the policy is not developed in coordination with other relevant ministries and government agencies, such as ministries of finance, commerce, industry, planning, NBR, etc. which have powerful roles for making decisions regarding tax, VAT and tariffs. Overall, the policy lacks the visions that are required to achieve the goal of fiscal support in terms of taxation.

A comprehensive assessment of the fiscal policies governing the agro-machinery sector is essential to understand the structural challenges local manufacturers face. This study aims to analyse how current taxation and tariff regimes impact the growth of domestic production and provide recommendations to foster a more competitive and sustainable agro-mechanization industry. This study also aims to address the following research questions:

1. What challenges do the various stakeholders in the agro-mechanization production sector face due to the personal and organisational tax and tariff structures imposed on machinery, spare parts, and raw materials? Is there any significant difference in the realised scenario and the intended scenario of the policy?
2. How do the current tax and tariff policies impact the competitiveness of domestic agro-machinery manufacturers in Bangladesh against various market trade-offs?
3. How can a tax and tariff structure be designed, or policy adjustments promote domestic production of advanced machinery whilst balancing the needs of different stakeholders in the agro-mechanization value chain?

The study is organised into five chapters. Chapter 1 introduces the background, motivation, and purpose of the research. Chapter 2 reviews existing literature on taxation, tariffs, and the agro-mechanization sector, with a specific focus on Bangladesh. Chapter 3 outlines the research methodology, detailing the use of Key Informant Interviews (KIIs) and Focus Group Discussions (FGDs) with key stakeholders. Chapter 4 presents the results and analysis, focusing on how current fiscal policies impact domestic manufacturers and the agro-machinery market. Finally, Chapter 5 concludes the study by summarising the key findings and offering policy recommendations to support local production and foster a more balanced market.

2. CONTEXT ANALYSIS

2.1 A Brief Review on Current Progress on Agro-mechanization and Role of the Government

Agricultural mechanization in Bangladesh has seen notable progress, driven by the need to address labour shortages and enhance productivity. According to a study in 2019, operations that are most heavily mechanised (over 90 per cent) are Land Preparation, Irrigation, Threshing and Pesticide application (Hossen, 2019). The rates of mechanization during Planting and Harvesting are below 2 per cent; that of Fertiliser application and Weeding are higher, but still below 10 per cent (Pranto, 2023).

However, the sector remains heavily reliant on imports, with around 72 per cent of agricultural machinery and spare parts sourced from countries like China, India, and Japan (Alam, 2022). This dependence creates financial challenges due to high import taxes, including a 15 per cent VAT on top of import duties, making equipment expensive for farmers and limiting the competitiveness of local manufacturers (NBR, n.d.). The product portfolio of local foundries and agricultural machinery manufacturing industries majorly consists of spare parts and small machines like rice milling machines, sprayer machines, threshers, and vertical pumps. Whilst a 10-year tax exemption for agro-based industries was introduced in 2021, its uneven implementation has caused challenges for industry

stakeholders, and mechanization adoption remains inconsistent across regions ('Agro-based industries get 10-year tax exemption', 2021).

Government Efforts to Promote Agricultural Mechanization

The government has introduced several initiatives to promote mechanization. Key among these is a subsidy programme offering up to 50 per cent (and 70 per cent in coastal areas) for the purchase of selected machinery, including power tillers, reapers, rice transplanters, and combine harvesters (LightCastle Partners, 2023).

In addition, former Finance Minister A H M Mustafa Kamal announced a BDT 30.2 billion project titled 'Mechanization of Agriculture Work through Integrated Management,' targeting the distribution of 51,300 units of agricultural machinery across 12 categories between 2020 and 2025 ('Agro-machineries get increased subsidy in budget FY23', 2022). In FY21, the government distributed 2,300 agricultural machines, including 1,762 combine harvesters, 379 reapers, and 34 rice transplanters, at a cost of BDT 208 crore to the farmers. For FY2021-22, the allocation increased to BDT 680 crore to continue supporting mechanization efforts (LightCastle Partners, 2023).

To further assist the sector, Bangladesh Bank reduced the interest rate cap on agricultural loans from 9 per cent to 8 per cent in FY2021-22 and provided loans at a 4 per cent interest rate for crop and harvest-related activities. Additionally, banks and non-bank financial institutions (NBFIs) have been instructed to direct 50 per cent of Small and Medium-sized Enterprise (SME) loans to cottage, micro, and small enterprises, including most foundries and workshops, by 2024. These initiatives aim to increase agricultural productivity and improve rural livelihoods (LightCastle Partners, 2023).

Looking forward, the government is planning to remove the advance tax (AT) on the import of specific machinery such as rice transplanters, agricultural dryers, sprayers, and potato planters in the upcoming national budget, further supporting efforts to modernise the agriculture sector (LightCastle Partners, 2023). Later on, though the FY2025–26 national budget announced a reduction in advance tax for industrial raw materials, no direct incentive or implication was found for the agro-machinery sector from the budget documents.

2.2 A Review of Policies on Taxation in the Agro-mechanization Sector in Bangladesh and Other Countries

In Bangladesh, taxation on agricultural machinery significantly affects both the cost of imports and local manufacturing. Importers face a complex tax regime, which combines customs duties, Value Added Tax (VAT), and supplementary duties (Siddique, 2017). This tax structure has made agricultural machinery less affordable for farmers, limiting the broader adoption of modern technology.

By contrast, countries like India and China have implemented more favourable tax policies to promote the growth of their agro-machinery sectors. India's agricultural machinery imports are subject to reduced duties through schemes like the Export Promotion Capital Goods (EPCG) Scheme (India Filings, 2019). This programme allows for zero customs duties on imports of capital goods, including agricultural machinery used in production, manufacturing, and other related sectors, aimed at boosting export

competitiveness. China, on the other hand, offers tax rebates on exported agricultural machinery and substantial subsidies for domestic manufacturers, allowing them to compete globally whilst keeping machinery affordable for local farmers (Huld, 2023).

Bangladesh's 10-year tax exemption for agro-based industries aims to foster growth in domestic manufacturing (Financial Express, 2021). One setting that make this policy apart from other cash-transfer programme is the practice of providing the subsidy to the farmers for purchasing the machines. However, the policy has faced criticism for its slow implementation and the continued imposition of VAT on spare parts, which makes it challenging for local manufacturers to compete with foreign imports.

For ease of understanding the comparative mechanization levels in Bangladesh and other two countries sharing approximately same geography, economy, and challenges: Thailand and Vietnam, a comparative policy/strategy analysis in the context of mechanization are presented in tabulated form in Table 1.

Table 1: A Comparative Policy/Strategy Analysis Among Bangladesh, Thailand, and Vietnam

Items	Bangladesh	Thailand	Vietnam
Tillage implements/tiller	Imported whole machines	Only engines imported	Only engines imported
Self-propelled reaper	Both locally fabricated and imported	Not used	Import tractor and locally fabricate
Combine harvester	Imported. Trying to develop and fabricate locally	Joint venture production with Kubota Company	Joint venture production with Kubota Company, importation of used machines from Japan
Power operated rice transplanter	Imported	Imported	Imported and local fabrication
Manual transplanter	Locally fabricated	Not used	Locally fabricated
Spare parts	Both locally fabricated and imported	Both locally fabricated and imported	Both locally fabricated and imported
Taxation on spare parts	High tax on spare parts (about 20 to 65%)	No tax on farming technology and spare parts	Minimum tax on farming technology and spare parts
Taxation on whole machines	Minimum tax on whole agricultural machines (5 to 6.5%)	No tax	Minimum taxation on agricultural machinery (no tax if the machine is not yet fabricated in Vietnam)
Subsidy on interest rates of loan for agricultural machinery purchases	No subsidy	Minimum interest rate about 4-6%	Zero interest on new and big machines for new entrepreneurship
Subsidy on machinery purchase	Project base	No subsidy	Project base. At present no subsidy.
Graded materials produced in the country	Have steel mills but graded material is not produced.	Produce and fabricate	Imported. Have steel mills but graded material is not produced.

(Table 1 contd.)

(Table 1 contd.)

Items	Bangladesh	Thailand	Vietnam
Govt. subsidy programmes	Project subsidies, etc.	Training, demonstration, R & D, location-based activities and strengthening of local entrepreneurship	Training, demonstration, R & D, location-based activities and strengthening of local entrepreneurship
Training program for technical manpower development	Not institutional form	Institutional form	Not institutional form

Source: (Hossen, 2019).

Countries that have succeeded in developing their Agri-machinery sectors typically offer a balanced approach to taxation, which includes incentives for both domestic manufacturing and machinery importation. China, for instance, provides VAT exemptions and export tax rebates for manufacturers, which has enabled it to become one of the largest producers and exporters of agricultural machinery globally. These tax policies, along with direct subsidies to smallholder farmers for machinery purchases, have significantly boosted mechanization and productivity in the agricultural sector (Global Trade Alert, 2018).

In India, the government offers up to 50 per cent subsidies on select machinery and provides GST exemptions on agricultural equipment, further promoting the growth of the agro-machinery market (Editorial, 2020). As a result, India has a thriving SME sector in machinery manufacturing, which has helped it expand its agricultural productivity whilst reducing reliance on imports.

On the other hand, countries like Nigeria have struggled due to high import duties and limited government support for local manufacturers. In Nigeria, import duties on agricultural machinery can be as high as 30-35 per cent, which deters investment in mechanization and hampers local industry growth (Internation Trade Administration, 2023). Bangladesh, with its high import duties and VAT on machinery and spare parts, risks following a similar trajectory unless reforms are implemented to reduce the tax burden and promote local production.

2.3 A Review of Methodologies of Existing Studies

The methodologies used to study agro-mechanization and taxation in Bangladesh and globally rely heavily on a combination of quantitative and qualitative approaches. Surveys and case studies are a common approach, particularly for assessing the impact of taxes on farmers and manufacturers. For example, a study under the Feed the Future (FtF) initiative did focus group discussions (FGDs) and Key Informant Interviews (KIIs) were conducted for qualitative investigation. The findings revealed that up to 72 per cent of the market depends on imports, and inadequate policies and regulations on importation of capital machinery and multiple VAT on imported raw materials are significant constraints for local manufacturers (Alam, 2022).

Quantitative methods, such as econometric modelling, have also been used to estimate the impact of mechanization on agricultural productivity. Although no specific study using a Cobb-Douglas production function was identified in the context of Bangladesh, similar studies in China utilised the

Cobb-Douglas production functions and showed that mechanization contributed to 31.46 per cent agricultural output (Han et al., 2013).

Overall, the literature review identified several areas where further research is required with a view to understanding the areas of policy and operational intervention towards strengthening agro-mechanization in the country. These include the lack of comprehensive analysis on the long-term effects of fiscal policies such as taxation, tariffs, VAT, and subsidies on the production of agro-machineries in Bangladesh. Furthermore, a gap of understanding still persists on the issue of how much a supply chain actor is faced with tax and VAT burden. The complexities associated with the tax, VAT and tariff issues are not properly studied in Bangladesh or any other countries and hence, the solutions are not explored as well. Moreover, our study also identifies the gap of un-coordinated tariff structure that adversely affects the domestic industries.

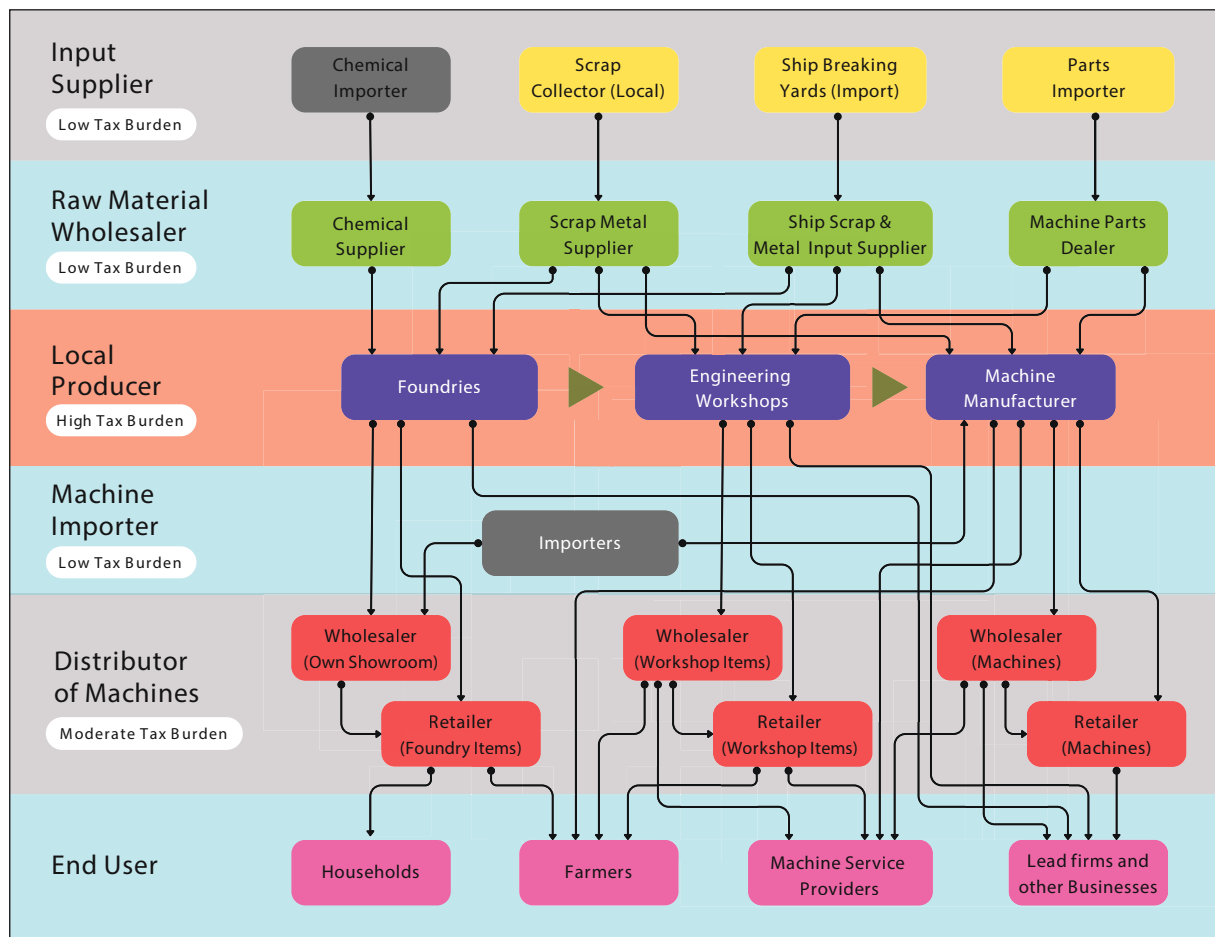
3. CONCEPTUAL REVIEW AND FRAMEWORK

To assess the tax burden on stakeholders in the agri-mechanization sector, it is essential to analyse the supply chain of machinery and spare parts. The supply chain can be segmented into six parts, as shown in the figure 1 below: Input Suppliers, Raw Material Wholesalers, Producers, Importers, Distributors of Finished Goods, and End Users.

The distribution of the tax burden depends on the price elasticity of supply and demand for a given good. Simply put, the party with more alternative options - whether a seller or buyer - will bear less of the tax burden. In the case of input suppliers, they sell a wide variety of products to multiple sectors. If a buyer chooses not to purchase due to a price increase, input suppliers can redirect their goods to other sectors. Similarly, raw material wholesalers serve as intermediaries between input suppliers and producers. They can easily pass the tax burden onto producers and also supply to sectors beyond agricultural machinery manufacturing.

Local producers in the agro-mechanization sector face a substantial tax burden. They not only absorb costs from input suppliers and raw material wholesalers but also encounter VAT directly on their sales. In assessing who bears the majority of this tax burden, it is essential to identify which party has the greater elasticity, or ability to adjust, in response to price changes. In the raw material markets, for instance, local producers purchase inputs from suppliers who serve a diverse buyer base across various industries. Thus, if local producers reduce their demand due to price increases, suppliers can redirect sales to other industries. This makes raw material suppliers relatively elastic sellers, as they are not solely dependent on the local agro-mechanization sector for their business. Conversely, local producers are highly reliant on these suppliers for essential inputs and cannot easily reduce their demand in response to price hikes, making them inelastic consumers. According to the theory of supply and demand, the party less responsive to price changes tends to bear more of the tax burden (Samuelson, 2004). This concept is visually illustrated in Figure 2(a).¹

¹For technical notes, the upward and downward sloping curves are respectively the supply and demand curve in both graphs.

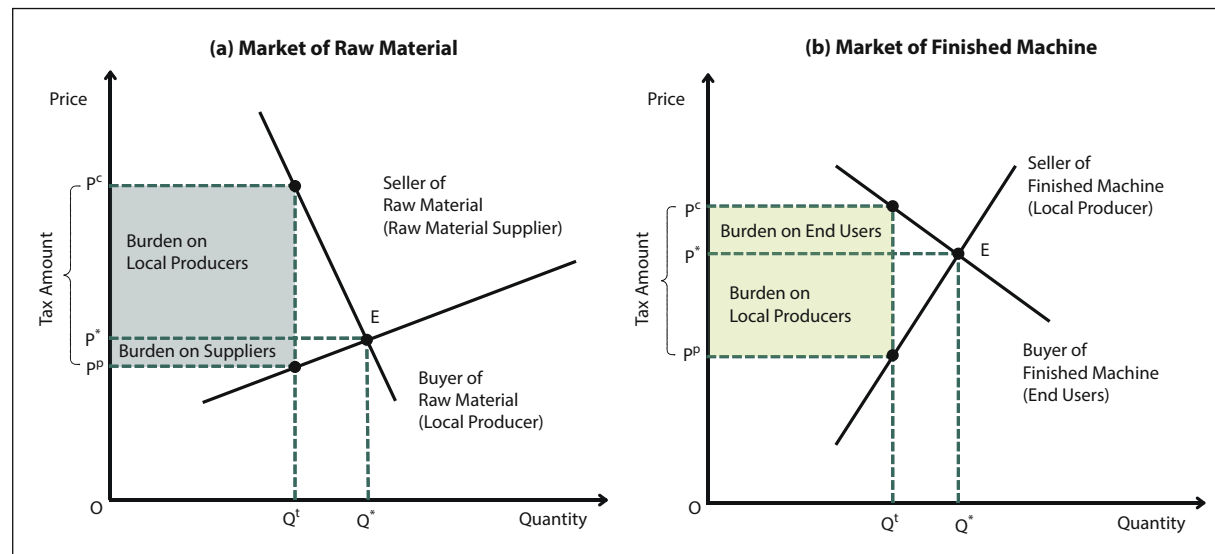
Figure 1: Supply Chain of the Agricultural Mechanisation Sector

Source: Authors' illustration.

In the market for finished agro-machinery, end users have alternatives: they can purchase imported machinery, which is often less expensive, or substitute labour for machinery. These end users also benefit from government and non-governmental organisation support. As a result, when local machinery prices rise, end users can reduce or eliminate their purchases. Local producers, however, are limited primarily to selling to these end users and thus must keep prices competitive to maintain demand. Furthermore, importers enjoy tariff exemptions from the government, which gives them a pricing advantage over local producers. Consequently, when a tax is imposed on finished machinery, local producers absorb much of the burden as they are pressured to keep prices low despite the added tax costs. This scenario is depicted graphically in Figure 2(b).

The role of the distributors is the same as raw material wholesalers. They act as intermediary between the importer or producers and end users. As mentioned earlier, end users, being able to choose between local producers and importers, face minimal tax burden as they can purchase from whichever source offers them the best price.

Figure 2: Tax Burden on the Local Producers of the Agricultural Mechanisation Sector



Source: Authors, following (Mankiw, 1991).

Note: The elasticity of a curve can be measured by the steepness of a curve. Higher elasticity is associated with flatter curve for both cases, and vice-versa. The higher the elasticity, the flatter the curves are. In graph (a), the demand curve (downward sloping curve) is more inelastic or steeper than the supply curve. We can witness that the burden on local producers, or buyers, are higher than that on the suppliers. The same mechanism is followed in the graph (b) as well.

4. METHODOLOGY

4.1 Methods

A qualitative approach has been utilised in this study in order to get insights and understanding about the impacts of taxation as well as tariff structures on the agricultural machinery sector of Bangladesh. FGDs and KIIs have been conducted in order to have a comprehensive understanding about the experiences, points of views, as well as challenges faced by the stakeholders in the domestic supply chain of the agricultural machinery sector in Bangladesh.

By incorporating findings from both KIIs and FGDs, the study aimed to offer a thorough assessment of the factors impacting the domestic agro-mechanization sector and propose informed policy recommendations. The use of KIIs and FGDs allowed for a reflection of the problems from the perspective of the key actors, which will be instrumental in improving the study reliability .

Key Informant Interviews

Twenty-one key informant interviews have been conducted in total with various stakeholders of the agricultural mechanization sector starting from the representatives from the Ministry of Agriculture, involved parties of the domestic supply chain to the representatives from associations such as AMMA-B (Agricultural Machineries Manufacturing Association, Bangladesh). Representative/s each from the following sectors were selected for the KII:

- National Board of Revenue
- Medium to large-scale agricultural machine manufacturer
- Academician (Professor of Bangladesh Agriculture University)
- Raw materials supplier
- Importers and Lead Firms
- Workshop owners
- Representative from AMMA-B
- Representative from BEIOA
- Ministry of Industries
- Machinery Dealer
- Ministry of Commerce
- Bangladesh Fish Research Institute
- Ministry of Agriculture
- Machine Service Provider

KII Participant Selection Criteria

The 21 interviewees were selected based on their profound knowledge as well as experience in this field.

Interview Structure

The KIIs were done in a semi-structured format, making sure of the fact that key themes are adequately addressed. This proposition was instrumental in amassing detailed information about the perspective of the stakeholders on the current tax and tariff structures, incorporating the challenges they face and the impact the present structure has on their profit margin, production capacity, and overall competitiveness. The interviews were conducted in person and the duration of the interviews ranged between 45 minutes to 1 hour.

Interview Contents

The interview checklists were prepared earlier, covering topics such as: Perspectives on the current taxation and tariff regime, impact of import duties on agricultural productions, impediments faced by local manufacturers and supply chain agents and policy recommendations from each stakeholder to improve the overall competitiveness of the domestic Agricultural mechanization sector.

Confidentiality of the Interviewees

The informants were assured of the confidentiality of their responses so that the discussions could be candid, and key insights could be gathered. The interviews were recorded with the consent of the stakeholders.

Focused Group Discussions

Along with the KIIs, three FGDs were conducted in Bogura and Jashore to investigate the combined viewpoints of stakeholders encompassing the agro-mechanization supply chain. The FGDs were done

with 10 participants from diverse fractions of the sector, ensuring a rich cross-section of perspectives. The FGDs were pivotal in providing valuable insights into the collective challenges faced by stakeholders, especially the small-scale manufacturers and supply chain agents who are disproportionately impacted by the current tariff and taxation structures. The FGD participants were as follows:

- Medium to large-scale machine manufacturer (1)
- Small-scale machine manufacturer (1)
- Foundry or factory owners specialising in spare parts production (2)
- Dealer exclusively selling domestic agricultural machines (1)
- Dealer selling both domestic and imported machines (1)
- Machine service providers (2)
- Local raw material supplier (1)
- Agent involved in both manufacturing, spare parts production, and direct sales (1)

FGD Participant Selection Criteria

The participants in the FGD are various stakeholders in the domestic supply chain who were selected based on their expertise and experience.

FGD Structure

The FGDs were conducted in a moderated setting with the participants being allowed to express their perspectives systematically. A facilitator along with personnels from CPD were present during the FGDs. The FGDs lasted for about one and a half hours on an average and were recorded with the consent of the participants. The discussion was transcribed later on for analysis.

FGD Content

The interview encompassed a wide range of topics, such as comparing the cost structure as well as quality for locally manufactured versus imported agro-machinery, the impact a low import tariff has on increasing the competitiveness of local manufacturers, the impact of taxation on selecting price strategies and increasing profit margins, and suggestions regarding policy reformation to strengthen the domestic manufacturing base.

Confidentiality of the Discussants

The participants in the FGD were ensured their confidentiality, and the discussion was recorded with their consent.

4.2 Evaluation Strategy and Issues to be Focused On

In the analysis phase, FGDs were conducted with various stakeholders of the domestic supply chain, including manufacturers, dealers, spare part producers, and machine service providers. The KIs, along with the stakeholders of the agricultural machinery supply chain, included representatives from the Ministry of Agriculture as well as from the Agricultural Machineries Manufacturers Association

Bangladesh. The insights gained from the representatives regarding the challenges they faced and the specifications for each of the stakeholders can later be interpreted in order to draw a conclusion about the state of the taxation and tariff mechanism affecting each of them individually, and the policy suggestions will be given accordingly.

Market Specific Challenges

The sector-specific challenges were used to draw an overall conclusion about the market, and by this way the study was able to identify the issues plaguing the supply chain as a whole regarding the tax and tariff rates. The analysis plan involved interpretations from the sector-specific challenges to draw an overall and comprehensive market picture. The steps of analysis are explained in table 2 below:

Table 2: Steps of Analysis and Details

Chronology of Steps	Area of Focus	Details and Key Insights	Outcomes
Step 1: Stakeholder Analysis	Stakeholder Categories	- Manufacturers, dealers, spare part producers, and machine service providers. - Ministry of Agriculture and Agricultural Machineries Manufacturers Association Bangladesh.	Understanding the specific challenges faced by each stakeholder in the supply chain.
Step 2: Identifying Challenges	Supply Chain & Tax/Tariff Issues	- Analysing the individual challenges for stakeholders. - Examining how the current tax and tariff mechanisms impact them.	Detailed understanding of sector-specific challenges, especially tax and tariff concerns.
Step 3: Sector-Specific Analysis	Interpretation of Challenges	- Insights gained from FGDs and KIIIs will be interpreted. - Sector-specific insights will help outline taxation and tariff issues.	Identifying stakeholder-specific tax and tariff challenges and their effects on the sector.
Step 4: Market-Level Analysis	Consolidating Sector Challenges	- Aggregating the challenges faced by individual stakeholders to understand the market-level issues. - Focus on overarching tax/tariff concerns.	Comprehensive view of how taxation/tariff rates affect the entire supply chain.
Step 5: Policy Recommendations	Policy Suggestions for Improvement in the taxation and tariff structure	- Suggestions to address both sector-specific and overall market challenges. - Focus on improving tax, tariff systems, and supply chain efficiency.	Formulating policy recommendations that improve market dynamics and taxation mechanisms.

Source: Authors' conceptualisation.

Fiscal challenges in the agro-machinery sector can lead to a cascade of complications, particularly concerning financial sustainability and competitiveness. High tariffs and taxes on raw materials and machinery significantly increase production costs for local manufacturers, making it difficult for them to compete with cheaper imported alternatives. This financial strain limits their ability to scale operations, invest in innovation, and improve product quality. Additionally, the burdensome tax structure, including inconsistent VAT policies and corruption, can distort market dynamics, further disadvantaging domestic producers. As a result, the sector struggles to attract foreign investment and skilled labour, ultimately

stifling growth and hindering the overall development of agro-mechanization in Bangladesh. Addressing these fiscal challenges is crucial for fostering a more resilient and competitive industry.

5. ISSUES AND CONCERNS RELATED TO FISCAL MEASURES ON AGRO-MECHANIZATION

The supply chain for agro-machinery in Bangladesh involves several key segments, each facing distinct challenges. Input suppliers struggle with high tariffs on scrap metal, impacting manufacturing costs. Raw material wholesalers, who are exempt from direct taxes, contribute to price hikes due to middleman involvement and unregulated operations. Local producers, particularly machine manufacturers and foundries, face high VAT, electricity costs, and taxes on raw materials, which inflate production costs and reduce competitiveness against imports. Additionally, VAT inconsistencies and corruption create barriers for manufacturers, whilst a lack of foreign investment and skilled labour hampers growth. Importers benefit from lower taxes on foreign machinery, particularly from China, whilst local distributors and machine service providers (MSPs) experience limited tax obligations but risk higher costs due to potential tariff hikes on imports. Addressing these issues through tariff reductions, tax simplifications, and improved support could enhance the sector's overall competitiveness.

5.1 Tax and VAT Related Issues Related to the Agricultural Mechanization Sector

5.1.1 Tax and VAT Related Issues from Primary Data

The study includes primary data related to Tax and VAT related to Agricultural Mechanization sector. Before delving into the agent-specific issues and observations from the data, it is crucial to note a few concerns that have been highlighted by nearly all market actors. For instance, the NBR sets an annual tax collection target for the market participants, which is done without consulting field-level government officials from the ministries or the market agents themselves. This target appears to be unreasonable since the targets are not matched by the contemporaneous conditions prevailing the market and this provides the NBR officials with the opportunity to impose higher taxes on market agents, even resorting to double or triple taxation when necessary to meet the target. Another issue is the lack of transparency in the documentation of the tax policy or tax circular. These documents are often shared in parts and fail to reach the tax-paying sector in full. This is attributed to intentional concealment, as well as the complex and unclear language in which the circulars are written, making them difficult to understand in both English and Bangla. Furthermore, NBR officials do not communicate openly or transparently with the sector's taxpayers. Perhaps most concerning is the widespread fear among market actors regarding agro-mechanization, as they worry that the complicated legal framework might be used to unfairly extract more taxes than they currently pay by the tax officers if the officers hold any enmity towards the market actors. This fear has led to a reluctance among market actors to challenge tax officers, as they are apprehensive about the potential consequences based on their past experiences and the lack of legal support. Last but not least, market actors with better political connections receive more favourable treatment from the NBR, allowing them to enjoy higher profit margins. This creates a discouraging environment for politically less connected enterprises, making it difficult for them to compete in the market. The following table 3 describes the Tax and VAT related issues faced by segments of the supply chain and contains observations and suggestions for remedies.

Table 3: Summary of Findings Relevant to Tax and VAT Related Issues from KIs and FGDs

Supply chain segments	Issues	Observations	Suggestions on remedies
Local Producer (Machine Manufacturers)	• High VAT/taxes on raw materials and machines (e.g., 35% on transformers). • High electricity costs during peak hours. • Tax burden on raw materials passed to manufacturers.	• High taxes increase production costs, making local machines 1.5 times more expensive than imports. • VAT on electricity inflates product prices. • Imported machinery faces lower tariffs but is not always suited for local use.	• Subsidise key machines and reduce taxes on components. • Align electricity rates with non-peak hours. • Lower tariffs on raw materials and establish a vetting system for imports. • Reduce VAT on electricity and key inputs.
	• VAT/tax confusion • 15% VAT on machinery • VAT licence discrepancy • Corruption • High tariffs • Lack of financial support	• VAT inconsistencies across regions (Jashore and Bogura), complex exemption processes, multiple VAT layers. • 40%-50% lack VAT licences, causing market distortions. • Corruption and high tariffs reduce profit.	• Standardise VAT policy and simplify exemptions. • Reduce VAT to 2%. - Ensure VAT registration for all manufacturers. • Strengthen anti-corruption measures. • Reduce tariffs.
Raw Material Wholesalers	• No tax burden	• Does not pay direct taxes; factories handle them.	• No suggestions
Importers	• Lower taxes on imported Chinese products	• Chinese products dominate due to lower taxes and VAT.	• Reduce VAT and import taxes to promote local products.
Distributors of Machines	• Annual income tax worth BDT 3000	• Only responsible for income tax, with limited interaction or knowledge of other tax structures.	• Increase overall awareness about the taxation structure
Manufacturer and Dealer	• VAT Exemption and Future Obligations	• VAT exemption is currently beneficial but will end in 2025, requiring VAT payments through banks.	• No specific remedies suggested.
Ministry of Industries	• No Involvement with Taxation	• The Ministry has no role in taxation decisions and follows policies determined by NBR and other ministries.	• No Specific remedies suggested.
NBR Officials	• VAT/Tax decision-making does not depend on NBR • Weak monitoring of tax-exempt products usage	• Ministries, business associations and government agencies negotiate among each other and recommend a rate for the NBR. • No uniform reporting system and lack of awareness among the producers.	• Continue involving sector-representative organisations to ensure tax policies consider all perspectives • Improve coordination between customs and the VAT commission for more effective monitoring of product usage compliance

Source: KIs and FGDs.

5.1.2 Discussion on Tax and VAT Related Issues

The agricultural mechanization sector in Bangladesh faces a myriad of challenges stemming from the existing Tax and VAT structures. These issues significantly impact the competitiveness, scalability, and profitability of local producers.

- Producers face a significant tax burden, paying up to 35 per cent VAT (accumulated) on essential inputs like transformers. Combined with peak-hour electricity costs, this makes domestic production far more expensive than importing finished machinery.
- In contrast, imported agricultural machinery is subject to a much lower tax rate. This tax disparity gives imported products a significant price advantage, undermining the competitiveness of locally manufactured machinery. As a result, even with improvements in quality, locally produced machines are often 1.5 times more expensive than imports.
- There are notable inconsistencies in procedures related to Tax/ VAT payment across regions. For instance, NBR offices in Jashore and Bogura have different documentation requirements for the same process. Such regional variations create confusion and delays, and it discourages compliance.
- Producers often face multiple layers of taxes and VAT. This includes paying VAT during raw material procurement and again when selling finished products. Additionally, tax is often levied on the transaction volume rather than profits, penalising manufacturers for higher sales rather than rewarding efficiency. This system discourages the use of bank transactions, reducing transparency and limiting access to formal financial systems. One could argue that businesses should refrain from using personal bank accounts for business purposes. However, due to the challenges in determining whether businesses are engaging in the moral hazard of using personal accounts (which would be outside of their corporate tax obligations) for business transactions, separating the two types of accounts becomes a complicated matter.
- Local manufacturers in the agricultural mechanization sector rely almost entirely on imported raw materials and spare parts, as certain essential components are unavailable in the domestic market. This dependence significantly increases production costs and limits the scalability of local manufacturing. Moreover, the market for raw materials, particularly for scrap metal, is controlled by regional syndicates. These syndicates manipulate supply and inflate raw material prices, creating additional financial burdens for producers. As mentioned in the context analysis section, local producers carry the lion's share of the tax burden because they lack alternative sources for raw materials and must absorb higher tariffs and VAT imposed on the raw materials. To compete with imported machinery, they are often forced to reduce prices, further cutting into their already slim profit margins.
- The market for raw material is also unregulated and fragmented, and it further complicates the situation, allowing unlicensed scrap sellers to operate without oversight. This creates an unpredictable supply chain and exacerbates price inflation as the seller can avoid tax system and can set higher prices, leaving manufacturers vulnerable to sudden cost hikes and inconsistent quality of inputs.
- Although the Light Engineering Policy 2022 proposed lowering VAT and taxes on essential raw materials such as base metal alloys, there has been little progress in implementing these reforms. This stagnation continues to disadvantage local producers.

- VAT exemptions for the producers, which are available until 2025, remain largely inaccessible to many stakeholders due to the complex and bureaucratic exemption process. A lack of awareness about these exemptions among producers further limits their ability to benefit from such policies.

5.2 Tariff Related Issues Related to the Agricultural Mechanization Sector

5.2.1 Tariff Related Issues from Primary Data

The study includes primary data related to tariff in Agricultural Mechanization sector. The Table 4 describes the tariff related issues faced by segments of the supply chain and contains observations and suggestions for remedies. In the next subsection, we discuss the various tariff rates imposed on the components of various machineries and their implications on the existing market.

Table 4: Summary of Findings Relevant to Tariff Related Issues from KIs and FGDs

Supply chain segments	Issues	Observations	Suggestions on remedies
Input Suppliers	• High tariffs on scrap metal	• Tariffs remain high despite reductions, affecting manufacturers' costs.	• Reduce tariffs for agricultural machinery and ensure suppliers pass on benefits to producers.
End Users (Machine Service Provider)	• Impact of tariff rates on MSPs	• Higher tariffs on imports will increase costs for MSPs.	• Tariffs on imported machineries should not be increased to cater local producers as it will add burden of higher price on MSPs.
Local Producer (Foundries)	• Higher cost of raw materials (iron ore) compared to China	• High iron ore costs lead to higher prices for locally produced machinery.	• Reduce tariffs on raw materials to lower costs for local manufacturers.
NBR Officials	• Tariff decision-making does not depend on NBR • Plausibility of HS codes for agro-mechanization	• Ministries, business associations and government agencies negotiate among each other and recommend a rate for the NBR. • The HS code system could be modified at the last two digits for sector-specific benefits, subject to ministry approval.	• Continue involving sector-representative organisations to ensure tax policies consider all perspectives.

Source: KIs and FGDs.

5.2.2 Discussion on Existing Tariff Related Issues

Bangladesh's current tax and tariff policies significantly hinder the competitiveness of local manufacturers in the agro-mechanization sector. A primary challenge stems from the high tariffs imposed on essential raw materials, such as steel and transformers, which are critical for machinery production. These materials are subjected to cumulative duties and taxes, including customs duties, VAT, and supplementary duties, reaching up to 35 per cent. In contrast, imported finished machinery enjoys significantly lower tariff rates, creating a pronounced pricing disparity that favours imports. This disparity enables importers to achieve higher profit margins whilst offering machinery at lower prices, putting local producers at a considerable

disadvantage. Consequently, the cost of locally manufactured machinery becomes approximately 1.5 times higher than that of imported alternatives. Furthermore, imported spare parts, accompanying finished machinery, often escape similar tariff scrutiny, creating a loophole that undermines domestic producers by allowing importers to sell these parts at reduced prices.

In Table 5, we present the current scenario of tariff for the mostly used agro-machineries. The table presents the domestically used agro-machineries for which there exists no specific HS-codes based on which the NBR could impose tariff upon importing them if they are produced locally. Based on this table, we would present our analysis of the finished goods which should be levied with higher tariff.

From the table, we could observe that among the machines which are domestically produced, rice transplanter, paddy reaper and fodder chopper are not being properly coded with harmonised codes. Hence, it would be difficult to impose tariff on these products if they were imported. Hence, the importance of assigning HS code for these products is paramount because it creates the space for importing goods that are restricted by high tariff rates. Moreover, the lack of specific HS codes will also make it complex for the customs to impose lower tariff with the raw material components used by this sector.

Table 5: Tariff Structure of Various Finished Agro-machines Used in Bangladesh

Name of the Machineries	Status of Local Production	Category	HS Code	CD	SD	VAT	AIT	RD	AT	TTI
Tractor type 1	Assembled, not fully produced	Large-scale machinery	40117010	5%	0%	0%	5%	0%	5%	15.25%
Tractor type 2	Locally assembled (Imported)	Large-scale machinery	40117090	25%	0%	15%	5%	3%	5%	58.60%
Combine harvesters	Locally assembled (Imported)	Large-scale machinery	84335100	1%	0%	15%	5%	0%	5%	26.20%
Power operated rice transplanters	Locally produced/assembled	Specialised equipment	84323000	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Seeders, planters and transplanters incl. no-till direct seeders, planters and transplanter	Locally assembled (Imported)	Specialised equipment	84323100	1%	0%	15%	5%	0%	5%	26.20%
Seeders, planters and transplanters excl. no-till direct seeders, planters and transplanter	Not produced locally (Imported)	Specialised equipment	84323900	1%	0%	15%	5%	0%	5%	26.20%
Manure spreaders and fertiliser distributors Manure spreaders	Locally assembled (Imported)	Specialised equipment	84324100	1%	0%	15%	5%	0%	5%	26.20%
Fertiliser distributors	Locally assembled (Imported)	Specialised equipment	84324200	1%	0%	15%	5%	0%	5%	26.20%
Soil preparation/cultivation machinery; lawn/sports-ground rollers, nes	Locally produced/assembled	Specialised equipment	84328000	1%	0%	0%	5%	0%	5%	11.05%
Parts Of Soil Preparation/cultivation Machinery...	Locally assembled (Imported)	Specialised equipment	84329000	1%	0%	15%	5%	0%	5%	26.20%
Mowers..., powered, the cutting device rotating in a horizontal plane	Not produced locally (imported)	Specialised equipment	84331100	5%	0%	15%	5%	0%	5%	31.00%
Fodder balers	Not produced locally (Imported)	Specialised equipment	84334000	1%	0%	15%	5%	0%	5%	26.20%

(Table 5 contd.)

(Table 5 contd.)

Name of the Machineries	Status of Local Production	Category	HS Code	CD	SD	VAT	AIT	RD	AT	TTI
Fodder chopper	Locally produced	Specialised equipment	N/A ²	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Power tiller/power tiller operated seeder	Locally produced	Specialised agro- machinery	84328090	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rice transplanter	Locally produced/assembled	Specialised machinery	N/A ³	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Harvesting machinery	Locally assembled	Specialised machinery	84335910	1%	0%	15%	5%	0%	5%	26.20%
Harvesting machinery, nes	Locally assembled (Imported)	Specialised machinery	84335990	1%	0%	15%	5%	0%	5%	26.20%
Paddy reaper	Locally produced	Specialised machinery	N/A ⁴	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Power take-offs	Not produced locally (Imported)	Specialised machinery	N/A ⁵	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Centrifugal Pumps which include Axial Flow Pumps	Locally produced	Specialised machinery	84137000	1%	0%	15%	2%	0%	5%	23.20%

Source: (NBR, 2024; Inspira, 2019).

²Does not have a particular HS Code is usually classified under broader categories within agricultural or harvesting machinery, which is 843680.³Does not have a particular HS code is usually classified under broader categories within seeders, planters, or transplanters, which are numbers 6 and 7.⁴Does not have a specific HS code, falls among any of the above two, i.e., harvesting machinery.⁵It doesn't have any particular HS code but falls under drive axles with differential, whether or not provided with other transmission components, and non-driving axles; parts thereof, and is 87085000.

5.3 Subsidies and Incentives in Agricultural Mechanization Sector

5.3.1 Observations Related to Subsidies and Incentives from Primary Data

The study also includes primary data related to subsidies and incentives in Agricultural Mechanization sector. The Table 6 below describes the subsidies and other incentives related issues faced by segments of the supply chain and contains observations and suggestions for remedies.

Table 6: Summary of Findings Relevant to Subsidy and Incentive Related Issues from KIIs and FGDs

Supply chain segments	Issues	Observations	Suggestions on remedies
Ministry of Agriculture (MoA)	Help for Farmers in Agricultural Mechanization	- Farmers receive 30-70% subsidies on machinery in haor and coastal areas. - Implemented by agricultural officers and UNOs.	Gradual automation of the subsidy process.
	Types of Machinery Used	Commonly used machines include combined harvesters (effective in flash flood areas), tractors, power tillers, buried pipes, and reapers.	No specific remedies suggested.
	Government Support for Machinery Integration	- Subsidies provided on machinery, seeds, and fertilisers. - Combined harvesters cost BDT 20 lakh with 30-70% subsidies.	No specific remedies suggested.
	Process for Receiving Incentives	Area representatives submit farmer lists to the upazila agricultural office for approval and monitoring.	No specific remedies suggested.

Source: KIIs and FGDs.

5.3.2 Discussion on Subsidy and Other Incentives Related Issues

Subsidies and other financial incentives play a crucial role in supporting the agricultural mechanization sector by alleviating the financial pressures on stakeholders and fostering growth across the supply chain. However, the current incentive structure in Bangladesh lacks the strategic depth needed to address the systemic challenges faced by local manufacturers, dealers, and end users. Limited scope, inadequate financing options, and market inefficiencies have prevented these measures from delivering the intended benefits, leaving stakeholders to grapple with high costs and restricted access to resources. The following points outline the key issues related to subsidies and other incentives in the sector:

- Offering subsidies has the opposite effect of imposing taxes. Tax exemptions and subsidies can significantly reduce the financial burden on stakeholders and facilitate business operations across all segments of the supply chain. Strategic implementation of these measures can promote growth, support local producers, and enhance the overall competitiveness of the agricultural mechanization sector.
- Government subsidies for agricultural machinery purchases are limited in scope and often confined to specific projects. For instance, in 2020, the government introduced subsidies covering up to 50 per cent of the machinery purchase price for farmers (70 per cent in the Haor region) (Naifu, 2021). Whilst beneficial for end users, these subsidies do not extend to supporting local manufacturers, leaving them without direct financial relief.
- Whilst taking burden of tax and VAT, affordable financing options remain scarce for stakeholders across the supply chain. Unlike other sectors, agricultural mechanization loans do not benefit from interest rate subsidies. This makes borrowing prohibitively expensive for producers, dealers, and end users, further restricting the sector's growth.
- NGOs provide some level of financing, but these efforts are insufficient to address the systemic financial challenges faced by stakeholders. As a result, many manufacturers and dealers rely on informal credit systems, which come with higher interest rates and greater risks.
- The lack of targeted financial initiatives for local producers also means that they struggle to invest in technological upgrades, capacity building, and quality improvement. This limits their ability to compete with imported machinery and meet the growing demand for agricultural mechanization in the country.
- Local manufacturers in the agricultural mechanization sector rely almost entirely on imported raw materials and spare parts, as certain essential components are unavailable in the domestic market. This dependence significantly increases production costs and limits the scalability of local manufacturing.
- The market for raw materials, particularly for scrap metal, is controlled by regional syndicates. These syndicates manipulate supply and inflate raw material prices, creating additional financial burdens for producers.
- Unregulated and fragmented markets further complicate the situation, allowing unlicensed scrap sellers to operate without oversight. This creates an unpredictable supply chain and exacerbates price inflation, leaving manufacturers vulnerable to sudden cost hikes and inconsistent quality of inputs.

5.4 Other Relevant Issues of Agricultural Mechanization Sector

5.4.1. Observations on Other Relevant Issues of Agricultural Mechanization Sector

Primary data related to other related issues in Agricultural Mechanization sector were also collected under the study. The following table 7 describes the other related issues faced by segments of the supply chain and contains observations and suggestions for remedies.

Table 7: Summary of Findings on Other Relevant Issues to Fiscal Measures on Agro-Mechanization Issues from KIIs and FGDs

Supply chain segments	Issues	Observations	Suggestions on remedies
Raw Material Wholesalers	Price determination of raw materials	Pricing depends on market conditions, transportation costs, middleman commissions add to the burden	- Reduce middleman dependency - Improve direct access to large suppliers
	Unregulated and syndicate-controlled operations	Scrap sellers' profit without trade licenses and operate syndicates.	Improve oversight and regulation of scrap metal operations.
Local Producer (Machine Manufacturers)	Lack of foreign investment despite ISO certification	No interest from foreign companies due to political reasons, despite ISO-certified factories in Bogura.	Encourage foreign direct investment and create Export Processing Zones (EPZs) to attract foreign businesses.
Local Producer (Foundries)	Lack of support and engagement from BITAC	BITAC has resources and certification capabilities but does not fully support the sector, especially in areas like heat testing.	Improve BITAC's engagement with the industry, especially in quality testing and certifications.
	Lack of skilled labour in foundries	Insufficient training facilities lead to low productivity and poor quality.	Expand training centres and technical education programmes.
Machine Service Provider	After-sales Service (Local vs Imported)	- Imported machines have limited-service periods (6-12 months) and service delays due to mechanic shortages. - Local machines offer better service but are costlier and sometimes of lower quality	- Improve after-sales service for imported machines. - Ensure quality of local products.
	Price and Quality (Domestic vs Imported)	- Chinese machines are cheaper but less durable. - Japanese machines are high-quality but expensive. - Local machines are affordable, but quality is uncertain.	No Specific remedies suggested.
	Product Preference.	- Preference depends on warranty, after-sales service, and spare parts availability. - MSPs prefer both local and imported products based on the types. - Spare parts availability is only 40% locally, with frequent delays.	Increase local spare parts availability and reduce delivery delays.
	Types of Machines Used	- Common machines: rice transplanter, ripper, chopper, seed sower, tractor, power tiller. - Major suppliers: ACL, Alim Industries.	No specific remedies suggested.

(Table 7 contd.)

(Table 7 contd.)

Supply chain segments	Issues	Observations	Suggestions on remedies
NBR Officials	- Bureaucratic hassle - Unsuitability of bonded warehouses	- National Single Window will integrate 35 departments to simplify the bureaucratic process - Bonded warehouses benefit export-focused industries like RMG	- Expedite the implementation of the National Single Window - Consider alternative forms of support for non-export industries such as targeted tax relief or subsidies for raw materials
Ministry of Agriculture (MoA)	Machine Leasing Programmes	- Bangladesh Agricultural Development Corporation (BADCO)'s machine leasing project has ended, with machines now in poor condition. - Focus shifted to irrigation canals.	
	Lack of Financing Facilities for Machine Producers	Government provides free machinery to farmers but has no financing projects for machine manufacturers.	Channel manufacturers' needs to the Ministry of Agriculture.
	Advancements in the Fisheries Sector	Adoption of aerators, Recirculatory Aquaculture System (RAS), and bottom-cleaning technology has modernised fisheries; aerators are locally produced and globally competitive.	No specific remedies suggested
Bangladesh Fish Research Institute (BFRI)	Import Dependence on Machinery	Some essential fisheries machinery is imported, though local manufacturing is gradually developing but still limited.	No specific remedies suggested
	Quality of Locally Produced Machinery	Locally produced aerators and machinery are of high quality, comparable to imports.	Standardisation is needed.
	Challenges for Expanding Domestic Manufacturing	Hindered by inadequate communication, outdated technologies, and low technological awareness.	- Improve stakeholder communication. - Promote technological adaptability. - Enhance infrastructure.
	Obstacles to Domestic Manufacturing Growth	- Poor communication, - Reliance on primitive technologies - Weak infrastructure, and no export channels.	- Develop infrastructure - Create export channels - Promote technology awareness to scale up production.
Ministry of Commerce	Lack of Focus on Agricultural Machinery	The EC4J project prioritises the light engineering sector but excludes agricultural machinery in the TRIPS framework.	Introduce targeted policies under EC4J to include agricultural machinery.

(Table 7 contd.)

(Table 7 contd.)

Supply chain segments	Issues	Observations	Suggestions on remedies
	Insufficient Implementation of Article 66.2 of TRIPS	Technology transfer provisions benefit the light engineering sector but exclude agricultural machinery.	Push for agricultural machinery-specific technology transfer initiatives.
	Limited Emphasis on Agricultural Mechanization in Export Diversification	Agricultural machinery is not prioritised in export diversification efforts despite its potential for modernisation.	Broaden export strategies to include agricultural machinery.
	Lack of Competitiveness in Agricultural Machinery Industry	The industry faces challenges like limited technological advancements and restricted global market access.	Invest in R&D and focus on innovation and local adaptation.
	Insufficient Focus on Agro Mechanization as a Strategic Priority	National initiatives like EC4J lack adequate focus on agricultural machinery production needs.	Make agricultural mechanization a strategic priority in national initiatives.
	Dependence on Imports for Agricultural Machinery	Heavy reliance on imports increases costs and hinders local industry growth.	Develop policies to encourage local production with incentives and technology transfer.
	Indirect Involvement in Agricultural Mechanization Projects	The Ministry indirectly supports Agro mechanization through the Light Engineering Policy 2022 and SME Policy 2019. These policies promote modernisation, industrial clusters, and finance access.	Strengthen direct involvement by introducing specialised programmes in existing policies targeting agricultural mechanization.
	Limited Awareness, Lack of Collateral, and Coordination Issues	Challenges include limited stakeholder awareness, lack of collateral among small manufacturers, and poor coordination between entities.	Conduct awareness and capacity-building workshops focusing on agricultural mechanization's importance.
	Need for More SME Capacity-Building and Support Mechanisms	SMEs lack resources, technical knowledge, and business skills to expand or modernise operations.	Implement targeted training and mentorship programmes for SMEs, focusing on technical, financial, and marketing capabilities.

Source: KIs and FGDs.

5.4.2. Discussion on Other Related Issues of Agricultural Mechanization Sector

Institutional gaps and the lack of quality standards hinder the competitiveness of local machinery and the effective targeting of government subsidies and tax benefits. These challenges limit the ability to compare local products with imports and prevent the sector from reaching its full potential.

- This lack of benchmarking also hinders the process of targeting government subsidies and tax benefits, as eligibility criteria based on certified quality standards can help the government identify which products should be offered benefits. The absence of standard testing and certification mechanisms poses a major challenge for local manufacturers. Without recognised quality standards, it is also difficult to compare domestically produced machinery and spare parts with imported alternatives.
- Institutions like the Bangladesh Industrial and Technical Assistance Center (BITAC) have the capacity to provide technical testing and training services. However, these facilities remain underutilised, leaving local manufacturers without the necessary support to improve their product quality or comply with regulatory standards. This underutilisation of available resources prevents government to better target the benefits like subsidies and tax exemptions for the sector to achieve its full potential.
- Bangladesh's tax and tariff policies heavily favour imported agricultural machinery over locally manufactured alternatives, undermining the competitiveness of domestic producers. High tariffs and cumulative duties on raw materials inflate production costs, making locally produced machinery 1.5 times more expensive than imports. In contrast, imported finished machinery benefits from significantly lower tariffs, preferential treatments, and loopholes for spare parts, further exacerbating the pricing disparity. These structural imbalances restrict local manufacturers' ability to scale operations, innovate, and compete effectively, ultimately disincentivising domestic production.
- Local manufacturers in Bangladesh's agro-mechanization sector face systemic disadvantages due to unbalanced tax and tariff structures. Burdensome duties on inputs like steel and transformers, combined with inconsistent VAT exemptions and additional operational costs, inflate local production costs. Meanwhile, importers benefit from reduced tariffs and exemptions, allowing them to undercut local prices. This policy-induced disparity distorts market dynamics, discourages local production, and limits farmers' access to durable and locally tailored machinery, weakening the sector's regional and global competitiveness.

6. RECOMMENDATIONS FOR POLICY ADJUSTMENTS TO BOOST DOMESTIC ADVANCED MACHINERY PRODUCTION WHILST BALANCING AGRO-Mechanization STAKEHOLDERS' NEEDS

This section outlines strategic recommendations aimed at addressing the key policy and structural challenges facing Bangladesh's agro-mechanization sector. These recommendations, formulated based on insights from key informant interviews (KIIs), focus group discussions (FGDs), and sectoral analyses, target reforms in taxation, and tariff structures, to enhance domestic production and encourage mechanization.

6.1 Recommendations for Fiscal (Taxation and Subsidy) Structure

1. Lower VAT on Essential Services and Inputs: To make local production of agro-mechanization equipment more competitive, reducing the VAT on essential services like electricity and on key machinery components—such as transformers, engines, and other mechanical parts—is a critical policy

step. High VAT rates on these inputs significantly raise production costs for manufacturers, making local products more expensive compared to imports, especially in a price-sensitive market like agriculture. By lowering VAT on these essential services and inputs, local manufacturers can benefit from reduced production costs, which could result in lower prices for the end consumers, particularly farmers. In many countries, such as India and South Africa⁶, governments have recognised the need to reduce VAT or provide tax exemptions for agricultural machinery and its components, as well as key inputs like electricity, to ensure that the domestic agro-mechanization industry is not at a disadvantage compared to foreign imports (MoF India, 2024; PWC, 2023). This reduction can foster a more competitive local industry, enabling domestic manufacturers to offer more affordable machinery to farmers, ultimately supporting agricultural productivity and mechanization.

One effective method used by several countries to lower VAT on inputs for agro-mechanization is implementing a tiered VAT system, where specific sectors, like agriculture and agro-industrial manufacturing, are classified as 'essential' and benefit from lower tax rates.⁷ In India, for example, various agricultural machinery components enjoy lower VAT rates or even tax exemptions under the Goods and Services Tax (GST) framework (MoF India, 2024). Similarly, in Brazil, the government offers reduced VAT on agricultural inputs, including machinery and parts, to promote rural development and ensure that small and medium-sized farms can afford to mechanise (Rahman, et al., 2021). To implement a similar strategy in Bangladesh, the government could create specific tax brackets for the agro-mechanization sector and exempt VAT on essential inputs like transformers, engines, and electricity required for manufacturing. Additionally, ensuring that all agro-mechanization manufacturers are registered for VAT could improve transparency, expand the tax base, and help formalise the sector, which would bring in long-term benefits for the industry. This would also prevent VAT evasion, ensuring that the reduction benefits all legitimate producers and contributing to a fairer competitive landscape.

2. Strategic Change in Subsidy Share from Consumers to Local Producers: To promote the local production of essential agricultural machinery in Bangladesh, the government could introduce targeted subsidies for agro-mechanization manufacturers, especially those producing key machinery like tractors, harvesters, and irrigation systems. Even though the government provides subsidies to the farmers for buying agro-machineries, the benefits remain confined within the sphere of the local farmers. Past experience shows that only small, short-term subsidy programmes are used to generate interest or stimulate high-profile sales of machinery in specific regions with underdeveloped markets (Loon, et al., 2020). Whilst these benefits farmers in the short term, it undermines the growth of the domestic production sector. This scenario raises critical concerns, as subsidies intended to stimulate the local economy are inadvertently supporting foreign manufacturers, leaving domestic producers in a disadvantaged position. In other words, the subsidy programme gives the scope of more Pareto efficient outcome. Hence, restructuring the distributional mechanism will result in more socially optimal outcome.

However, in an extreme assumption, suppose, the government decides to reallocate the huge and long-term subsidy from the farmers to the local producers. The problems of the local producers in

⁶In South Africa, this depends on the nature of the goods and services provided (PWC, 2023).

⁷A tiered VAT (Value Added Tax) system refers to a tax structure where different rates of VAT are applied to different categories of goods and services based on their classification or importance. In this system, essential or basic goods and services—such as food, healthcare, or agricultural inputs - are subject to lower tax rates, while non-essential or luxury items are taxed at higher rates (Guo, 2021).

the agro-mechanization sector of Bangladesh are too multifaceted to be solved by small and short-term subsidies. If the government plans on subsidising the local producers instead of the farmers on a substantial and long-term basis, the price of the local machineries can be kept lower without increasing the domestic fiscal constraints. Moreover, since the local producers are subsidised, they can charge way lower price in the domestic market compared to the imported products which will benefit both the end-users and the local producers. It is a win-win game for the local producers and the end-users. Thus, deviating from the extreme case of reallocating the entire subsidy from the farmers to the direction of local producers will provide a more equal, profitable, and business sustaining outcomes for the local supply chain actors of the domestic agro-mechanization sector.

In response to these challenges, a redistribution of the government's subsidy structure has been proposed. The revised policy seeks to optimise subsidy allocation without increasing the government's fiscal burden whilst ensuring that farmers' welfare remains unaffected. Whilst subsidies can provide crucial support for the local agro-mechanization industry, it is essential to strike a balance, as over-reliance on subsidies can lead to inefficiencies and market distortions. Two potential strategies are under consideration. The first strategy involves transferring the entire subsidy from farmers to local producers, which would reduce production costs and allow producers to offer competitive prices, thereby stimulating domestic competition. The second strategy proposes a partial redistribution of subsidies, balancing support for farmers with financial assistance for producers to lower production costs. The central objective is to evaluate how changes in the share of subsidies allocated between farmers and local producers can improve outcomes for all stakeholders.

Objective: Evaluate the welfare of subsidies redistribution between farmers and local producers to improve domestic production, maintain farmers' welfare, and ensure fiscal sustainability.

Stakeholders:

- Farmers: Consumers of agro-machinery.
- Local Producers: Domestic manufacturers of agro-machinery.
- Importers: Suppliers of imported agro-machinery.
- Government: Provider of subsidies and collector of tariffs

Variables:

1. Subsidy Allocation:

- $S_T(t)$: Total subsidy budget available in period t
- k_T : Fraction of the subsidy allocated to farmers ($0 \leq k_T \leq 1$)
- $S_F(t) = k_T \cdot S_T(t)$: Subsidy to farmers
- $S_P(t) = (1 - k_T) \cdot S_T(t)$: Subsidy to producers

2. Market Prices:

- $P_L(t)$: Price of locally produced machinery
- $P_I(t)$: Price of imported machinery

3. Production and Tariffs:

- C_L : Cost of producing local machinery
- T_L : Tariff on raw materials for local production
- P_{import} : Base price of imported machinery
- T_I : Tariff on imported machinery

4. Demand and Supply:

- $Q_L(t)$: Quantity of local machinery sold
- $Q_I(t)$: Quantity of imported machinery sold

5. Welfare Metrics:

- Farmers' Welfare ($W_F(t)$):

$$W_F(t) = Q_L(t) \cdot P_L(t) + Q_I(t) \cdot P_I(t) - S_F(t)$$

- Producers' Welfare ($W_p(t)$):

$$W_p(t) = Q_L(t) \cdot (P_L(t) - C_L) + S_p(t)$$

- Government Fiscal Outcome:

$$G(t) = T_L(t) \cdot Q_L(t) + T_I \cdot Q_I(t) - S_T(t)$$

6. Dynamic Timeline:

- Periods $t = 0, 1, 2, 3$ represent the baseline and future periods
- Subsidy decreases over time:

$$S_T(t) = S_T(0) \cdot (1 - r)^t$$

- r : Subsidy reduction rate ($0 < r < 1$)

Model Equations

Price for Local Machinery:

$$P_L(t) = C_L - S_p(t) + \text{profit margin}$$

Price for Imported Machinery:

$$P_I(t) = P_{import} + T_I(t) + \text{profit margin for importers}$$

Quantities Demanded for Local Machinery:

$$Q_L(t) = \max(0, \alpha_L - \beta_L \cdot (P_L(t) - P_I(t)))$$

Quantities Demanded for Imported Machinery:

$$Q_I(t) = \max(0, \alpha_I - \beta_I \cdot (P_I(t) - P_L(t)))$$

Farmers' Welfare:

$$W_F(t) = Q_L(t) \cdot P_L(t) + Q_I(t) \cdot P_I(t) - S_F(t)$$

Local Producers' Welfare:

$$W_P(t) = Q_L(t) \cdot (P_L(t) - C_L) + S_P(t)$$

Government Fiscal Outcome:

$$G(t) = T_L(t) \cdot Q_L(t) + T_I(t) \cdot Q_I(t) - S_T(t)$$

Constraints

Farmers' Welfare Constraint:

$$W_F(t) \geq W_F(0) \forall t$$

- Farmers' welfare must not fall below the baseline

Fiscal Sustainability Constraint:

$$G(t) \geq G(0) \forall t$$

- Government fiscal burden must not increase

Objective Function

Maximise combined welfare of farmers and producers over time:

$$\text{Maximize } \sum_{i=0}^3 \delta^i \cdot (W_F(t) + W_P(t))$$

$$\text{subject to } W_F(t) \geq W_F(0) \quad \forall t$$

$$G(t) \geq G(0) \quad \forall t$$

Where:

- δ : Discount factor ($0 < r < 1$) to account for time preference

Since the solutions are highly non-linear, it is not possible to solve the system non-numerically or without any data and figure out the impact of the proportionate change of subsidy share. However, subsidies allocated to local producers have both direct and indirect impacts on their business operations, market dynamics, and overall welfare.

Direct Effects

1. Reduction in Production Costs: Lower production costs allow producers to offer competitive prices for local machinery and improve profit margins without raising prices.

2. Boost to Welfare: We can see that subsidies to the producers will increase significantly, even without increased sales and that will contribute to the total welfare increase of the market.

Indirect Effects

1. Improved Price Competitiveness:

- Reduced production costs allow producers to set lower prices (P_L), narrowing the price gap with imported machinery (P_I):

$$\Delta P = P_L(t) \geq P_I(t)$$

- As the price gap decreases, demand for local machinery increases, boosting quantities sold and producers' total profit from sales

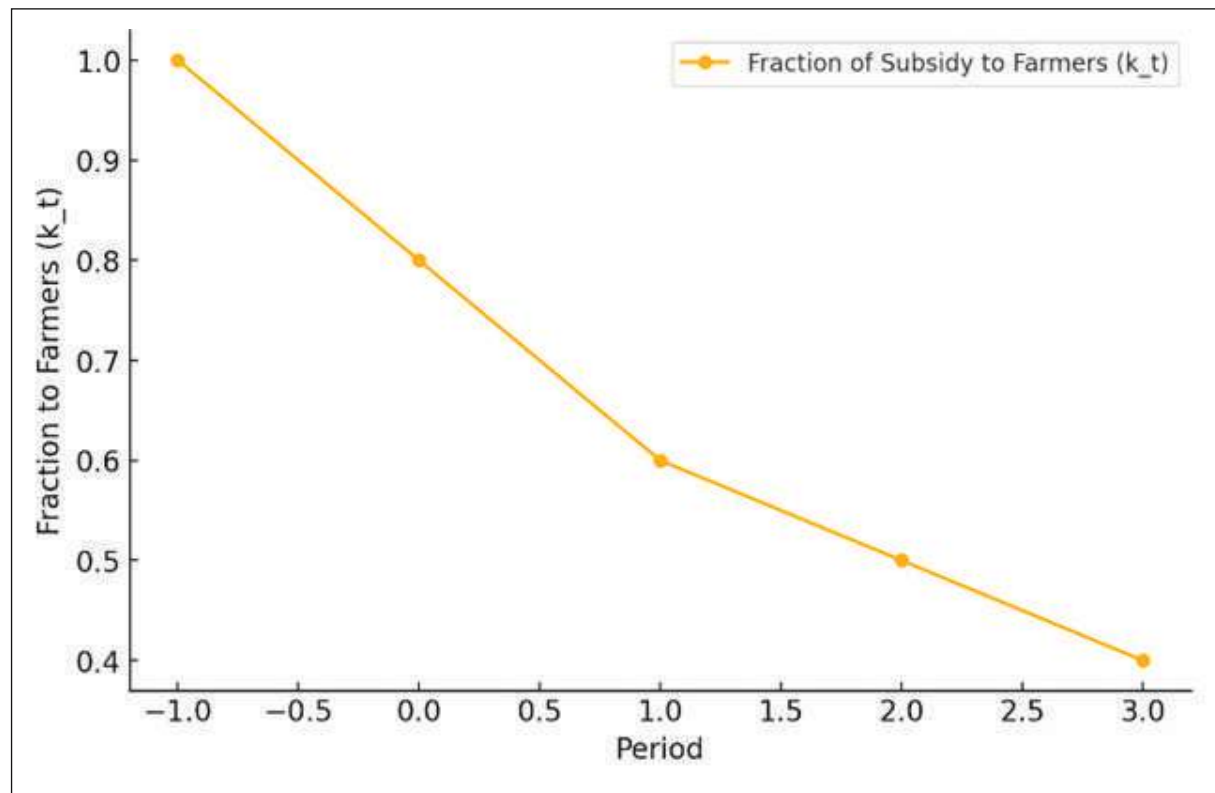
2. Economies of Scale:

- Increased production volumes may lead to economies of scale, further reducing costs over time
- A virtuous cycle of reduced costs and increased sales may emerge

3. Enhanced Market Share:

- Local producers can capture a greater share of the machinery market, reducing dependency on imports:

$$\text{Market Share} = \frac{Q_L}{Q_L + Q_I}$$

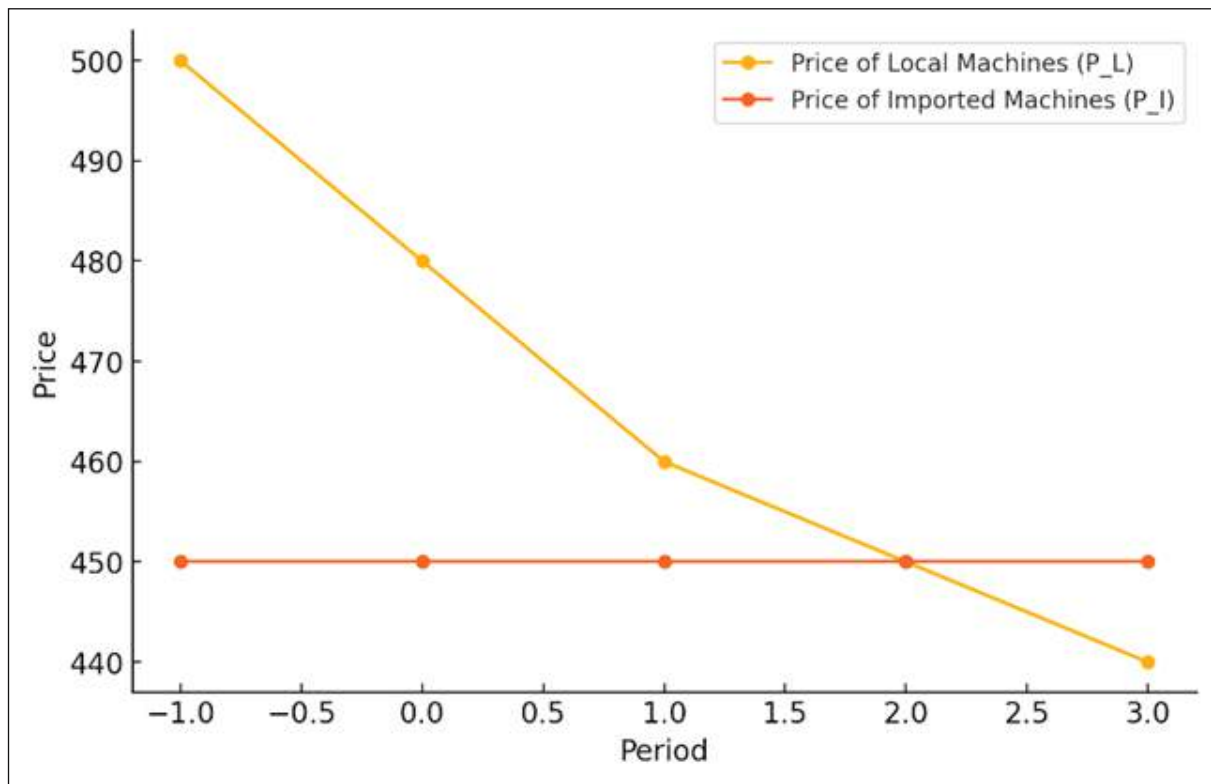
Figure 3: Optimal Subsidy Distribution Over Time Against Fraction to Farmers (Dynamic)

Source: Authors' simulation and illustration

In this part of the analysis, we have utilised simulations to estimate the effects of changes in subsidy allocations between farmers and local producers. Due to the unavailability of detailed sectoral data, the graphs and results were derived using basic simulations and randomly generated data grounded in real-life scenarios and plausible assumptions. The simulated data reflects key dynamics in the agro-mechanization sector in Bangladesh, providing insights into the potential impacts of policy adjustments.

Furthermore, we propose a phased subsidy programme to be implemented over an initial three-year period. This timeline is informed by Bangladesh's anticipated accession to the Regional Comprehensive Economic Partnership (RCEP), a major trade bloc that includes China and other key economic partners. As part of the RCEP, Bangladesh will be required to gradually reduce tariffs on goods traded with participating countries, which could have significant implications for the agro-machinery sector. By phasing out the subsidy programme over three years, this policy framework seeks to prepare local producers for a more competitive trade environment while fostering sustainable growth in the domestic market.

From Figure 3, we can see that the optimal share of subsidy received by the farmers gradually shifted toward the producers. So, it is clear that we cannot reduce the subsidy entirely at a single point of time from the farmers to the local producers.

Figure 4: Change of Prices Over Time Across Local and Imported Machines

Source: Authors' simulation and illustration

We can see from the simulated Figure 4 that holding the tariff structure and zero inflation rate, the price level of local machines will fall over time and that will lead to more competitiveness of the locally produced products and more quantity sold of the local products over time as the subsidy share of the farmer is gradually phased out. This will increase the welfare of the local producers whilst the welfare of government and farmers is retained. Also, this will lead to increased total welfare as a consequence.

Feasibility of the Proposed Policy: To ensure the success of these strategies, several key considerations must be addressed. First, a standardised regulatory committee must ensure that only high-quality machines compatible with local agro-climatic conditions are eligible for subsidies. Second, subsidies should be targeted exclusively at locally producible machinery, excluding imported products that can be manufactured domestically and those that have already achieved economies of scale, such as deep-water pumps. Third, positive welfare could only be achieved by offering subsidies on the purchase of essential production equipment (e.g., CNC machines, robotic systems, laser cutting tools), tax incentives for machinery production, and support for research and development (R&D) in agricultural technology. Lastly, the redistribution policy must consider its impact on all stakeholders. It should maintain affordability and accessibility for farmers, boost profitability and competitiveness for local producers, and uphold fiscal sustainability for the government, whilst balancing market dynamics with fair competition for importers.

If subsidies are too intensive or poorly targeted, they could create dependence on government support and hinder innovation and competition within the sector. Furthermore, excessive subsidies may result in

a misallocation of resources, where manufacturers focus on subsidised products rather than improving quality or diversifying their offerings. Countries such as Brazil have encountered these challenges in their efforts to support the local agricultural sector. Brazil initially offered broad subsidies to stimulate agricultural mechanization, but later reformed these schemes to ensure that they were better aligned with sustainability and market needs (Mueller & Mueller, 2016; Santana & Nascimento, 2012). To avoid such pitfalls, Bangladesh could consider phase-out mechanisms for subsidies, gradually reducing financial support as the local industry matures and becomes more competitive, thereby encouraging sustainable growth in the agro-mechanization sector, as outlined by our model.

Lastly, one potential issue that has emerged regarding subsidy reception is tied to the enlistment of firms. When the government procures agro-machines for farmers through the MoA or other relevant agencies, NGOs, or banks, the intention is to subsidise the price. However, domestic agro-mechanization producers have raised serious complaints about the tender process, which they claim is plagued by false companies making fake bids during procurement. These fake bids are designed to pave the way for larger importers to win the contracts. Additionally, many domestic producers are not even aware of such bidding processes and are not properly notified. The enlistment of these fake companies is used to create the illusion of sufficient competition, thus validating the fairness of the process. Furthermore, under-the-table deals before the bidding process are common, and only major importers tend to win the so-called 'competitive bidding' for government subsidies. To address this issue, we propose conditioning subsidy eligibility on firms being domestic producers, rather than importers or parts assemblers. However, it is important to note that if the government fails to ensure fair competition in the bidding process, the intended benefits of the subsidies will remain unrealised.

3. Simplify the Process of Tax Exemptions and Implement Profit-Based Taxation: To enhance the growth of the agro-mechanization industry in Bangladesh, the tax exemption process should be simplified, particularly under initiatives like the Light Engineering Policy. Currently, manufacturers face significant bureaucratic hurdles when trying to access available tax exemptions, which can delay production and increase the cost of doing business. By streamlining the procedures and reducing paperwork, the government can make it easier for agro-mechanization manufacturers to benefit from these exemptions. One way to do this is by introducing digital platforms for application and approval, allowing manufacturers to apply for tax exemptions and track their status more efficiently. In addition, it is crucial to ensure that taxes are levied based on actual profits rather than arbitrary estimates. Clearer guidelines should be established to distinguish between personal and business transactions, so that manufacturers are not penalised for legitimate business expenses. Countries like Germany and South Korea have implemented similar approaches, where clear distinctions between personal and business expenses are made in tax regulations, helping businesses plan better and minimise confusion.

In Germany, the tax system is structured to ensure that business expenses are clearly delineated from personal expenses. The German Tax Act (EStG, Einkommensteuergesetz) allows for tax deductions on business-related expenses as long as they are directly related to generating income for the business. Germany has a robust framework for tax exemptions for manufacturers, particularly those in industries such as light engineering, which is relevant to agro-mechanization (German Federal Ministry of Finance, 2021).⁸ Manufacturers can deduct costs related to machinery, research and development, and

⁸For details regarding the robust tax structure, please visit the cited source. The details technicalities and scientific aspect of the respective taxation framework requires a different study.

business operations from their taxable income. Furthermore, the process for accessing VAT exemptions for exports or for purchasing production equipment is relatively streamlined, thanks to Germany's digital tax portal. This system allows businesses to submit claims for tax deductions and exemptions online, reducing bureaucratic obstacles and ensuring quicker processing. To ensure that personal and business expenses are properly separated, Germany requires businesses to maintain detailed records and separate accounting systems for personal and business finances, which might get challenging for the local producers of Bangladesh. However, proper training and workshops can become highly effective since the local producers have strong willingness to decrease the taxing process.

South Korea follows a similar pattern of separating personal and business expenses, with a strong emphasis on tax fairness and transparency. South Korea's National Tax Service (NTS) administers tax policies that distinguish between deductible business expenses and personal expenses, especially for small and medium-sized enterprises (SMEs) in sectors such as manufacturing (KLRI, 2024). Businesses are allowed to deduct expenses related to business operations such as machinery, materials, and labour costs, but personal expenses like private car usage or meals not related to business are not deductible. This is similar to Germany's model, where businesses must maintain clear records showing that their expenses directly contribute to generating income for the company. South Korea also offers a VAT exemption for certain sectors, including the agricultural machinery industry, when the machinery is used for production purposes. The South Korean government has also embraced digital tools for tax filing and exemption applications. Businesses can apply for VAT refunds or exemptions via an online portal, which simplifies the process of getting approvals and reduces the paperwork, corruptions and complications involved. Profit-based taxation is strictly enforced in South Korea, where tax obligations are linked to the actual net income earned by businesses (Deloitte, 2023).

4. Awareness About the Taxation Structure and MoA Appointed Tax Lawyers: To enhance awareness about the taxation structure in Bangladesh, especially among agro-mechanization manufacturers, the government should launch targeted educational campaigns. These campaigns should aim to explain the tax policies, tariff structures, and benefits available to local businesses, particularly those in agro-mechanization. Whilst the National Board of Revenue (NBR) handles taxation, it often lacks the specialised focus and good-will needed to address sector-specific concerns, which can lead to confusion, double or even triple taxation, and missed opportunities for businesses to access relevant exemptions and benefits. Respondents from our interviews have disclosed that they are often taxed twice or thrice the actual amount, with NBR officials not willing to provide clear justifications for these excessive charges. Over time, many business owners realize that they were over-taxed and were unable to avail the exemptions they were entitled to. However, they often feel unable to challenge the NBR's decisions and continue to be charged higher than required each year. To address these issues, we propose that the MoA provide state-owned tax lawyers to agro-mechanization business entities for a period of two years. These tax lawyers would serve as specialised advisers, helping businesses navigate the complexities of the tax system, clarify ambiguities, and ensure that they are not unfairly taxed multiple times when consulting with the NBR. By having a tax lawyer from the MoA, businesses can directly address the unique challenges they face in the agro-mechanization sector, benefiting from expert legal advice tailored to their needs and avoiding misinterpretations of tax regulations. Moreover, this will bear an effective learning process for the local stakeholders. The MoA's involvement is crucial because it has a closer understanding of the agricultural mechanization sector's dynamics, compared to the NBR, which is a broader, more generalised tax body.

This proposal may raise concerns that government tax revenue could decline in the short term due to the provision of tax lawyers. By helping agro-mechanization businesses navigate the tax system more effectively and avoid unnecessary over-taxation, the government can create a more transparent, efficient, and business-friendly environment. This, in turn, would stimulate growth in the agro-mechanization sector, encourage more local manufacturing, and attract new investments. As businesses grow, generate higher revenues, and become more competitive, they will ultimately contribute more to government revenue through taxes. Moreover, businesses that can operate more effectively and at lower costs are more likely to expand, hire more workers, and increase their taxable activities, leading to a sustainable increase in tax revenue in the long run.

6.2 Recommendations for Tariff Structure

1. Strategic Tariff Policy for Imports and Local Production: Whilst maintaining higher tariffs on locally produced finished agricultural machinery to encourage domestic production, the government should subsidise the producers to facilitate domestic mechanization. By increasing tariffs on imports of products that can be locally produced, the government can create a more competitive market for local producers. This would incentivise manufacturers to innovate, improve product quality, and expand production capacity. So, we are proposing a tariff structure where imported goods that are already produced locally should have tariffs raised to protect and incentivise local manufacturers. The goods which are only locally assembled can also be levied with lower import tariff only if they are not manufactured locally.

To protect and promote local production, products that are fully locally produced (not assembled) should face the highest tariffs on imports. These include Power Tiller/Power Tiller Operated Seeder, Fodder Chopper, and Paddy Reaper. As these products are entirely produced within Bangladesh, increasing the tariff on imports would protect them from foreign competition, encouraging further investment in local manufacturing, and ensuring local producers can compete on a level playing field. The increased tariffs will also incentivise the development of local supply chains, creating jobs and fostering innovation in the sector.

For locally produced or locally assembled goods, a medium increment in tariffs is necessary to safeguard the local market whilst ensuring that domestic industries continue to grow. Products like Tractor Type 1, Combine Harvesters, Seeders, Planters and Transplanters, Manure Spreaders, and Harvesting Machinery fall under this category. These items are either fully assembled locally or rely on both imported and locally produced components. A moderate tariff increase will arm local producers with a competitive advantage, allowing them to expand production aligned with assurance that the market remains open for competition and innovation without undermining the local industry.

Fully imported products that are not locally assembled or produced, such as Mowers, Fodder Balers, and Power Take-Offs, should face no tariff increment. These products are essential but cannot be produced locally, either due to technological constraints or the lack of local manufacturing capacity. Imposing higher tariffs on these items could hinder access to crucial machinery for farmers and agro-businesses. Therefore, keeping the tariffs on these products at their current rates or moderate levels will ensure that essential agricultural equipment remains accessible whilst the local industry develops over time.

2. Expand Bonded Warehouse Access to Support Raw Materials Supply at a Lower Price: Tariffs should be lowered on essential raw materials, spare parts, and capital equipment used in agro-machinery production to reduce the cost of local manufacturing. Although the NBR traditionally views bonded warehouses as a facility exclusively for export-focused industries, such as the Readymade Garment (RMG) sector, this perspective is rooted in outdated policies that lack a clear, reasonable justification for restricting bonded warehouse use. This approach overlooks the potential benefits that bonded warehouses could provide for domestic industries, particularly in sectors like agricultural machinery, which requires accessible and affordable raw materials and components. The use of bonded warehouses in the agricultural machinery sector could play a significant role in reducing costs by allowing manufacturers to store imported raw materials and components tax-free until they are ready for production. This would reduce the upfront financial burden on local manufacturers, enabling them to source quality materials at competitive rates. It would also support the growth of domestic production, reduce reliance on fully imported machinery, and make locally produced machinery more competitive with imported alternatives. By revisiting this outdated perspective and expanding bonded warehouse benefits to include the agricultural machinery sector, the NBR could empower local manufacturers, stimulate industry growth, and help achieve national goals of self-sufficiency in agricultural machinery production.

3. Monitoring the Spare Parts Brought Alongside Imported Finished Goods: Local producers are facing a significant challenge due to a loophole in Bangladesh's tariff structure. Whilst the tariff system imposes higher duties on spare parts for agro-machinery, importers of finished machinery often bring spare parts under zero duty alongside the finished products. As a result, importers only pay duties on the finished machinery, whilst the spare parts—needed for machine replacement—are not subject to any tariff. Instead of supplying these spare parts with the machinery as intended, importers often sell them independently in the market. Additionally, the number of spare parts imported exceeds the typical requirements for the machines, further exacerbating the problem by creating unfair competition for local manufacturers.

To address the issue of spare parts being imported alongside finished agro-machinery under zero duty, the government should implement stricter customs regulations to ensure that spare parts are correctly classified and taxed. Specifically, spare parts should be declared separately from finished products at customs and subjected to the appropriate tariff rates. Importers must justify the number of spare parts being imported based on the actual requirements of the machinery, ensuring that these parts are either supplied with the machinery or used exclusively for after-sales service. The government should establish a minimum threshold for the number of spare parts that can be imported alongside the finished products, with any quantity exceeding this limit subject to standard tariff rates. A new, more detailed HS Code 10 could be introduced to specifically categorise spare parts and machinery components. To enforce compliance, customs inspections should be enhanced to verify that spare parts imported under zero duty are not being sold independently in the market. Non-compliance should be penalised to deter such practices and protect local manufacturers from unfair competition.

4. Engagement of BITAC in Quality Testing: Improvement is needed in BITAC's engagement with the agro-machinery sector by enhancing its role in quality testing and certification. This will ensure that both imported, and locally manufactured products meet the necessary standards and contribute to sustainable mechanization. Implementing a testing process for imported agricultural machinery is

also necessary to ensure that only products suited to the local agricultural environment benefit from tariff reductions. This will protect local manufacturers whilst ensuring that imported machinery is appropriate for Bangladesh's needs.

6.3 Overall Recommendations

1. Strengthen Coordination and Monitoring within NBR: To enhance the effectiveness of the National Board of Revenue (NBR) in supporting the agricultural machinery sector in Bangladesh, it is essential to strengthen inter-departmental coordination, monitoring, and the use of customised HS codes. A task force dedicated to the agricultural machinery sector should be created within NBR. This task force would assess industry needs, address specific challenges, and ensure policy recommendations are balanced and inclusive of industry stakeholders. The NBR should also increase its capacity to monitor tax-exempt products and prevent misuse by implementing tighter control mechanisms. Enhanced coordination between customs and VAT departments would help ensure compliance. Additionally, audits or random checks for tax-exempt products would verify that these products are used for their intended purpose. Moreover, efforts should be made to streamline bureaucratic processes by accelerating the National Single Window (NSW) initiative. By integrating 35 relevant government departments into NSW, NBR can reduce bureaucratic complexities, making it easier for businesses to navigate customs, VAT, and tax systems.

2. Introduce HS Code 10 for Agro-mechanization Sector Benefits: To implement HS Code 10 for the agro-mechanization sector in Bangladesh, the first step is to collaborate with international trade bodies, such as the World Customs Organization (WCO), to develop and propose a customised HS Code 10 specifically for agro-mechanization products and their critical components. This would include machinery such as tractors, harvesters, and specialised parts like engines and transmission components, which are key for local agricultural practices. Once this new HS Code is approved, the NBR must update its Customs Tariff Schedule to incorporate the new classification. This ensures that customs authorities and importers can properly classify agro-mechanization products and components, allowing the government to implement sector-specific tariffs for agricultural machinery and parts. Importers would then be able to benefit from reduced duties on critical raw materials like engines and chassis, which would lower costs for domestic manufacturers and enhance their competitiveness against fully imported finished products.

Following this, the NBR should create a tailored tariff structure under HS Code 10, where duties on essential machinery components are reduced, and sector-specific tax breaks and exemptions can be implemented, such as reduced VAT on specialised parts that are not readily available locally. This would encourage local production by lowering the financial barriers for domestic manufacturers. Additionally, subsidies for locally produced or assembled agro-machinery can be more effectively managed using HS Code 10. The government can define eligibility for these subsidies, ensuring that machinery that meets local agricultural needs—such as tractors, harvesters, and seeders that are produced locally—receives financial support. To monitor this process effectively, the government needs to develop real-time tracking systems within the customs and tax framework. This would ensure that imports under the new HS Code are subject to the correct duties and that subsidy claims are properly managed and allocated to eligible manufacturers.

Furthermore, it is essential for Bangladesh to align the new HS Code with global trade norms, ensuring that agro-mechanization products benefit from preferential duties or export rebates under trade agreements with neighbouring countries and international markets. Bangladesh should negotiate these terms under regional trade agreements like SAFTA and ASEAN to enhance access for local producers. To ensure smooth implementation and compliance with the new code, Bangladesh should engage with customs authorities in neighbouring countries to establish consistent classification and enforcement across borders. Finally, a robust monitoring and compliance system should be put in place, enabling Bangladesh to track the success of HS Code 10 and measure its impact on local agro-mechanization production. This continuous monitoring will provide data on the effectiveness of the tariff changes, subsidies, and overall market competitiveness, ensuring that the policy meets its objectives of promoting local manufacturing while fostering growth in the agricultural sector.

By implementing these recommendations, the government can create a more conducive environment for the growth of Bangladesh's agro-machinery sector. A balanced approach of lowering costs for local manufacturers, whilst maintaining incentives for mechanization, will foster sustainable development in the agricultural sector and boost productivity across the country.

7. CONCLUSION

The agro-mechanization sector in Bangladesh is ready to grow a lot, but it faces many big challenges, especially regarding taxes and tariffs that make it hard for local manufacturers and raise the costs of importing essential machinery. As the country works to modernise its agricultural practices, it is important for the government to create a supportive policy environment that benefits both local manufacturers and farmers, ensuring that technology and machinery are accessible and affordable.

The analysis in this report shows that the current tax and tariff policies need to be revisited to better align with the needs of the agro-machinery industry. Reducing tariffs on raw materials and capital machinery, lowering VAT on essential services, and simplifying the process for accessing tax exemptions are crucial steps to help local manufacturers compete. Additionally, implementing clearer regulatory frameworks for imported machinery and ensuring strong oversight of policy execution will strengthen the sector. The recommendations in this report aim to address the financial, technical, and operational challenges faced by key stakeholders in the agro-mechanization industry. By creating a balanced tax and tariff regime, the government can accelerate local manufacturing growth and enhance agricultural productivity, benefiting the economy and improving farmers' livelihoods across Bangladesh.

Looking forward, continuous dialogue with stakeholders like AMMA-B, policymakers, and financial institutions will be essential for successfully implementing these reforms. If executed properly, these measures will position Bangladesh as a leader in sustainable agro-mechanization, ensuring the sector thrives amid local and global challenges. The potential benefits of these reforms—including enhanced productivity, job creation, increased exports, and improved rural incomes—highlight the need for an inclusive and forward-looking policy agenda.

References

- Agro-machineries get increased subsidy in budget FY23. (2022, June 10). *Financial Express*. Retrieved from: <https://thefinancialexpress.com.bd/economy/bangladesh/agro-machineries-get-increased-subsidy-in-budget-fy23-1654776208>
- Alam, M. M. (2022). *Trend of Agricultural Machinery and Spare Parts Manufacturing and*. Retrieved from CSISA: https://csisa.org/wp-content/uploads/sites/2/2022/04/Day-2-Session-3_Trend-of-Agricultural-Machinery-and-Spare-Parts-Manufacturing-by-BAU.pdf
- CPA re-fixes tariffs. (2025, September 15). *New Age*. Retrieved from: <https://www.newagebd.net/post/economy/276144/>
- Deloitte. (2023). *International Tax: Korea Highlights*. Delloite. Retrieved from <https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Tax/dttl-tax-koreahighlights-2023.pdf>
- Editorial. (2020, February). *Subsidies for Farmers in India for Selected Machinery*. Retrieved from Grain Mart: <https://www.grainmart.in/news/subsidies-for-farmers-in-india-for-selected-machinery/>
- Finance Division, Ministry of Finance. (2024). *Bangladesh Economic Review 2024*. Dhaka: Finance Division, Ministry of Finance. Retrieved from https://mof.portal.gov.bd/sites/default/files/files/mof.portal.gov.bd/page/f2d8fabb_29c1_423a_9d37_cdb500260002/BER_2024_11.%20Chapter%202_Eng_U.pdf#:~:text=According%20to%20the%20provisional%20estimate%20for%20FY,51.05%20percent%20in%20the%20previous%20f
- Financial Express. (2021). *Agro-based industries get 10-year tax exemption*. Retrieved from Financial Express: <https://thefinancialexpress.com.bd/economy/bangladesh/agro-based-industries-get-10-year-tax-exemption-1622741148>
- German Federal Ministry of Finance. (2021). *Income Tax Act (EStG)*. German Federal Ministry of Finance. doi:https://www.bzst.de/SharedDocs/Downloads/EN/Withholding_taxes/section_49_EStG.pdf?__blob=publicationFile&v=1
- Global Trade Alert. (2018). *China: Export tax rebates on 397 products to increase*. Retrieved from Global Trade Alert: <https://www.globaltradealert.org/intervention/62918/tax-based-export-incentive/china-export-tax-rebates-on-397-products-to-increase>
- Guo, G. (2021). *What is VAT? A Comprehensive Guide to Value-Added Tax*. Retrieved November 30, 2024, from Koho: <https://www.koho.ca/learn/what-is-value-added-tax/>
- Han, W., Wang, X., Geng, N., & Wang, X. (2013). Investigation of the Contribution Rate of Agricultural Mechanization to Agricultural Production Using Cobb-douglas Model. *Information Technology Journal*.

Hossen, M. A. (2019). Mechanization in Bangladesh: Way of Modernization in Agriculture. *International Journal of Engineering Trends and Technology*, 69-77. Retrieved from <https://ijettjournal.org/Volume-67/Issue-9/IJETT-V67I9P212.pdf>

Huld, A. (2023, August). *China's Tax Incentives for the Manufacturing Sector in 2023*. Retrieved from China Briefing: <https://www.china-briefing.com/news/china-preferential-tax-policies-for-manufacturing-sector/>

India Filings. (2019, December). *Export Promotion Capital Goods – EPCG Scheme*. Retrieved from India Filings: <https://www.indiafilings.com/learn/export-promotion-capital-goods-epcg-scheme/>

Inspira. (2019). *Market Analysis of the Agricultural Machinery and Spare Parts Manufacturing and Light Engineering Sector in Bangladesh*. Dhaka: Inspira Advisory & Consulting Ltd.

International Trade Administration. (2023, June). *Nigeria - Country Commercial Guide*. Retrieved from International Trade Administration: <https://www.trade.gov/country-commercial-guides/nigeria-agribusiness#:~:text=Agricultural%20tractors%20imported%20as%20complete,import%20duty%20and%207.5%25%20VAT.>

KLRI. (2024). *Agriculture - By Legal Field*. Retrieved November 30, 2024, from Korean Legislation Research Institute: https://elaw.klri.re.kr/eng_service/lawTotalSearchPart.do?pCode=02

Light engineering sector's dev stressed for growth. (2025, September 20). *New Age*. Retrieved from: <https://www.newagebd.net/post/trade-commerce/276621/light-engineering-sectors-dev-stressed-for-growth#:~:text=%27Backward%20linkage%20development%20could%20reduce,at%20the%20two%20day%20fair.>

LightCastle Partners. (2023, May 30). *Agricultural Mechanization Landscape of Bangladesh: Access to Finance a Significant Barrier*. Retrieved from LightCastle Partners: <https://lightcastlepartners.com/insights/2023/05/agricultural-mechanization-bangladesh/>

Loon, J. V., Woltering, L., Krupnik, T. J., Baudron, F., Boa, M., & Govaerts, B. (2020). Scaling agricultural mechanization services in smallholder farming systems: Case studies from sub-Saharan Africa, South Asia, and Latin America. 180, 102792. doi:<https://doi.org/10.1016/j.agsy.2020.102792>

Mankiw, N. G. (1991). *Principles of Microeconomics*. South-Western Pub.

MoA. (2020, October). *National Agricultural Mechanization Policy 2020*. Retrieved from Ministry of Agriculture, Government of the People's Republic of Bangladesh: https://dae.portal.gov.bd/sites/default/files/files/dae.portal.gov.bd/policies/c940594d_3ca5_4665_b390_ace578255853/2021-08-25-06-05-7b2382934f7fa3773586d4084061cd04.pdf

MoF India. (2024). *GST on Agricultural Equipment: Government's Stance & Rates*. Retrieved from TaxGuru: Complete Tax Solution: <https://taxguru.in/goods-and-service-tax/gst-agricultural-equipment-governments-stance-rates.html>

Mueller, B., & Mueller, C. (2016). The political economy of the Brazilian model of agricultural development: Institutions versus sectoral policy. *The Quarterly Review of Economics and Finance*, 12-20. doi:<https://doi.org/10.1016/j.qref.2016.07.012>

Naifu, R. F. (2021, June 19). Why is farm mechanization in Bangladesh not gaining momentum? *Dhaka Tribune*. Retrieved from Dhaka Tribune: <https://www.dhakatribune.com/others/250094/why-is-farm-mechanization-in-bangladesh-not>

NBR. (2024). *National Customs Tariff, FY:2024-2025*. Dhaka: National Board of Revenue, Government of the People's Republic of Bangladesh. Retrieved from https://customs.gov.bd/files/TRF_2024_2025_06062024.pdf

NBR. (n.d.). VAT FAQ. Retrieved from National Board of Revenue, Bangladesh: <https://nbr.gov.bd/faq/vat-faq/eng>

Pranto, P. (2023). *Agricultural Mechanization Landscape of Bangladesh: Access to Finance a Significant Barrier*. LightCastle Partners.

PWC. (2023, May). *South Africa: Overview*. Retrieved from PWC: <https://www.pwc.co.za/en/publications/vat-in-africa/south-africa-overview.html>

Rahman, M. M., Ali, M. R., Oliver, M. M., Hanif, M. A., Uddin, M. Z., Hasan, T. U., . . . Moniruzzaman, M. (2021). Farm mechanization in Bangladesh: A review of the status, roles, policy, and potentials. *Journal of Agriculture and Food Research*, 6, 100225. doi:<https://doi.org/10.1016/j.jafr.2021.100225>

Robin, T. A. (2023, August 2). Full-scale farm mechanization in Bangladesh: a long way to go. Retrieved from *The Financial Express*: <https://thefinancialexpress.com.bd/views/views/full-scale-farm-mechanization-in-bangladesh-a-long-way-to-go>

Samuelson, P. (2004). *Microeconomics*. McGraw-Hill Companies.

Santana, C. A., & Nascimento, J. R. (2012). *Public Policies and Agricultural Investment in Brazil*. Brazil: Food and Agriculture Organization of the United Nations: Policy Assistance Support Service (TCSP). https://www.fao.org/fileadmin/templates/tci/pdf/InvestmentPolicy/Inv_in_Br_agriculture_-_20_08_2012.pdf

Siddique, A. (2017, June). VAT on farm machinery import to hit farmers. Retrieved from *Dhaka Tribune*: <https://www.dhakatribune.com/business/22046/vat-on-farm-machinery-import-to-hit-farmers>

Appendix

Table A.1: Transcripts of KIIs

Agents	Issues	Observations	Suggestions for Remedies
AMMA-B [Date: 15 August 2024, Online]	Corruption in the Tax System (NBR)	NBR imposes 7.5% Tax Deducted at Source (TDS) and 7.5% VAT Deducted at Source (VDS) on raw material purchases. Corruption is rampant, and businesses often end up paying extra as a 'package', with part of the money unofficially going to NBR officials.	Strengthen monitoring of TDS and VDS by NBR to ensure sellers provide necessary documents. Implement a transparent system to avoid corruption.
	High Tax Rate	Businesses are subject to a 27% tax, which is considered too high for the development of the agricultural machinery sector.	Reduce the tax rate from 27% to a more reasonable level to foster growth and development in the sector.
	VAT Exemptions and Classification Issues	There is confusion in the application of VAT exemptions for combine harvesters, with authorities asking for unnecessary classifications not mentioned in the circular.	Streamline the process for VAT exemptions and clarify machine classifications to avoid confusion and delays.
	Disparity in Import Tariff for Locally Produced Machines	The government hesitates to raise import tariffs on machines that can be produced locally, citing potential harm to farmers. Local manufacturers struggle to compete with cheaper imports.	Raise import tariffs on machines that can be locally manufactured, and provide subsidies (e.g., on gas and electricity) to support local producers and level the playing field.
	Lack of Subsidies for Local Manufacturers	Local manufacturers are unable to afford advanced machinery like laser cutters due to high costs. Past subsidy schemes (e.g., for electricity) were not properly implemented, resulting in financial burdens on businesses.	Provide government subsidies (e.g., 50% of machinery costs) for essential manufacturing equipment and ensure better implementation of existing subsidy policies.
	Unfair Competition from Big Firms and Imports	Large firms like ACI Bangla Mart benefit from government projects, whilst local manufacturers do not. Local manufacturers face competition from low-quality but cheaper imported machinery, making it hard to sell their products and stay in business.	Government projects should prioritise purchasing from local manufacturers rather than importers. Introduce restrictions on the types of businesses large firms can operate in, to protect small, local producers.
	Implementation of Policies	Government policies and funds are not effectively reaching local manufacturers. Only 20 crores out of a 3020-crore fund for agricultural mechanization was allocated, but local businesses have not benefited from it.	Focus on proper implementation of policies rather than just introducing them. Ensure that allocated funds reach the intended beneficiaries.

Table A.1 contd.)

Table A.1 contd.)

Agents	Issues	Observations	Suggestions for Remedies
	Quality Differences in Imported vs Local Machinery	Imported small machines are inferior in quality but dominate the market due to their lower prices. Local manufacturers produce machines that are of equal or better quality, but they struggle to compete on price.	Introduce protective measures or restrictions on low-quality imports to give local manufacturers a fair chance in the market.
Manufacturer and Workshop Owner [Date: 2 September 2024, Bogura] [Date: 5 September 2024, Jashore] [Date: 18 September 2024, Cox's Bazar]	VAT and Tax Burden on Raw Materials	Imported items have low VAT and tax, but raw materials for local production are taxed heavily. VAT is also applied on electricity and shifted to manufacturers by ship-breakers, increasing the cost of production.	Reduce VAT and taxes on raw materials and essential services like electricity to ease the cost burden on local manufacturers.
	Difficulty Accessing Tax Breaks	Despite policies providing tax breaks, many manufacturers cannot avail these benefits. The tax authorities impose additional burdens based on transactions, including non-business-related ones, assuming they are part of the business income.	Streamline tax benefit processes and ensure authorities do not penalise businesses for unrelated transactions. Introduce clearer guidelines on calculating taxes based on actual profit margins, not arbitrary assumptions.
	High Income Tax on Sales	Authorities assume a 20% profit margin on sales and impose tax accordingly, even when businesses are making only a 5% margin, particularly due to competition from cheaper imported products.	Adjust income tax rates based on actual profit margins and not assumed ones.
	Concerns Over Raising Tariffs on Imports	Raising tariffs on imported products would increase prices for farmers, impacting their livelihoods. However, a tariff on imported spare parts could help local manufacturers if done carefully.	Implement balanced tariffs that protect local manufacturers without placing a heavy financial burden on farmers.
	Quality Standards for Local Production	Local products need improvements in quality to compete with Chinese imports, especially in terms of using high-grade metals like manganese and chrome.	Establish clear quality standards for local production and invest in upgrading technology and training to improve product quality.
	Taxation Harassment and Corruption	Manufacturers face sudden tax inspections and harassment, with demands for bribes to avoid penalties.	Introduce a gradual and transparent tax inspection process, overseen by third-party authorities to minimise corruption and harassment.

Table A.1 contd.)

Table A.1 contd.)

Agents	Issues	Observations	Suggestions for Remedies
Raw Materials Supplier [Date: 5 September 2024, Jashore] [Date: 18 September 2024, Cox's Bazar]	VAT and Taxes in the Raw Material Supply Business	The respondent pays annual taxes through the bank and for transportation via challan, but no sales tax or VAT is applied to their business. Yearly expenses also include trade license renewal, costing between BDT 15,000 and 20,000, depending on business size.	No specific suggestions provided, but minimising bureaucratic costs like trade licence renewal could help reduce financial burdens.
	Price Determination for Raw Materials	Prices are set by the factories from which raw materials are purchased, usually communicated through SMS or phone calls. Price fluctuations are based on the international market rather than VAT or local tariffs.	
	Impact of VAT Reduction on Imports	The respondent believes that a reduction in VAT or tariffs could lead to lower prices from shipbreaking firms, potentially benefiting raw material suppliers.	Lower VAT or tariffs on the shipbreaking industry could reduce raw material prices, benefiting suppliers and end users.
Importer (Lead Firm) [Date: 2 September 2024, Bogura] [19 September 2024, Dhaka]	High Import Tariffs on Spare Parts	Import tariffs for large machinery like tractors and harvesters are relatively low (around 6%), but tariffs on spare parts are very high, ranging from 45-55%, creating financial burdens for farmers who need to purchase parts.	Reduce import tariffs on spare parts to make them more affordable for farmers and to encourage maintenance of machinery, which is crucial for sustainable farming operations.
	Lack of Domestic Production of Large Machinery	Domestic production is limited to small-scale machinery (threshers, power tillers) due to technological and infrastructure limitations. There is no domestic production of advanced large-scale machinery like combine harvesters or tractors.	Invest in building local manufacturing capacity for large-scale machinery through government support, especially in critical areas like design, testing, and capacity building to reduce reliance on imports.
	Government Subsidies on Agricultural Machinery	The government provides subsidies of 50% for machinery like power tillers and combine harvesters, with 70% subsidies in coastal areas, encouraging mechanization.	Continue and expand government subsidies to further promote mechanization across the country, ensuring that farmers have access to affordable machinery.
	Impact of Increasing Import Tariffs on the Market	Increasing tariffs on imported machinery could deter farmers from purchasing essential equipment due to the higher costs, ultimately reducing the rate of mechanization.	Maintain balanced tariff levels to avoid deterring farmers from purchasing agricultural machinery. Removing or reducing tariffs in specific areas would make it easier for farmers to invest in mechanization.

Table A.1 contd.)

Table A.1 contd.)

Agents	Issues	Observations	Suggestions for Remedies
	Alternative Tax Policies for Agricultural Mechanization	Current taxes within the supply chain are too high, limiting the adoption of machinery by farmers. Eliminating taxes could help reduce machinery prices and increase the mechanization rate, crucial for ensuring food security.	Remove or reduce taxes across the agricultural supply chain to make mechanization more affordable for farmers and boost local food production.
	Price Comparison Between Domestic and Imported Products	No major domestic producers exist for large machinery, making comparisons impossible. Small local machines are outdated and cater only to niche markets, whilst imported products, though expensive, offer advanced technology and better efficiency.	Encourage the production of modern and advanced agricultural machinery domestically through government support and technology transfer programs to reduce dependency on imports.
	Quality of Domestic vs Imported Machinery	Imported machinery tends to outperform locally produced small-scale equipment, which is based on outdated technologies, in terms of efficiency and quality.	Improve the quality of domestic machinery by investing in modern technology and upgrading manufacturing standards to match global competition.
	Barriers to Domestic Competitiveness	Limited demand for locally produced large-scale machinery, coupled with a lack of support in areas like design, testing, and heat treatment, makes domestic production unfeasible on a large scale.	Government investment is required to develop the supply chain system, including facilities for design, testing, and capacity building, to enhance the competitiveness of domestic machinery producers.
BEIOA (Bangladesh Engineering Industry Owners' Association) [Date: 20 August 2024, Dhaka]	Tax Exemptions on Imported Agricultural Machinery	Tax exemptions on imported agricultural machinery allow for irregularities, where non-exempt items are often smuggled in along with exempted items.	Overturn the current tax exemptions for imported machinery and apply higher tax rates (2%, 5%, 10% or more). Ensure better regulation and vetting during imports to prevent illegal activities.
	VAT on Domestic vs Imported Machinery	VAT on domestically produced capital machinery is significantly higher compared to imported machinery, discouraging local production.	Revise the policy structure to lower VAT on domestically produced machinery to encourage local manufacturing.
	Quality and Common Facility Centre for Raw Materials	There is no significant analysis of raw material quality, and raising customs duties on imports doesn't necessarily improve the quality of domestic products.	Create a Common Facility Center for raw material analysis to ensure better quality control in local manufacturing.
	Encouraging Farmers to Adopt Agricultural Mechanization	Farmers need to be trained and efficient in using modern agricultural technologies. Current subsidies are not effectively targeted at those who can best utilise the mechanization.	Provide subsidies only to farmers who are proficient in agricultural mechanization and improve training facilities for farmers.

Table A.1 contd.)

Table A.1 contd.)

Agents	Issues	Observations	Suggestions for Remedies
	Price Difference Between Domestic and Imported Goods	Domestically produced goods are about 20% more expensive due to the high cost of raw materials, especially iron, which is not available locally. However, this does not always mean imported goods are of better quality.	Highlight the quality advantages of locally produced goods like cylinder liners and promote the domestic industry by addressing raw material cost issues.
	Improving the Quality of Domestic Goods	Lack of modern technology adoption and inadequate training are key challenges in improving the quality of domestically manufactured goods.	Invest in modern technology and training for manufacturers. Offer tax exemptions for small industries and encourage exposure to international workshops to learn best practices and apply them in Bangladesh.
BAU Professor [Date: 8 July 2024, Online]	High Tariff on Raw Materials, Low Tariff on Imported Machines	Domestic agro-machine production is hindered by high tariffs on raw materials, making locally produced machinery 1.5 times more expensive than imported ones. Imported machinery, often unsuited for local use, has a low tariff.	Reduce tariffs on raw materials for local production. Introduce a Test Certificate for imported machinery to ensure they are suitable for use in Bangladesh.
	Impact of Raising Import Tariffs	Increasing tariffs on imported machinery will hurt farmers, slowing the adoption of agricultural mechanization, as the cost of machines like combined harvesters (currently BDT 30-35 lakh) will rise.	Maintain lower tariffs on imported agricultural machinery for the next 5-10 years to encourage mechanization. Instead of raising tariffs, offer soft loans to domestic producers to lower manufacturing costs.
	Challenges in Local Production of Big Machinery	Bangladesh only produces small machinery like threshers or engine parts. Big machinery such as tractors and combined harvesters are imported, and increasing tariffs will further slowdown mechanization.	Provide financial support, such as soft loans, to domestic producers and farmers. This would help manufacturers lower their production costs and encourage the use of locally produced machinery.
	Alternative Fiscal Policies to Encourage Mechanization	Government provides up to 70% subsidies for agricultural machinery, but farmers still struggle to pay the remaining 30%. Soft loans for farmers or dealers could help.	Offer financial support through soft loans to farmers or dealers. One approach could be training one person per village to share resources and knowledge.
	Standard Testing Procedures for Machinery	There is no standard testing procedure for either imported or domestic machinery, leading to a lack of quality control.	Establish standard testing procedures for both domestic and imported machinery to ensure consistent quality, helping buyers identify reliable products and encouraging manufacturers to produce higher-quality machinery.

Table A.1 contd.)

Table A.1 contd.)

Agents	Issues	Observations	Suggestions for Remedies
	Mechanization in Fisheries and Livestock	The livestock sector is not mechanised, whilst fisheries use auto feeders, which are fully imported.	No specific remedy provided for fisheries and livestock mechanization
	Role of Workshops in Local Production	In Bangladesh, agro-machinery is mostly produced by workshops rather than large manufacturers. High-quality spare parts are produced domestically and exported, but larger machines like combined harvesters are manually produced and lack advanced technology.	Support workshops with access to better technology and capital to improve the quality of their products and invest in developing high-quality domestic products for export markets.
National Board of Revenue (NBR) Officials [Date: 9 July 2024, In-person, Dhaka]	Tax/VAT Decision-Making	NBR does not directly set tax/VAT rates but relies on suggestions from various ministries and business associations.	Continue involving sector-representative organisations to ensure tax policies consider all perspectives.
	Monitoring Use of Tax-Exempt Products	Customs house sends a letter to the VAT commission, which monitors if tax-exempted products are used for intended purposes.	Improve coordination between customs and the VAT commission for more effective monitoring of product usage compliance.
	HS Codes for Agro-Machineries	The HS code system could be modified at the last two digits for sector-specific benefits, subject to ministry approval.	Propose changes to the last two HS code digits to allow tax exemptions for products critical to the agriculture sector.
	Tariffs on Imported Agricultural Machinery	Increasing tariffs on imports can protect local production but may also negatively impact consumers.	Carefully evaluate tariff increases to balance support for local industry with consumer cost concerns.
	Bureaucratic Simplification	National Single Window will integrate 35 departments across ministries to streamline processes for local businesses. Currently seven agencies are brought under the window (Standard, The Business, 2025).	Expedite the implementation of the National Single Window initiative to reduce bureaucratic hurdles for local businesses.
	Bonded Warehouse Facility for Agriculture Sector	Bonded warehouses benefit export-focused industries like RMG; thus, they are not applicable to non-export sectors like agriculture machinery.	Consider alternative forms of support for non-export industries such as targeted tax relief or subsidies for raw materials.
	Process for Tariff Exemptions	Business associations negotiate with the government to secure tariff exemptions for their members.	Encourage agricultural machinery sector businesses to work with associations to communicate their needs effectively.

Table A.1 contd.)

Table A.1 contd.)

Agents	Issues	Observations	Suggestions for Remedies
Machine Service Provider [Date: 05 September 2024 Jashore] [Date: 18 September 2024; Cox's Bazar]	Impact of High Tariff Rates	If import VAT/tariff rises, it will affect the MSPs as they are the major buyer of agro-machineries. Higher tariffs will increase product costs, which companies will pass on to MSPs.	Tariff should be kept lower.
	After-sales service (Local vs Imported)	Imported machines come with 6 months to 1-year after-sales service, but there is a shortage of mechanics, leading to service delays from the importers. They find the after-sales service more helpful in the case of local producers, but the price of the local machineries are higher and sometimes they don't find good quality machines from the local producers.	No specific remedies suggested except for probing better quality after-sales service of the importers.
	Price and Quality difference (Domestic vs Imported and Intra-imported products)	Chinese products have shorter lifespans and require more maintenance compared to Japanese products. The Japanese products last long but they are very expensive. Local machines are cheaper, and Chinese products are cheaper than Japanese. They are unaware of the quality of the local machineries.	No specific remedies suggested
	Preference between domestic and imported products	Preference is influenced by warranty, after-sales service, and spare parts availability. I am not sure about how the preference of other MSPs. I have more local machineries than imported. Usually, the MSPs have both locally produced and imported products. I am not sure about the demand basket of the other MSPs. Local spare parts availability is 40%, and delays in spare part delivery.	Ensure better availability of spare parts in the local market and reduce delays in delivery.
	Types of machines used	Machines include Rice transplanter, Ripper, Chopper, Seed Sower (BIRRI), Tractor, Power tiller. These are bought mostly from ACI and Alim Industries.	No specific remedies suggested
Ministry of Agriculture (MoA)	Help for farmers in agri mechanization	Subsidies of 30-70% on machinery for haor and coastal areas. Agricultural officers and UNOs collaborate to implement this initiative.	No specific remedies suggested but the process can be automated slowly.
	Types of machinery used	Combined harvesters are effective for flash flood areas. Farmers use tractors, power tillers, buried pipes for irrigation, and reapers to address labour shortages.	No specific remedies suggested

Table A.1 contd.)

Table A.1 contd.)

Agents	Issues	Observations	Suggestions for Remedies
	Government support for integration of machinery	Government provides subsidies on machinery, free seeds, and fertilisers. Regular cost of a combined harvester is 20 lakh BDT, with a subsidy of 30-70%.	No specific remedies suggested
	Process for receiving incentives	Area representatives submit lists of eligible farmers to the upazila agricultural office, which approves them and monitors the process.	No specific remedies suggested
	Machine leasing programmes	BADC previously ran a machine leasing project, but machines are now in poor condition, and the project is likely discontinued. BADC is now focused on irrigation canals.	No specific remedies suggested
	No government financing facilities for machine producers	Government provides machinery for farmers for free across all regions, but no projects for machine manufacturers exist.	No specific suggestions and the needs of the machine manufacturers are not properly channelled to the MoA.
	Advancements in the fisheries sector	The fisheries sector in Bangladesh has advanced in the adoption of technologies like aerators and automated machines. Aerators are mostly produced locally, with quality competitive globally. Technologies such as Recirculatory Aquaculture System (RAS) and Bottom Cleaning Technology have been adopted to modernize the sector.	
Bangladesh Fish Research Institute (BFRI) [Date: 2 September 2024, Bogura]	Import dependence on machinery	Some essential machinery required for the fisheries sector is still imported, but Bangladesh has gradually developed a domestic manufacturing base. However, the local production of machineries is still small in amount.	
	Quality of locally produced machinery	Locally produced aerators and machinery are of a high standard and comparable to imported machines.	Standardisation is needed.
	Challenges for expanding domestic manufacturing	Several challenges hinder the creation of a robust domestic manufacturing base, such as inadequate communication, reliance on outdated technologies, and lack of technological awareness.	Improve communication among stakeholders to boost collaboration. Encourage technological awareness and adaptability. Focus on improving infrastructure for efficient production.

Table A.1 contd.)

Table A.1 contd.)

Agents	Issues	Observations	Suggestions for Remedies
	Obstacles to domestic manufacturing growth	Lack of effective communication, continued use of primitive technologies, limited technological awareness, poor infrastructure, and absence of export channels for fishing machinery.	Improve infrastructure, establish export channels for machinery, and promote technology awareness to help scale up the domestic manufacturing industry.
Manufacturer and Dealer [Date: 2 September 2024, Bogura]	Dependence on domestic raw materials	The local manufacturer sources all its raw materials from domestic markets, avoiding imports. The products are modelled after Chinese designs, with a small difference in quality.	
	Price variation of the raw materials depending on the payment methods	The prices of raw materials differ based on the payment mode. If you purchase with liquid money or current cash, it costs less. The raw material suppliers declare a quote for both cash and credit scheme.	Decreasing tax of the manufacturers will give them a bit more cash support that they can use to buy raw materials by paying cash, which will cost less. That will decrease the price of the machineries that they produce and that will increase their competitiveness in the market.
	Durability of Bangladeshi products	Local products are more durable and long-lasting compared to Chinese imports, despite a slight quality difference. However, they need more advanced Chinese products to replicate the design and the structure of the advanced machineries.	Does not discourage import for this purpose. However, there should be a control over the imported quantity.
	VAT exemption and future obligations	The manufacturer has benefited from VAT exemption but will be required to pay VAT starting in 2025. They responsibly ensure taxes are paid through bank transactions.	
	Labour shortage	A critical concern for the business is the labour shortage. Even with significant investment, the sector cannot thrive without sufficient labour.	If the tax paid by the manufacturer can be deducted, they can use that money to increase the wage of the workers which can attract skilled workers.
	Lack of government support	Despite being a local business, the manufacturer has not received any support from the government, which could ease financial burdens.	Provide more government support to local businesses, including financial aid or subsidies or tax breaks.
	Shrinking profit margins	The business's profit margins have been shrinking, though taxes have not significantly impacted them. They now rely more on NGO financing for better loan terms and longer repayment periods.	Offer more favourable financing terms through banks and other institutions or reduce bureaucratic hurdles for easier access.

Table A.1 contd.)

Table A.1 contd.)

Agents	Issues	Observations	Suggestions for Remedies
Ministry of Commerce [Date: 01 September 2024]	Lack of focus on agricultural machinery in light engineering sector initiatives	The Ministry of Commerce is focused on enhancing the light engineering sector as part of the Export Competitiveness for Jobs (EC4J) project, which is funded by the World Bank. However, whilst the light engineering sector is a priority, there is no specific mention of agricultural machinery in the TRIPS framework. This gap limits the potential to directly promote the growth of the agricultural machinery industry within the broader initiative.	Introduce targeted policies under the EC4J project that specifically focus on agricultural machinery. This would ensure the sector benefits directly from the technological advancements and technology transfer provisions under TRIPS, supporting agricultural mechanization.
	Insufficient implementation of Article 66.2 of TRIPS for agricultural machinery	The TRIPS Agreement, particularly Article 66.2, encourages technology transfer to the least developed countries (LDCs), including Bangladesh. However, whilst the light engineering sector benefits from these provisions, the agricultural machinery sector is not specifically targeted. This limits opportunities for advancing agricultural mechanization through technology transfer.	Focus on integrating agricultural machinery within the TRIPS framework by pushing for specific technology transfer initiatives in this sector. This would help Bangladesh modernise its agricultural practices and improve the competitiveness of its agricultural machinery industry.
	Limited emphasis on agricultural mechanization in export diversification efforts	The EC4J project is focused on export diversification, particularly through the light engineering sector, but agricultural machinery is not a highlighted focus. Agricultural mechanization is crucial for modernising farming and enhancing productivity, yet it is not receiving as much attention in export diversification strategies.	Broaden the scope of export diversification efforts to include agricultural machinery. This would help position Bangladesh as a competitive exporter of agricultural machinery, furthering the development of the agricultural sector.
	Lack of competitiveness in agricultural machinery industry	Agricultural mechanization is key to increasing agricultural productivity and ensuring food security in Bangladesh. However, the agricultural machinery industry faces challenges in becoming competitive, including the lack of technological advancements and limited access to global markets.	Invest in research and development for agricultural machinery within the light engineering sector, with a particular focus on innovation and adaptation to local agricultural practices. This will increase the competitiveness of Bangladesh's agricultural machinery industry both locally and internationally.

Table A.1 contd.)

Table A.1 contd.)

Agents	Issues	Observations	Suggestions for Remedies
	Insufficient focus on agricultural mechanization as a strategic priority	Agricultural mechanization is crucial for modernising farming and ensuring sustainability, but it is not receiving sufficient focus within national strategic initiatives like the EC4J project. The light engineering sector is critical, but it does not adequately address the specific needs of agricultural machinery production.	Make agricultural mechanization a central focus of national initiatives, aligning it with other strategic priorities. This will foster the development of machinery that meets the demands of modern agriculture and contribute to overall sector growth.
	Dependence on imports for agricultural machinery	Bangladesh relies heavily on imports for agricultural machinery, which increases costs and limits local industry growth. The development of the local agricultural machinery sector has not been sufficiently prioritised in national policies and projects like EC4J. The government has no choice but to rely on imports because otherwise the domestic demand will not satisfy.	Remedy: Develop policies that encourage local production of agricultural machinery. This could include offering incentives for domestic manufacturers and promoting technology transfer to improve local manufacturing capabilities.
Dealer [Date: 05 September 2024, Jashore] [Date: 18 September 2024; Cox's Bazar]	Limited availability of agricultural machinery and spare parts prior to the projects	The dealer primarily sells spare parts for tractors, harvesters, thresher machines, and chopper machines. Previously, these machines were not available locally. The dealer started working with harvesters and expanded their offerings after the CSISE-MEA and iDE projects. They purchase parts from local manufacturers and workshops, providing a key role in the supply chain.	Increase the availability and accessibility of agricultural machinery and spare parts by supporting local manufacturers and facilitating direct imports.
	Reliance on both local and imported sources for machinery parts	The dealer sources parts from both local manufacturers (e.g., Rajshahi, Jashore, Bogura) and imports, with partnerships with major brands like ACI and Abedin. The dual sourcing system helps ensure a steady supply of parts but may be susceptible to supply chain challenges and price fluctuations.	Strengthen partnerships with reliable local manufacturers and explore more direct import options to ensure price stability and availability.
	No direct involvement in VAT or tax payments	The dealer does not pay VAT or tax directly, as these are handled by the larger importing companies. The dealer only requires a trade licence and TIN certificate for operations. This setup may lead to gaps in transparency and regulation enforcement at the retail level.	Ensure that smaller dealers are informed and encouraged to comply with tax regulations. Consider training or guidance on tax responsibilities for dealers, helping to establish a more structured and regulated retail environment.

Table A.1 contd.)

Table A.1 contd.)

Agents	Issues	Observations	Suggestions for Remedies
	Ensuring compliance with trade license regulations	Most dealers in Cox's Bazar have obtained trade licences, ensuring some level of formalisation in the industry. This is a positive sign of regulatory compliance and business legitimacy within the sector.	Continue to encourage dealers to formalise their operations by maintaining trade licences and explore ways to incentivise smaller dealers to meet the required standards.
	Seasonal fluctuations in customer payments	Customers generally pay for products either in cash or credit, with payments typically coming after the harvest season when they have sold their crops. This seasonal payment cycle can create cash flow issues for dealers.	Consider offering flexible payment plans for customers, such as instalment-based payments or deferred payment options.
Ministry of Industries (Mol) [Date: 01 September 2024, Dhaka]	Indirect involvement in agricultural mechanization projects	The Ministry does not directly implement agro-mechanization initiatives but plays a supporting role through policies like the Light Engineering Policy 2022 and SME Policy 2019. These policies indirectly benefit the mechanization sector by promoting technological modernisation, industrial clusters, and improving access to finance for small-scale producers.	Strengthen the direct involvement of the Ministry in agro-mechanization projects by creating specialised programmes within the Light Engineering Policy and SME Policy specifically targeting the mechanization needs of the agriculture sector.
	Limited awareness, lack of collateral, and coordination issues	The Ministry acknowledges several challenges, including limited awareness among stakeholders, lack of collateral among small manufacturers, and coordination issues between various government and non-government entities.	Enhance awareness and capacity-building programmes through workshops and outreach campaigns, specifically focusing on the importance of mechanization in agriculture.
	No involvement with taxation	The ministry states that they do not have any relationship or involvement with taxation in this sector and they follow what the NBR and the other ministries decide for them.	No specific remedies suggested
	Need for more SME capacity-building and support mechanisms	The Ministry recognises the importance of strengthening the capacity of SMEs involved in mechanization but suggests that current initiatives may not be sufficient. SMEs often lack the resources, technical knowledge, and business skills to expand or modernise their operations.	Implement more targeted training and mentorship programmes for SMEs in the mechanization sector. These programmes could focus on improving technical capabilities, financial management, and marketing strategies.

Source: Authors' compilation from KIIs.

This report presents a pioneering analysis of the fiscal and structural barriers constraining Bangladesh's agro-mechanization sector. It reveals how tariff distortions cause local manufacturers to bear a heavier fiscal burden, whilst importers of finished machinery benefit from lower duties. As a result, domestic producers struggle to grow and compete in the market. Drawing on extensive field consultations and comparative insights from China, India, South Korea, and Germany, the study uncovers how imperfect market structures, bureaucratic inefficiencies, and fragmented fiscal coordination undermine policy goals. Offering a holistic reform roadmap, the report calls for recalibrating tax and tariff structures, improving access to inputs through targeted subsidies and bonded warehouses, and introducing stronger coordination across government agencies. With its evidence-based approach linking macroeconomic perspectives to ground-level realities, this study provides actionable guidance for policymakers and industry stakeholders seeking to unlock sustainable growth in Bangladesh's agro-mechanization ecosystem.



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