B-BRIDDHI

REPORT

ASSESSING THE AGRITECH LANDSCAPE IN

BANGLADESH

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LIST OF ACRONYMS

AAS	Agriculture and Allied Sector
ADP	Annual Development Programme
AI	Artificial Intelligence
AIC	Agritech and Innovation Centres
APMC	Agricultural Produce Market Committee
BADC	Bangladesh Agriculture Development Corporation
BAIDP	Bangladesh Agriculture Infrastructure Development Project
BARI	Bangladesh Agriculture Research Institute
BoP	Bottom of the Pyramid
DFS	Digital Financial Services
DOST	Department of Science and Technology
DSE	Dhaka Stock Exchange
ESG	Environment, Social and Governance
FAO	Food and Agriculture Organisation
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
HYV	High-yield Variety
IoT	Internet of Things
IPO	Initial Public Offering
KII	Key Informant Interview
KVKs	Krishi Vigyan Kendras
MFI	Microfinance Institutions
NGO	Non-Governmental Organisation
PAYGO	Pay-As-You-Go
PPP	Public-Private Partnerships
PSE	Private Sector Engagement
R&D	Research and Development
ROI	Return on Investment
SBL	Startup Bangladesh Limited
VAT	Value Added Tax
VC	Venture Capital

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FOREWORD

This report is presented by Biniyog Briddhi (B-Briddhi), a multi-year Private Sector Engagement (PSE) programme supported by the Embassy of Switzerland in Bangladesh and implemented in collaboration with Roots of Impact and LightCastle Partners. The programme aims to improve the lives of underserved groups in Bangladesh and increase their access to essential products and services by boosting the growth and scale of local impact enterprises. By analysing the agritech landscape in Bangladesh, B-Briddhi seeks to support the advancement of the development of impact enterprises that empower smallholder farmers, who represent some of Bangladesh's most vulnerable populations, by enhancing their productivity and resilience within an evolving agricultural landscape.

EXECUTIVE SUMMARY

The need for agritech solutions has rapidly emerged in South Asia, with recent trends indicating that this sector is no longer a peripheral consideration, but a core component of national agriculture strategies. As the agricultural landscape evolves, the integration of technology has become essential for improving productivity and ensuring sustainable practices. Nations such as India and Vietnam have showcased successful agritech models, attracting substantial investments from domestic and international sources. **These successes highlight the potential for similar advancements in Bangladesh, which is uniquely positioned due to its large agricultural workforce (45%[1]) and fragmented supply chain.** As such, agritech solutions represent a crucial pathway for modernisation, providing opportunities for farmers to enhance yields, reduce waste, and optimise resource usage.

Investment Opportunities in Bangladesh

In Bangladesh, smallholder farmers face several interconnected challenges, i.e., access to affordable credit, difficulty obtaining high-quality inputs, unstable pricing, and restricted market access. These are compounded by price volatility, heavy reliance on multiple intermediaries, and the overall fragmented nature of agricultural markets, which together reduce profitability and limit farmers' capacity to improve productivity. **As such, the agritech sector offers compelling investment opportunities, particularly in areas that can enhance smallholder farmers' productivity and market access.** Investors are increasingly aware of the potential for both financial returns and social impact, as agritech ventures have the potential to uplift rural communities.

Findings from Stakeholder Consultations

The agritech landscape in Bangladesh presents a complex interplay between the needs of entrepreneurs and the perspectives of investors. Insights gathered from Key Informant Interviews (KII) reveal themes that characterise both demand-side and supply-side experiences.

[1] Bangladesh Bureau Statistics [Link]

Demand-Side Sentiment (Agritech Entrepreneurs):

- Limited access to patient capital, especially for early-stage ventures, restricts their capacity to innovate and scale operations. **Local banks are hesitant to fund agritech ventures due to perceived risks and the lack of collateral.** Consequently, enterprises often seek international funding but face challenges related to capital repatriation. This lack of financial support is compounded by a deficit in understanding market dynamics and consumer preferences, which inhibits effective product development and alignment with market needs.
- The fragmented nature of the agricultural market presents challenges in reaching farmers effectively. **Establishing trust with farmers is essential yet challenging due to a history of exploitation by intermediaries.** There is a clear gap between the technological solutions being developed and the practical needs of farmers, necessitating a focused effort to align innovations with the specific challenges faced by the agricultural community. Although technological solutions exist, their adoption is slow due to entrenched traditional practices among farmers.
- **Lack of reliable market data and underdeveloped infrastructure further exacerbates this problem.** A lack of cold storage, absence of regulatory sandboxes, and monopolistic practices by larger conglomerates limit market access and profitability for enterprises. Additionally, regulatory complexities also pose barriers, with bureaucratic hurdles and an absence of investor friendly regulations discouraging investment.

Supply-Side Sentiment (Investors):

- Despite perceived risks associated with Bangladesh's market volatility, the overall macroeconomic outlook is positive. The growing middle class and increasing consumption create plenty of opportunities for investment. Investors adopt varying approaches based on their risk tolerance, with some focusing on long-term investments to support sustainability while others seek quicker returns through partnerships with financial institutions.
- A notable skills gap exists among entrepreneurs, with many lacking operational expertise essential for building sustainable businesses. There is a consensus on the need for structured support from accelerators and venture capital firms to help founders transition into effective CEOs capable of executing actionable business plans.
- Investors express mixed feelings about exit strategies in Bangladesh. While some see potential in private equity roll-ups and acquisitions by financial institutions, others remain cautious due to underdeveloped financial markets and challenges related to capital repatriation.
- Although Bangladesh's political and economic environment presents challenges, investors remain optimistic about the sector's potential. The importance of agritech to the broader economy offers some insulation from political shifts. Nonetheless, logistical challenges and regulatory inconsistencies are recognised as primary risks impacting business operations.
- Collaboration between agritech enterprises and financial institutions presents a promising avenue for growth. Agritech companies generate valuable data that banks can leverage to create tailored financial products, potentially resolving financing challenges in the agricultural sector.

Proposed Intervention and Priority Areas for Recommendation

As the country seeks to modernise its farming practices, leveraging blended finance can play a pivotal role in expediting the development of agritech solutions across priority areas. **By combining various types of capital, including grants, concessional loans, equity investments, and guarantees**, blended finance structures mitigate investor risk while ensuring agritech enterprises have access to the necessary funding to develop and scale. This approach can expedite initiatives in **value chain financing, crop insurance, and mechanisation** by providing the sustained support agritech enterprises require at each stage of their development, from ideation to commercialisation. Blended finance also enables greater flexibility in **subsidy schemes, regional training centres, and a centralised data platform**, which are designed to enhance farm mechanisation, improve input quality, and increase operational efficiency. To drive meaningful change from a policy standpoint, regulatory and organisational frameworks require targeted updates, **such as a centralised trade licensing platform, regulatory sandboxes, and private credit bureaus.** These reforms can cultivate a more supportive ecosystem for agritech enterprises, facilitating high-impact, scalable innovations that yield lasting benefits for farmers, communities, and the agricultural sector at large.

B-BRIDDHI
Scaling Impact Enterprises of Bangladesh

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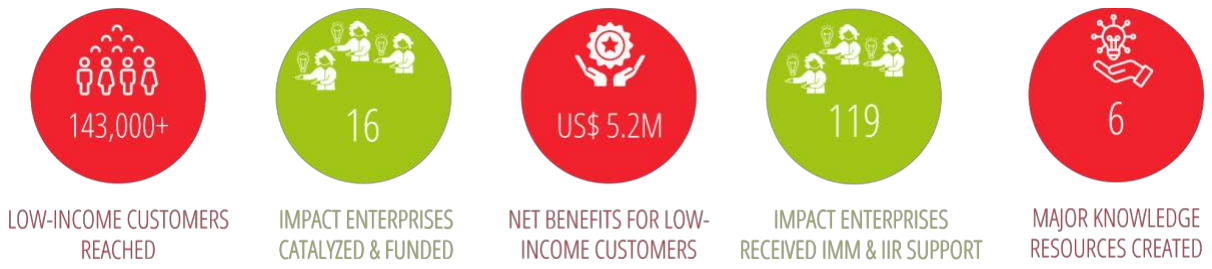
1. PROGRAMME INTRODUCTION: BINIYOG BRIDDHI

Biniyog Briddhi (B-Briddhi) is a multi-year Private Sector Engagement (PSE) supported by the Embassy of Switzerland in Bangladesh, and implemented by Roots of Impact and LightCastle Partners. The programme is structured around four key pillars:

- Pillar 1: Capacity Building - Provides targeted capacity-building support to incubators, accelerators, and impact-driven entrepreneurs, enhancing their investment readiness and strengthening their impact management capabilities.
- Pillar 2: Catalytic Funding - Offers impact enterprises and investors access to innovative financing solutions that monetise impact, creating more attractive and suitable forms of capital to drive social and environmental change.
- Pillar 3: Policy Advocacy - Equips policymakers and advocates with fresh ideas and evidence-based insights to help build a more supportive framework, mobilising capital and fostering a thriving environment for impact enterprises.
- Pillar 4: Knowledge Management - Captures and disseminates key lessons learned, generating insights to support sustainable growth across Bangladesh's impact ecosystem and empowering future initiatives.

Achievements In Phase I



The agritech landscape study highlights B-Briddhi's commitment to enhancing access to essential products and services for underserved populations in Bangladesh. By focusing on sectors that impact a significant portion of the Bottom of the Pyramid (BoP) population, such as smallholder farmers, the study aims to generate insights that can inform strategies to overcome challenges like limited access to modern agricultural technologies, financing, and reliable markets, ultimately contributing to improved productivity and income stability.

In line with the objective of the programme's fourth pillar, this report contributes to creating a foundation of knowledge that will guide effective interventions and resource allocation, supporting impact enterprises' impact on underserved agricultural communities.

2. STATE OF AGRICULTURE

Agriculture remains a critical pillar of Bangladesh's economy, ensuring food security and driving economic development. **The sector contributes approximately 11.4% to the country's GDP and employs around 45.3% of the total labour force**.[2] Despite facing numerous challenges, Bangladesh's agricultural sector has demonstrated remarkable resilience and adaptability in meeting the demands of a growing population. This chapter offers an overview of the sector's current growth trajectory and examines key obstacles that continue to limit further development.

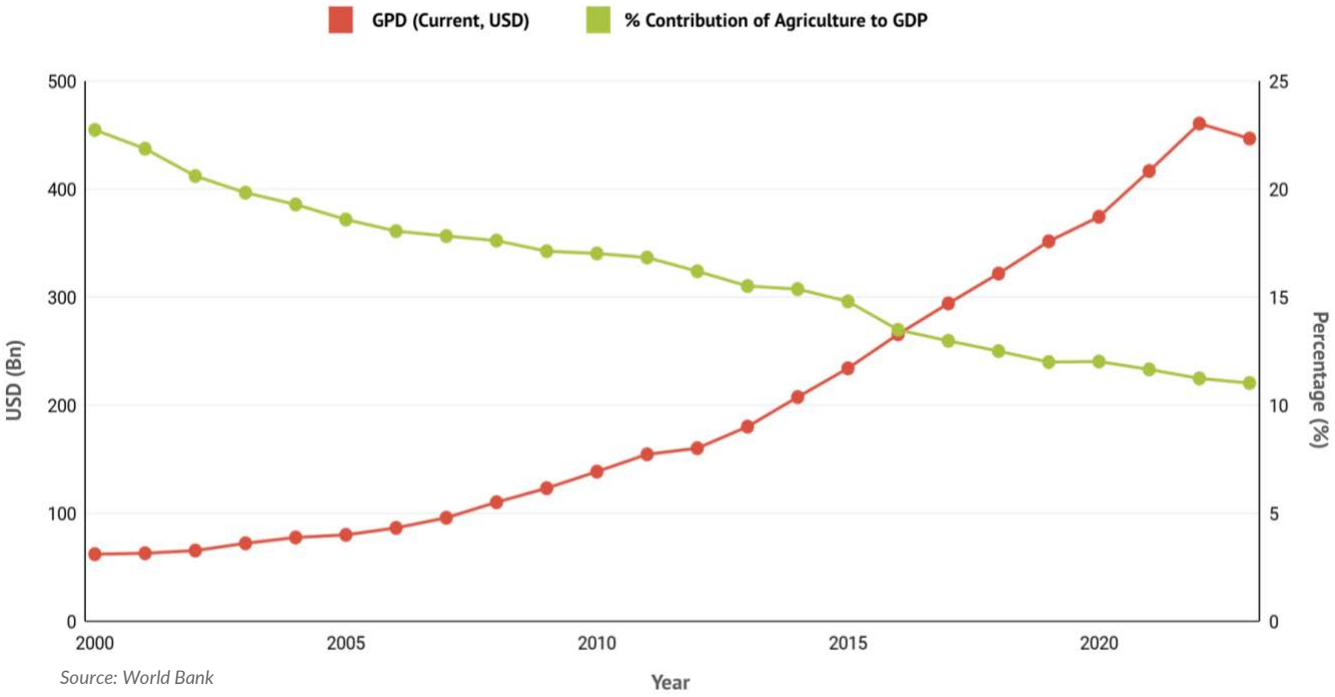
2.1. OVERVIEW OF SECTOR GROWTH

The agricultural sector in Bangladesh has steadily evolved from traditional farming methods to adopting more advanced technologies and diversified cropping systems to meet rising domestic demands. **This progress has been spurred by a combination of government initiatives, technological advancements, and the resilience of the farming community, positioning Bangladesh as a leading producer of several key crops.** The reliance on agriculture can be traced back to Bangladesh's independence in 1971 when the country faced the daunting task of feeding a rapidly growing population with limited resources in a post-conflict environment.
Agriculture, initially characterised by low productivity and a heavy reliance on rice cultivation, saw a transformative shift during the Green Revolution of the 1970s and 80s. High-yield variety (HYV) seeds, chemical fertilisers, and improved irrigation techniques[3] catalysed progress, leading to Bangladesh achieving rice self-sufficiency by 2000.

However, the sector's contribution to the country's GDP has steadily declined since then. This decrease reflects the country's broader economic transition towards industrialisation and the growth of the service sector. While the percentage of the workforce in agriculture has decreased from 67% in 2000 to 37% in 2022,[4] this shift has not kept pace with population growth, which increased from 158 Mn to 174 Mn[5] over the past decade. **As a result, the labour force is not proportionately transitioning to the industrial and service sectors, leaving agriculture still employing nearly half of the population.** The declining GDP contribution of agriculture, coupled with its large workforce, underscores a productivity gap that hinders the sector's potential for further development.

[2] Bangladesh Bureau Statistics [Link]
[3] Agriculture, Nutrition & the Green Revolution in Bangladesh, 2016 [Link]
[4] World Bank [Link]
[5] World Population Review [Link]

Figure 1: Decline of Agriculture Sector's Contribution to Current GDP (2000 – 2023)



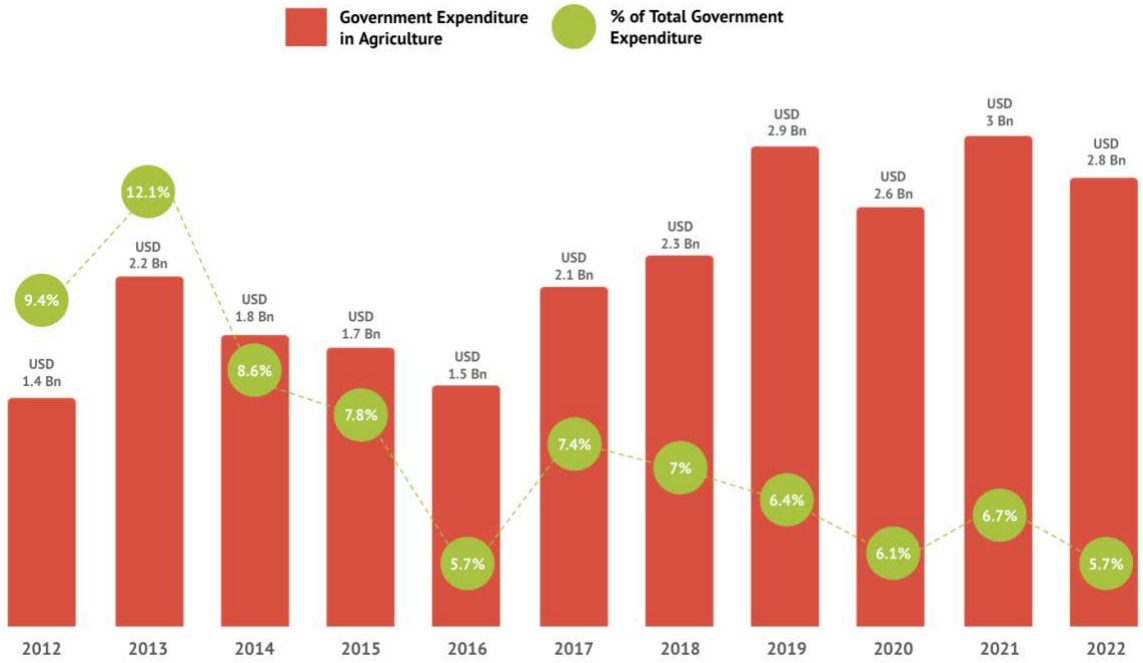
Source: World Bank

Government Expenditure In Agriculture

The FY25 budget for the agriculture and allied sector (AAS) has been reduced by 15.5% from FY24, with USD 3.9 Bn (BDT 47,332 Cr) crore allocated. This decrease, along with a drop in AAS's share of the national budget from 7.8% to 5.9%, signals a potential shift in government spending priorities. Notably, agricultural subsidies, now 36.5% of the AAS budget (down from 45.8% in FY24), have been slashed by 32.7% to USD 1.4 Bn (BDT 17,261 Cr). While this reduction may support fiscal prudence, it raises concerns about its impact on productivity, especially given the sector's reliance on key inputs like fertilisers.[6] However, the annual development programme (ADP) scope of the agriculture budget marks a 40% rise from the previous year, **an opportunity that can be seized to make space for technological solutions that tackle issues of value chain efficiency,** sector productivity and the protection of smallholder farmers who constitute a majority of the sector.

[6] Centre for Policy Dialogue [Link]

Figure 2: Government Expenditure in Agriculture, Forests & Fisheries (2012-2022)



Source: World Bank

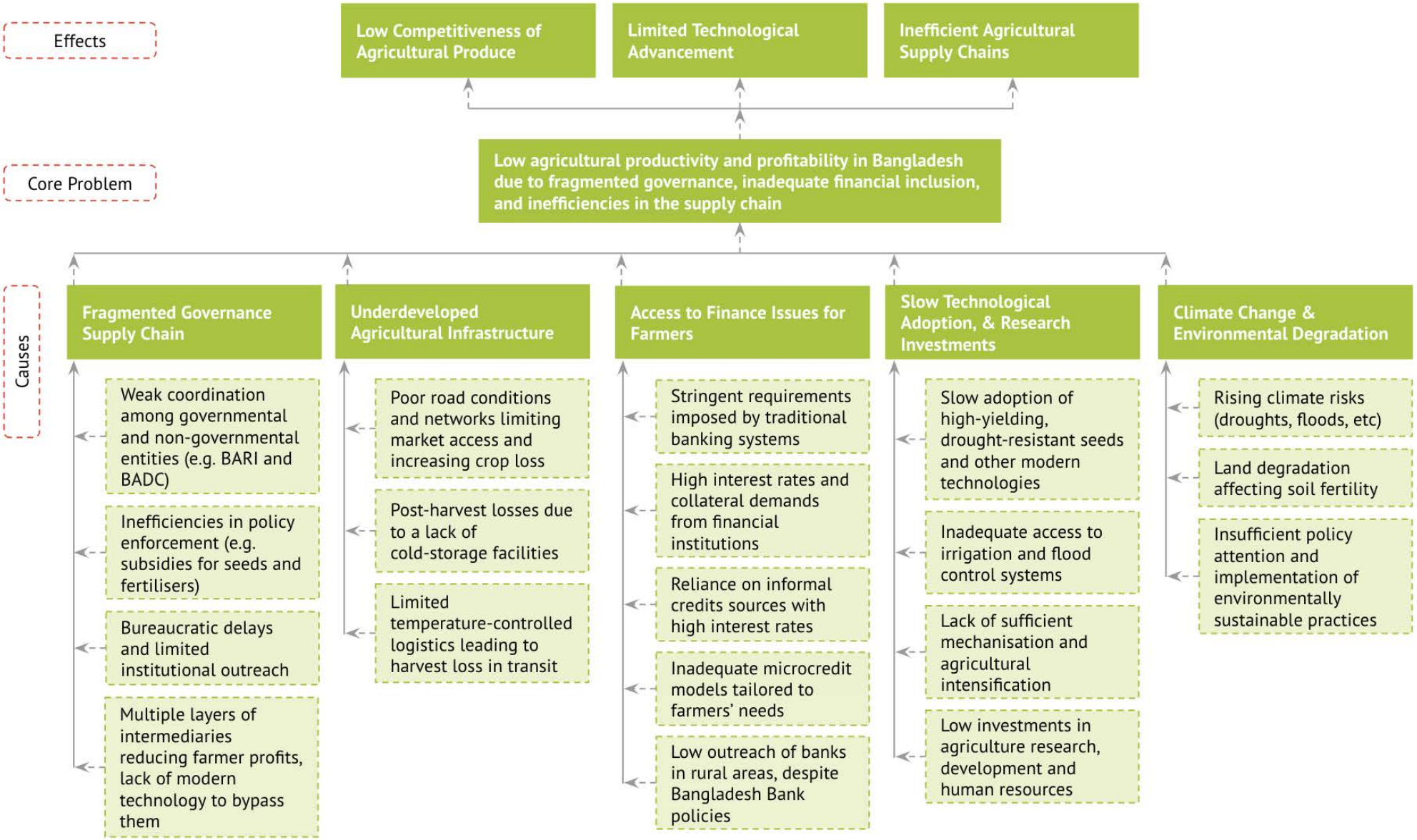
Role Of Foreign Donors

\Foreign aid has also played a key role in Bangladesh's agriculture sector since its independence. Over time, the focus of foreign aid has shifted, from immediate post-independence food security to technological advancements and climate adaptation. **In recent years, foreign aid has increasingly focused on incorporating agricultural technology and improving market access for farmers.** Despite these advancements, several challenges persist. One key issue is Bangladesh's ongoing reliance on foreign aid for certain agricultural initiatives, raising concerns about the sustainability of these programs once donor support diminishes. Additionally, despite these heavy foreign investments in agriculture development, the sector remains largely fragmented and inefficient, signalling clear underlying challenges and obstacles.

2.2. OVERVIEW OF THE SECTOR AND KEY CHARACTERISTICS

The agriculture sector faces a myriad of challenges such as climate change, land degradation, and the need for continued technological adoption to sustain productivity. Addressing these challenges is essential to maintaining the sector's vitality and its role in supporting the country's economic and social development. This section focuses on key areas of hard and soft technology disruptions to accelerate the sector's development.

Figure 3: Bangladesh's Agriculture Sector Problem Tree



Fragmented Governance and Supply Chain

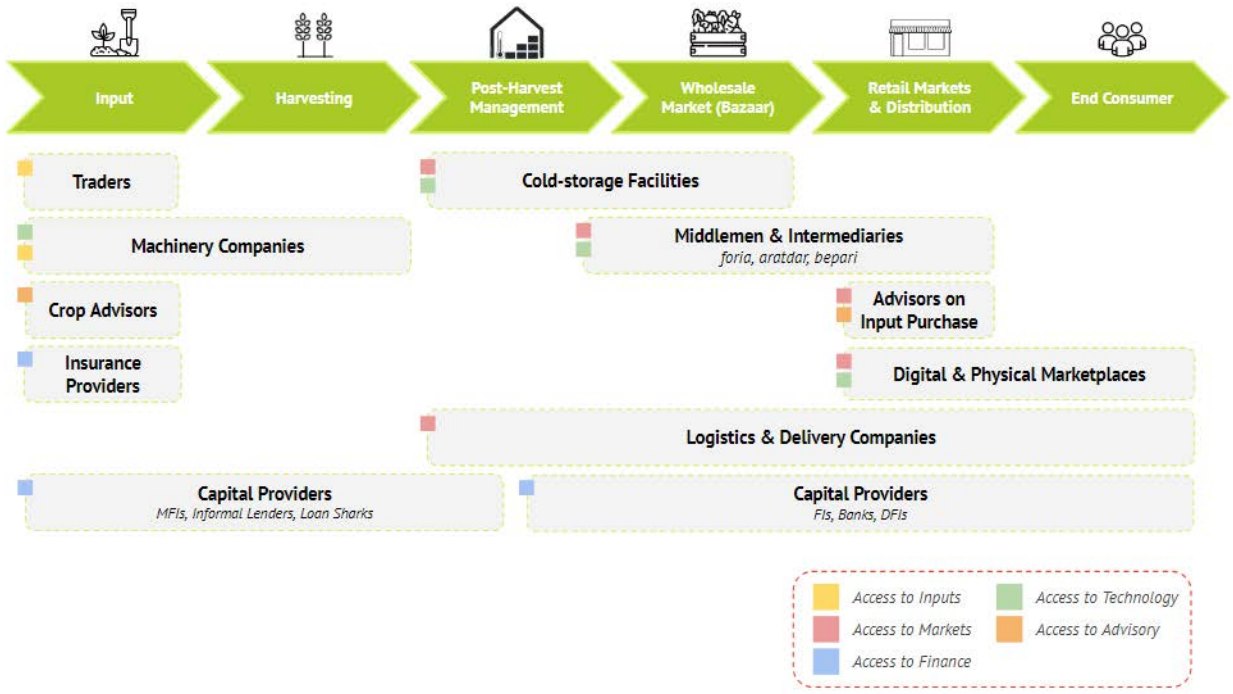
Bangladesh's agricultural sector struggles with weak governance and policy coordination, which impedes effective execution across the sector. Inadequate inter-agency collaboration has led to inefficiencies and inconsistencies, weakening the overall policy impact. This disjointed governance landscape leaves gaps between policy formulation and implementation, affecting productivity and sustainability. **The lack of a unified approach hinders key areas, such as subsidy allocation, seed quality control, and market strategy development.** Policies aimed at providing subsidies for fertilisers and seeds are inconsistently applied, failing to uniformly reach farmers, particularly those in remote areas, due to local government inefficiencies and infrastructural limitations.[7]

Bangladesh's agricultural supply chain remains fragmented, with multiple intermediary layers that reduce farmers' share of profits. These middlemen capture a large portion of the consumer price, often leaving farmers with less than 40% of the end price.[8] This impacts farmers' financial viability and reduces incentives, especially with perishable goods such as vegetables, where post-harvest losses are high.[9] The dominance of intermediaries leads to price fluctuations and operational inefficiencies, presenting a substantial opportunity for agritech interventions.

Agritech solutions such as digital platforms provide direct market access, allowing farmers to bypass middlemen, gain real-time pricing insights, and improve logistics to minimise post-harvest losses. Emerging technologies such as mobile apps that connect farmers directly to consumers or wholesalers, could disrupt traditional supply chain models, granting farmers greater control over pricing while reducing dependency on intermediaries.

[7] Asian Development Bank [Link]
[8] Asian Development Bank [Link]
[9] Dependence on Intermediaries in Agricultural Supply Chain in Bangladesh [Link]

Figure 4: Actors in Bangladesh's Agritech Value Chain



Source: LightCastle Analytics

Underdeveloped Agricultural Infrastructure

Infrastructure inadequacies severely limit agricultural productivity and access to markets, impacting the entire agriculture value chain. **Poor road conditions and limited networks hinder the movement of goods, reducing efficiency and profitability across the sector.** Efficient cold chain systems are crucial for the trade of perishable goods, both domestically and internationally, yet Bangladesh lacks a fully integrated, temperature-controlled supply chain. The current national cold storage capacity is only 2.4 Mn metric tons, significantly below the estimated need of 4.5 Mn metric tons. **This capacity shortfall leads to post-harvest losses, estimated at USD 2.4 Bn annually[10] highlighting major value losses due to inadequate infrastructure.** Without proper cold chain logistics, perishable goods suffer reduced shelf life, limiting both market reach and profitability for farmers.

A USAID study conducted as part of the Bangladesh Agriculture Infrastructure Development Project (BAIDP) in January 2019 highlighted substantial benefits for farmers and traders from improved agricultural infrastructure, including roads and collection centres. This case study, focusing on the Jessore district, involved surveys and interviews with 20 farmers and nine traders. Approximately 85% of surveyed farmers reported increased productivity, with 77% noting higher overall production. Farmers realised a 23% increase in output and a 30% rise in income, while crop damage dropped from 10% to 1%, and transportation costs fell by 67%. For traders, transaction volumes grew by 89%, and the number of buyers increased by 114%, indicating improved market access and profitability.[11]

[10] Policy Research Institute [Link]

[11] Bangladesh Agricultural Infrastructure Development Program: A Case Study [Link]

Access to Finance for Farmers

Bangladesh is a country of nearly **17 Mn farmers**[12], with the majority struggling to access necessary financial resources crucial for purchasing inputs like seeds, fertilisers, and equipment. Low levels of financial inclusion stem primarily from the stringent requirements imposed by traditional banking systems and financial institutions, including high interest rates and collateral demands that many farmers cannot meet. **Consequently, many farmers are forced to rely on informal credit sources that often charge exorbitant interest rates, further entrenching them in a debt trap.**[13]

In contrast, NGOs and Microfinance Institutions (MFIs) have a wider presence in rural regions, providing a straightforward loan application process. **Consequently, around 63.28% of farmers secure loans through these organisations.**[14] Additionally, they often target landless or near-landless farmers, overlooking the small and marginal farmers who actually cultivate land.[15] The seasonal, time-sensitive nature of agricultural operations presents additional hurdles, as the current microcredit models do not align with farmers' specific needs regarding loan amounts, timing, and repayment conditions.

To address these issues, Bangladesh Bank has implemented the **Agricultural and Rural Credit Policy and Programme**, aiming to streamline access to credit for rural farmers. **The policy mandates that banks disburse at least 50% of their agricultural loans directly to farmers, reducing the dependence on NGOs and MFIs and fostering trust with rural communities.** Under this mandate, agricultural credit disbursement amounted to USD 1.9 Bn during the July-January period of FY24, reaching 60.4% of the total disbursement target for the fiscal year. This represents a 13.2% increase compared to the USD 1.7 Bn disbursed during the same period in the previous fiscal year.[16] However, low branch numbers lead to poor national coverage of commercial banks, greatly affecting the efficiency at the implementation stage.

The lack of financial inclusion has broad implications not only for the economic well-being of farmers but also for food security in the country. **Farmers' inability to access financial resources directly impacts their ability to invest in quality inputs, adopt modern farming techniques, and thus improve their productivity and sustainability.** This financial exclusion also heightens farmers' vulnerability to external shocks, such as pest infestations, market fluctuations, and climatic changes, further threatening agricultural output and livelihoods.

Agricultural Research & Development and Market Data

Bangladesh's agricultural sector requires sustained research, development, and investment to remain competitive regionally and address evolving challenges. Currently, funding for agricultural research stands at only 0.20% of GDP, significantly lower than the World Bank and FAO's recommended 2% of GDP. [17] This underfunding restricts the ability of research institutions to develop innovative

[12] Bangladesh Bureau of Statistics [Link]
[13] Ibid
[14] Bangladesh Bureau of Statistics [Link]
[15] Crop Agriculture of Bangladesh: Challenges and Opportunities [Link]
[16] Bangladesh Bank [Link]
[17] Food and Agriculture Organisation [Link]

technologies needed to address pressing issues such as climate change, pests, and other environmental pressures. Additionally, limited R&D funding leads to inadequate market data, impacting informed decision-making in policy and on-ground application. As a result, the absence of comprehensive market intelligence makes it difficult for farmers and businesses to access timely information, leading to inefficiencies in production and distribution.

The agricultural research infrastructure in Bangladesh is not only underfunded but also lacks modern equipment essential for advanced research. This inhibits the capacity of scientists to conduct state-of-the-art research, thereby stalling innovation that is vital for improving productivity and sustainability. **There is a notable gap in the adoption and dissemination of new agricultural technologies among farmers.**[18] This gap is exacerbated by inadequate extension services that fail to bridge the research-to-field application divide. Additionally, limited research focuses disproportionately on staple crops like rice, leaving other critical crops without adequate support and innovation. There is also a shortage of skilled personnel in Bangladesh's agricultural research sector. Many researchers lack access to ongoing professional development, restricting their ability to stay updated on scientific advancements and effectively drive research. This talent gap limits the sector's capacity for growth and hinders the implementation of progressive agricultural techniques.

Fragmented coordination among government and non-government entities further complicates infrastructure and research efforts. Institutions like the Bangladesh Agricultural Research Institute (BARI) and the Bangladesh Agricultural Development Corporation (BADC) play essential roles in supplying quality seeds and inputs to farmers.[19] However, their effectiveness is hampered by limited outreach, bureaucratic delays, and insufficient resources, restricting their ability to swiftly respond to crises or modernise in line with sector needs. This results in a weaker research infrastructure, further hindering productivity and market efficiency.

Key research priorities within Bangladesh's agricultural sector focus on several key areas aimed at enhancing productivity, sustainability, and innovation.[20] These include:

1. **Genetic Resource Management and Crop Improvement:** Prioritising the development of stress-tolerant, high-yielding crop varieties.
2. **Pest and Disease Management:** Emphasis on biological control measures, bio-pesticides, and enhanced monitoring systems.
3. **Farm Mechanisation and Irrigation:** Precision farming tools, IoT-enabled irrigation systems, and drone technology present substantial opportunities to improve resource efficiency, automate labour, and enhance overall productivity.
4. **Post-Harvest Management:** Tech-driven solutions can help minimise losses, improve storage and logistics, and boost processing efficiency.
5. **Technology Validation and Market Linkages:** Digital platforms and data systems can be transformative, improving market access and ensuring new technologies reach farmers effectively.

[18] Crop Agriculture of Bangladesh: Challenges and Opportunities [Link]
[19] Current Scenario and Challenges of Agricultural Production to Future Food Security in Bangladesh [Link]
[20] Bangladesh Agricultural Research Council [Link]

These areas, combined with innovations in market research and commercial agriculture, highlight the role of digital platforms and data-driven systems in enhancing market access, improving value chains, and driving efficiency in the sector. To advance these research priorities, increased funding and institutional support are essential.

Vulnerability To Climate Change

Ranked as the sixth most impacted nation by severe weather,[21] Bangladesh is highly susceptible to climate change – specifically to natural disasters that have harmful consequences in the agriculture sector. The sector's reliance on the monsoon cycle leaves it vulnerable to changing rainfall patterns, which now oscillate between extreme droughts and intense flooding. These unpredictable weather conditions disrupt planting and harvesting schedules, as heavy rainfall during critical crop growth stages, such as rice, can lead to waterlogging that inhibits nutrient absorption and reduces yield potential. Rising sea levels compound this issue by intensifying salinity in coastal soils, compromising soil quality and the availability of freshwater for irrigation. Saltwater intrusion degrades arable land and impairs crop germination and growth, affecting areas that once relied on river water, now tainted with increased seawater intrusion.[22] **Alarmingly, projected sea level rise may reduce 24% of available cropland[23], further threatening food security in a nation with a growing population.**

Introducing climate-resilient crop varieties, diversifying cropping patterns, and improving water management practices can help stabilise food production.[24] The impact of the climate crisis on agriculture could lead to social instability, migration, and increased poverty[25] unless adaptive actions are taken. Implementing community-based adaptation strategies can enhance social resilience and provide stability in rural areas. **Adaptive measures such as sustainable land management, conservation agriculture, and efficient use of water resources[26] are crucial to prevent further degradation and promote long-term sustainability.**

While these challenges are not an exhaustive list of the hurdles that the Bangladesh agriculture sector needs to overcome, there is untapped potential for positive disruptions to be made by vested stakeholders. Addressing these areas through innovative policies, inclusive financial systems, enhanced research and development, and climate-resilient practices can propel the sector forward. Collaboration among government bodies, international organisations, communities, and the private sector will be essential to harness these opportunities. Such efforts can transform constraints into pathways for sustainable growth, improving productivity, market access, and food security, thereby supporting Bangladesh's long-term economic stability and resilience.

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[21] Global Climate Risk Index [Link]
[22] Ministry of Environment & Forests [Link]
[23] Sea Level Rise Induced Impacts on Coastal Areas of Bangladesh and Local-Led Community-Based Adaptation, 2022 [Link]
[24] Climate Change and the Future Impacts of Storm-Surge Disasters in Developing Countries, 2014 [Link]
[25] Adaptation Strategies after Cyclone in Southwest Coastal Bangladesh – Pro Poor Policy Choices, 2015 [Link]
[26] Local Perceptions and Adaptations to Climate Vulnerability, 2015 [Link]

3. EMERGENCE OF AGRITECH SECTOR

Agriculture remains an essential sector in emerging economies, yet it faces a host of modern challenges. To scale agritech, it is crucial to demonstrate the unit economics and provide empirical evidence of Return on Investment (RoI) at the farm level. 30% of farmers cite unclear RoI as a key reason for not adopting agritech solutions[27]. **Agritech covers a diverse spectrum of solutions, including software and data-driven farm management tools, as well as physical innovations like affordable mechanisation, advanced crop varieties, hydroponics, and vertical farming.** While smartphone adoption has opened up new avenues for credit access, market connections, and quality inputs, challenges remain in scaling these solutions. Limited smartphone access, particularly among women, further restricts access to digital advisories and agritech services, often delivered via mobile technology. Although emerging economies in Asia, Africa, and Latin America have been slow to adopt digital technologies beyond basic mechanisation, progress has been made through increased smartphone adoption, allowing farmers better access to efficient agricultural services. These technologies have broadened access to vital information, empowering smallholder and vulnerable farmers to improve resource management and productivity.

3.1. ROLE OF AGRITECH IN SOUTHEAST ASIA

Southeast Asia is a major contributor of the world's food supply – accounting for over 90% of global rice production,[28] and is set to increase for most crops, meat, poultry, and fish. The reliance on Southeast Asia's agricultural production will drive investment into upstream agri-technology, services, and sciences. As demand for food increases, the region is well-positioned to contribute to meeting this need while prioritising sustainable practices. The agricultural market in Southeast Asia offers numerous opportunities for investors resulting in a surge in agri-tech investments in recent years.

Table 1: Agritech Regional Funding (2013-2023)

	Grants	Pre-Seed	Seed	Pre-Series A	Series-A	Series B	Series C	Series D+
Bangladesh	USD 0.9 Mn	USD 3.2 Mn	USD 3.9 Mn					
India		USD 1.2 Bn				USD 2.5 Bn		USD 9.1 Bn
Pakistan		USD 6.5 Mn	USD 3.2 Mn	USD 2.0 Mn				
Thailand		USD 5.7 Mn	USD 6.3 Mn	USD 11.9 Mn				
Vietnam		USD 7.4 Mn		USD 5.3 Mn	USD 4.6 Mn	USD 30 Mn		

Source: LightCastle Analytics, Invest2Innovate,NIA, Deal Street Asia, AgFunder

Across Bangladesh, India, Pakistan, Thailand, the Philippines, and Vietnam, agritech is positioned to tackle critical issues in agriculture, such as inefficient supply chains, limited access to finance, and

[27] World Economic Forum [Link]
[28] Food And Agriculture Organization [Link]

the need for technological innovation. A holistic analysis of the region's agritech positioning reveals common trends in opportunities, challenges, and key drivers.

Table 2: Regional Trends In Agritech

Digital Platforms & Financial Services	All countries are leveraging digital platforms for market access, financial services, and advisory. Agritech DFS is vital for financial inclusion, especially in regions like Pakistan and Bangladesh.
Supply Chain Optimisation	Many countries, particularly India, Bangladesh, and Vietnam, face challenges related to supply chain inefficiencies and are focusing on optimising logistics and distribution through technology.
Infrastructure Gaps	Lack of internet access, electricity, and digital literacy are common barriers in rural areas, affecting the adoption of agritech solutions in all countries.
Government & Policy Support	Government initiatives and policies play a significant role in promoting agritech, as seen in countries like Thailand and the Philippines, where state-backed programmes facilitate the growth of the sector.
Labour & Population Issues	Countries like Thailand are facing labour shortages due to an ageing farming population, prompting increased adoption of automation and IoT solutions.

Improving market access and financial inclusion for smallholder farmers is a regional priority. Digital marketplaces, such as iFarmer (Bangladesh) and Ninjacart (India), connect farmers to buyers, reducing waste and boosting profits. In Pakistan and Vietnam, fintech solutions offer financial services like credit and insurance to traditionally underserved farmers. Additionally, precision farming technologies are gaining traction in India, Pakistan, Vietnam, and Thailand, where data-driven solutions enhance resource management, reduce input costs, and boost productivity. Bangladesh and Thailand are also advancing farm mechanisation to modernise agricultural practices.

Government support for agritech is steadily rising across the region, with a focus on fostering innovation through public-private partnerships, policy initiatives, and Venture Capital (VC) investments. Countries like Thailand, the Philippines, and Vietnam are actively promoting high-tech agricultural solutions, recognising the strategic importance of agriculture for food security and economic growth. For instance, Vietnam has leveraged its Free Trade Agreements to attract Foreign Direct Investment (FDI) and build partnerships that promote sustainable, tech-driven farming practices. The Philippines, through its e-Extension Program, is integrating digital tools and training to modernise farming methods and equip farmers with the necessary skills to utilise agritech solutions. Thailand, which already benefits from being a regional food production hub, is enhancing smart farming capabilities with support from both government initiatives and private investment.

The region, however, faces persistent challenges that inhibit the scalability of agritech solutions. **Infrastructure gaps,** particularly in rural areas, remain a hurdle. Limited **access to electricity, internet, and transport networks** hampers the widespread adoption of digital tools and technologies, particularly in countries like Pakistan, the Philippines, and Vietnam. **Financial barriers also limit smallholder farmers' ability to invest** in smart tools and equipment, especially in regions where access to credit and insurance is minimal. **Furthermore, low digital literacy across much of the farming population prevents many from taking full advantage of available technologies, necessitating more focused efforts on capacity-building and training programs.** Labour shortages and fragmented landholdings further complicate the adoption of large-scale technology solutions. In Thailand and Vietnam, the ageing farming population and the fragmentation of agricultural land reduce the efficiency of mechanisation and tech adoption, creating additional hurdles for agritech scalability.

Despite these challenges, the overall momentum towards digital transformation in agriculture is promising, though uneven. India stands out as a regional leader in agritech funding, having attracted USD 14.4 Bn over the past decade. This influx of investment has allowed India to scale its agritech ecosystem rapidly, driving innovations in precision farming, supply chain optimisation, and digital market platforms. In contrast, countries like Bangladesh and the Philippines, while showing potential, are still in earlier stages of agritech development. Their ecosystems are growing but are yet to reach the scale and maturity seen in India, as they work to overcome barriers such as limited funding and slower technology adoption.

Table 3: Comparative Analysis Of Agritech Enterprises In Southeast Asia

	Areas of Disruption	Opportunities	Key Challenges	Agritech Funding (2013-2023)	Key Players
Bangladesh	Access to inputs, markets, credit, and technology (Farm Management Software, Machine Learning, AI, IoT)	1. Input marketplaces bundling insurance, advisory services, and forward market linkages. 2. Development of farm management software to streamline agricultural processes. 3. Embedded financing to support farmer investments in machinery and inputs.	1. Fragmented supply chain with inefficiencies in distribution. 2. Limited access to finance for smallholder farmers. 3. Bureaucratic hurdles impacting ease of doing business and accessing subsidies.	USD 20 Mn	iFarmer, WeGro, Agroshift, iPage, Fashol
India	Precision agriculture, supply chain optimisation/tech	1. Improved productivity through precision farming (using data for irrigation, fertilisation, pest control). 2. Reduced costs by optimising input usage (water, fertilisers, pesticides). 3. Reduced post-harvest wastage (20-30%) using logistics and warehousing tech. 4. Better market access via digital platforms, allowing farmers to bypass intermediaries.	1. Limited adoption of technology due to smallholder farmers' lack of access and training. 2. Gaps in infrastructure (internet, electricity) in rural areas. 3. Fragmented agricultural supply chain with many intermediaries. 4. Regulatory barriers, inconsistent enforcement of APMC reforms across states.	USD 14.4 Bn	Aqua Connect, Moofarm, Deep Rooted, Eggoz, CropIn, Fasal, GramworkX, Ninjacart, DeHaat, Waycool, VeGrow, BharatAgri, AgroStar
Pakistan	Smart farming (IoT, sensors), agricultural digital financial services (Agri DFS)	1. Enhanced productivity through IoT and smart tools, reducing water consumption by 30%. 2. Agri DFS provides access to credit, savings, and insurance, improving financial inclusion for smallholder farmers.	1. High adoption costs and limited infrastructure (unreliable electricity, low internet penetration). 2. Digital and financial illiteracy among smallholder farmers. 3. Scepticism towards formal financial institutions, especially in rural areas.	USD 11.6 Mn	Telenor Velocity, Acumen, Planet N, Ricult, Tazah, Cowlar, farmGhar, AgriDunya
Thailand	Agri marketplace, fintech, smart farming (equipment, sensors, IoT)	1. Thailand's strategic role as a food production hub (food industry contributes 23% of GDP). 2. Growing interest and investment in smart farming tools and applications from the government and venture capitalists.	1. Ageing farming population reduces available labour. 2. Labour shortages impacting large-scale farming operations.	USD 450 Mn	FreshKet, East-West Seed, EnerGaia, Thammachart Seafood, Rakbankerd

Philippines	Access to market	1. Modernising farming practices through agritech enterprises, improving crop yields and reducing waste. 2. Digital platforms connect farmers to consumers directly, enhancing profits and sustainability. 3. Government support for agritech through initiatives like the e-Extension Program providing digital tools and training.	1. Digital divide with limited access to affordable internet and smartphones in rural areas. 2. Lack of awareness about agritech benefits, requiring capacity-building programmes. 3. Poor infrastructure (electricity, internet) in rural areas.	USD 4 Mn	Mayani, Cropital, Agrea, MooMart, DOST Program
Vietnam	IoT-driven farming systems	1. Transition to modern, high-tech, sustainable agriculture (adoption of AI, drones, and blockchain). 2. Significant market demand for scalable, cost-effective agritech solutions. 3. FDI and global partnerships leveraging Vietnam's Free Trade Agreements.	1. Limited internet access and low digital literacy among farmers. 2. Fragmented landholdings hindering large-scale tech implementation. 3. Difficulties in securing funding for agritech enterprises due to perceived risks.	USD 493 Mn	Techcoop, Tepbac, Kilimo, Koina

Agritech across South and Southeast Asia is positioned at a crossroads of immense potential and challenges. The ongoing transformation is **driven by smart farming technologies, digital platforms improving market access, and fintech solutions enhancing financial inclusion**. However, the **region's full agritech potential is limited by infrastructure deficiencies, financial constraints, digital illiteracy, and fragmented land ownership.** Government support, venture capital investment, and public-private partnerships are essential to overcoming these barriers, with countries like India leading the charge in agritech funding and innovation. Ultimately, a concerted effort to address common challenges, improve infrastructure, and foster digital literacy is essential for agritech to scale and deliver on its promise of improving productivity, food security, and livelihoods across the region.

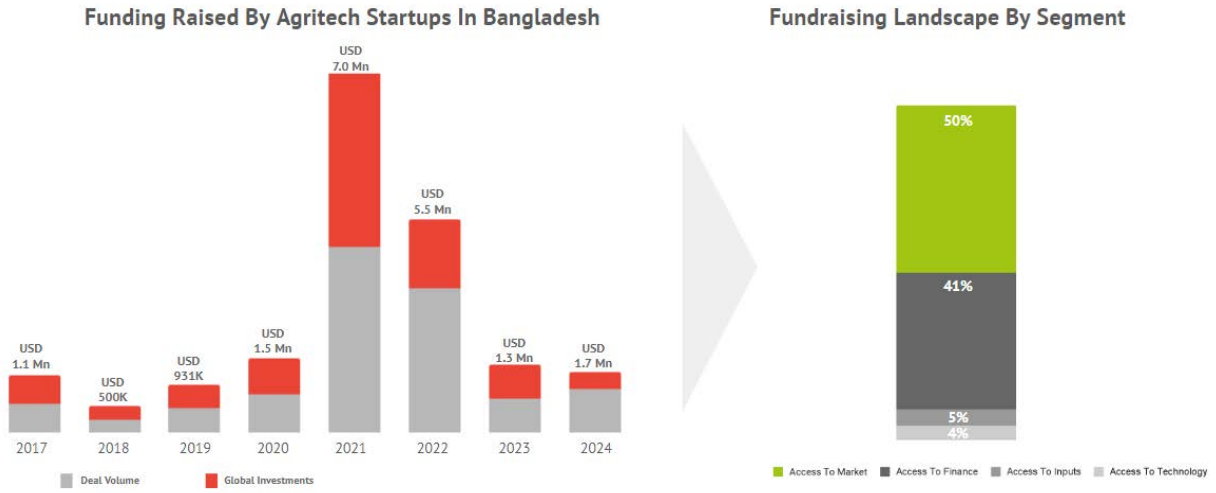
3.2. CASE STUDIES OF SUCCESSFUL AGRITECH SOLUTIONS

Company	Bio	Funding Raised	Impact Generated
iFarmer	iFarmer is a full-stack agri-tech impact enterprise that helps small-scale farmers and agribusinesses boost profits through a digital financing platform and comprehensive supply chain support. With a tech-driven network that aggregates fresh produce, iFarmer enhances market access and profitability for farmers.	USD 3 Mn +	The company has onboarded 140K+ farmers, financed 50K+ and provided USD 46 Mn in farm financing to date.
Agroshift	Agroshift is an agri-commerce platform connecting producers with low- and middle-income consumers. Through micro-fulfillment and digital aggregation, Agroshift enables bulk buying and demand-driven procurement, primarily serving factory workers in Tier 2 and 3 cities.	USD 2 Mn+	Agroshift enables factory workers to purchase daily commodities at prices 15-20% lower than nearby retail markets, while farmers receive 5-15% better prices than the standard market rate.
WEGRO	WeGro is an agritech impact enterprise modernising agriculture by integrating technology across the supply chain to give smallholder farmers access to finance, quality inputs, markets, and data.	USD 1.4 Mn	WeGro has financed projects totaling USD 4.6 Mn, impacting 4.5K+ farmers. The company has reimbursed USD 3.6 Mn in returns, onboarded 200+ financiers (including commercial banks), and marketed 615 tonnes of agricultural yield.
iPAGE	iPage is building an AI-powered agricultural system to provide actionable insights to farmers and B2B partners, featuring aeQuilibrium for agronomic recommendations, Aunkur for farm advisory, and a data aggregation platform.	USD 430K+	WeGro has financed projects totaling USD 4.6 Mn, impacting 4.5K+ farmers. The company has reimbursed USD 3.6 Mn in returns, onboarded 200+ financiers (including commercial banks), and marketed 615 tonnes of agricultural yield.

3.3. POTENTIAL INVESTMENT OPPORTUNITY IN BANGLADESH

Bangladesh's agritech sector presents a growing investment opportunity, despite being in its early stages. Over the past few years, cumulative investment in the sector has been relatively modest, totalling only around USD 20 Mn. However, there is potential for expansion, as demonstrated by enterprises like iFarmer and WeGro, who operate within the nexus of agriculture and fintech sectors. In addition, output market linkage enterprises like Agroshift and Fashol have successfully attracted investment from both local and international investors amounting to 50% of total agritech investments in Bangladesh. Global investors are also beginning to show increased interest in the sector. Companies addressing farmers' access to finance have attracted 41% of total funding. For instance, iFarmer, initially focused on agricultural financing, has now evolved into a full-stack agritech provider. There is also a considerable number of players in the output market linkage space, alongside those leveraging precision technology and IoT solutions to enhance agricultural productivity.

Figure 5: Agritech Funding Insights - Bangladesh



Source: LightCastle Analytics

Despite these developments, the sector's activity remains minimal compared to its potential. However, there is growing optimism that investment and activity will increase as the global economic situation stabilizes. Agritech enterprises in Bangladesh can be categorised into four primary sub-sectors:

1. **Alternative Farming Systems/Farm Mechanisation** – While machinery adoption is limited due to affordability, leasing models and Pay-As-You-Go (PAYGO) schemes offer opportunities for scaling farm mechanisation.
2. **Access to Inputs** – Agritech enterprises are addressing inefficiencies in the input supply chain, including seeds, fertilisers, and machinery, by building digital marketplaces that improve access to quality inputs.
3. **Access to Markets** – Companies are working to eliminate inefficiencies and middlemen in the supply chain, offering farmers better prices and reducing costs for retailers.
4. **Access to Finance** – Financing solutions are essential, particularly for smallholder farmers who often lack formal credit options. Crowdfunding platforms and partnerships with financial institutions are emerging to meet this need.
5. **Access to Advisory** – Digital advisory services, often bundled with input marketplaces, provide crucial farming advice, enabling informed decision-making to mitigate risks.
6. **Access to Technology (Farm Management Software, AI, IoT)** – Precision agriculture using IoT sensors, drones, and AI-driven insights is improving farm management and productivity.

Figure 6: Agritech Use Case Framework

Access To Advisory	Access To Inputs	Access To Markets	Access To Finance	Access To Technology
Digital advisory on crop, livestock, and pest management	Digital input marketplace	Input market linkages	Credit/Loan	Smart farming assets
Weather insights	Climate resilient inputs	Output market linkages	Crowdfunding	IoT for farm management
Soil health monitoring	Bundled inputs (Seed Varieties)	Traceable input sourcing	Crop/Livestock insurance	IoT-based crop & livestock monitoring
Digital farmer cooperatives		Market readiness certifications	Credit scoring	Sensor-based soil testing
Seasonal crop advisory services		Export linkage & readiness training	Value chain financing	Digital records for farm operations
		Technical assistance (Packaging/Sorting/Grading)	Carbon credit financing	Drone based field mapping
			Asset financing	Automated irrigation systems
			Input financing	Data sharing platforms
				Affordable mechanisation solutions (Seedling Gun)

Currently In Practice
Potential Use Case For BD

Source: LightCastle Analytics

Investment Landscape

The increasing interest from both local and international investors suggests that Bangladesh's agritech sector is poised for growth in the coming years, offering ample opportunities for those looking to enter this space. Recent investment in Bangladesh's agritech sector has focused primarily on agricultural finance, input linkages, and supply chain technology. **Investors such as Startup Bangladesh Limited, Millville Opportunities Management, Razor Capital, South Asia Tech Partners, and the Bill and Melinda Gates Foundation have been key contributors to the sector's growth.**

Table 4: Agritech Opportunities In Bangladesh

Farmer Challenges	Agritech Use Cases/Opportunities	Examples
Productivity challenges	- Smart advisory on crop selection, pest management, and irrigation - Weather information	iPage (IoT-driven soil testing) iFarmer (mobile advisories)
Poor access to markets	- Input and output market linkages - Online trading platforms for farmers	Fashol (B2B agri-platform for produce) Agroshift (output market linkage)
Financial exclusion	- Credit and loans - Input financing - Crowdfunding platforms	iFarmer (crowdfunding platform connecting retail investors) WeGro (crowdfunding for agri-financing)
Knowledge gaps	- Digital records for farm management - Pest and disease management advisories	InsureCow (livestock monitoring) Adorsho Pranisheba (livestock advisory)
Fragmented landholdings	- Shared smart assets (machinery as a service) - Equipment monitoring (IoT)	Tractors on lease through PAYGO models Government-subsidised machinery programs
Vulnerability to climate change	- Climate-smart inputs - Traceable input sourcing - Digital procurement records	Bhalo (marketplace for climate-resilient seeds) Khaas Food (traceable, sustainable sourcing)
Poor access to credit	- Digital records with payments - Credit scoring based on farm data - Insurance products for farmers	iFarmer (digital credit scoring) InsureCow UPTIQ (real-time updates and KPI tracking for creditworthiness)

4. ASSESSING STAKEHOLDER SENTIMENT

This chapter examines the perspectives of key stakeholders within Bangladesh's agritech landscape (**Annex A**), providing a comprehensive understanding of the sector's dynamics. It explores the challenges, opportunities, and expectations from both those directly engaged in the agricultural value chain, as well as the broader ecosystem supporting the sector's growth.

4.1. GROUND-LEVEL INSIGHTS FROM AGRITECH ENTREPRENEURS

As Bangladesh navigates the path toward transforming its agriculture sector, the importance of the demand-side players, particularly agritech enterprises, cannot be overstated. These companies are playing a pivotal role in reshaping the landscape, yet they continue to face obstacles in achieving widespread impact. This section synthesises insights from organisations in this space, highlighting their approaches and challenges while navigating the agritech sector. The key themes emerging from discussions with these enterprises revolve around the challenges of trust-building, the complexities of the agricultural supply chain, the intricate nature of finance and investment, policy and reform expectations, and the importance of infrastructure.

Gaining Farmer Confidence & Market Trust

Building trust with farmers is one of the most significant challenges faced by agritech companies in Bangladesh. The agriculture sector has been traditionally dominated by intermediaries and syndicates that control access to markets, making it difficult for new entrants to establish credibility. **Farmers, many of whom have faced years of exploitation by middlemen, are naturally sceptical of newcomers, especially those promising better prices or more efficient market access.**

Trust-building is a slow process that requires time and consistent engagement. It typically takes multiple growing seasons for companies to gain the confidence of farmers. Establishing transparent processes, ensuring timely payments, and offering competitive prices for produce are all crucial steps in this process. **Trust extends beyond just farmers to financial institutions, where enterprises must prove their reliability and ability to manage funds responsibly.** This is particularly challenging for asset-light enterprises that lack the traditional forms of collateral often required by financial institutions in Bangladesh. For instance, while many enterprises receive grants, they are often perceived by banks and other institutions as NGOs, which leads to further bureaucratic complications. This lack of understanding of the startup ecosystem by financial institutions reinforces the challenges around building credibility and securing the necessary funding.

Gaining trust from customers—such as smallholder retailers—is equally challenging. The promise of cutting out intermediaries is a strong selling point, **but convincing retailers that such models are sustainable in the long term requires demonstrable success.** Trust is not built overnight, and without it, scaling operations becomes significantly more difficult.

Supply Chain Complexity

One of the primary challenges agritech entrepreneurs face is the nature of the market, which is often oligopolistic. A few large conglomerates dominate key sectors, particularly in the supply of raw agricultural commodities. **This entrenched control keeps profit margins static and prevents new players from scaling quickly.** enterprises attempting to introduce more efficient supply chain models face resistance from these established players, who benefit from maintaining the status quo. The high volume of imported commodities, for instance, does not necessarily translate into high margins for smaller players, as large companies control pricing and distribution. **Moreover, these large companies sometimes exploit regulatory loopholes, avoiding taxes and other obligations, which further disadvantages smaller enterprises.** This unequal playing field discourages innovation and limits the potential for smaller agritech firms to grow and scale.

The agricultural supply chain in Bangladesh is fraught with inefficiencies, particularly in the management of perishable goods. **The process of sorting, packing, and delivering produce must be done within a narrow time frame to avoid spoilage, making this one of the most technically challenging aspects of the supply chain.** The perishability of agricultural products means that any delays in this process can result in substantial losses, both for farmers and companies.

Infrastructure & Technological Gaps

Infrastructure limitations, particularly in logistics and storage, are among the most pressing issues faced by demand-side players in agritech. The lack of cold storage facilities is a significant bottleneck, particularly for businesses dealing with perishable goods. Without adequate storage, companies are forced to sell produce immediately, often at suboptimal prices, to avoid spoilage. This reduces profitability and limits the ability to scale operations. Improving storage and logistics systems would allow agritech businesses to extend the shelf life of produce, stabilise prices, and reduce waste.

The process of scaling technology has proven difficult, particularly in a sector that remains largely manual and cash-driven. **This reliance on manual labour, combined with a lack of technological adoption, further complicates efforts to modernise the supply chain.** Some companies have found that while developing technology is straightforward, adoption among farmers remains a challenge. The lack of aggregated data and formalised transactions creates a system in which consumer costs remain high, while farmers' profits remain low. This fragmented value chain presents an opportunity for digital transformation, but the path forward requires extensive data collection, connectivity, and infrastructure investment. **Companies in the sector are working to introduce technology solutions that can automate parts of the process, but adoption remains slow due to the deeply ingrained traditional practices.**

While solutions such as IoT devices and data-driven platforms are becoming increasingly common in other countries, their adoption in Bangladesh remains slow. **The reasons for this are manifold: from the high cost of technology to the reluctance of farmers to adopt new methods, technology has yet to penetrate the sector in a meaningful way.** Moreover, the country's lack of investment in modern agricultural machinery places it at a significant disadvantage compared to regional competitors. Additionally, farms are clustered, making adoption rates slower compared to large farms owned by an individual farmer. In countries like Thailand and China, modern machinery such as precision farming tools, automated irrigation systems, drone-based crop monitoring, mechanised harvesters, and GPS-guided tractors enable agricultural tasks to be completed in a fraction of the time it takes in Bangladesh. For agritech enterprises, addressing this gap is crucial to improving productivity and achieving scalability.

Financial Barriers & Investment Challenges

In the context of capital, agritech enterprises continue to struggle with the financing landscape in Bangladesh. Agricultural commodities often require large volumes of investment, and local banks are hesitant to provide the necessary funding due to the lack of understanding of enterprises and the unique nature of the sector. **As a result, they are viewed as high-risk due to their reliance on unpredictable factors such as weather and market volatility.** The lack of collateral further complicates access to working capital, as many enterprises operate with limited physical assets. This hesitancy on the part of local banks has driven many enterprises to seek venture capital or development finance from international sources. However, **accessing global capital comes with its own set of challenges, particularly around the issue of capital repatriation.** Regulatory and bureaucratic hurdles make it difficult for companies to move money in and out of Bangladesh, creating an additional layer of complexity. Offshore banking and external registrations in countries like Singapore have been used to navigate the difficulties of capital repatriation and ensure access to foreign investments, but these solutions are inefficient and costly.

Furthermore, the expectations of different types of investors, ranging from development finance institutions (DFIs) to venture capitalists, are often misaligned. **Each investor has a different thesis regarding the risks and returns they expect, forcing enterprises to continuously adapt their pitch and governance models**. This constant adjustment slows down the process of securing funding, and many enterprises struggle to speak the "right language" to unlock the capital they need.

The lack of exit opportunities in Bangladesh compounds the challenge. **Investors are hesitant to commit large sums of money without clear pathways for exiting their investments.** This uncertainty is particularly pronounced in sectors like agritech, which typically require longer timelines to generate returns. **In comparison to regional peers such as India, where larger agritech firms have matured over 15 years, Bangladesh's companies are still developing, and investors are seeking stronger indications of growth, particularly from technology-driven solutions.** While there is interest in the potential of agritech to deliver long-term value, the absence of established exit mechanisms makes raising patient capital from institutional investors immensely difficult. .

Policy & Regulatory Reform

The demand-side players in Bangladesh's agritech sector see policy reform as a critical component for fostering growth and innovation. **There is a pressing need for reforms, particularly in tax policies and commodity trading regulations**. The macroeconomic environment has presented hurdles for agritech organisations, particularly those reliant on commodity imports. Inflation and corruption remain key concerns, making it difficult for companies to maintain competitive pricing on essential items.

The process of setting up and running a business is often slow and complex, with approvals from multiple agencies required at different stages. Further complicating matters, the stock market regulations are highly restrictive. enterprises, especially those in the early stages and operating at a loss, find it difficult to list on the Dhaka Stock Exchange (DSE)**. These stringent requirements for an Initial Public Offering (IPO) prevent many promising agritech firms from accessing public capital.** In contrast, neighbouring markets like India allow loss-making companies with strong growth potential to go public, providing them with access to additional investment and growth opportunities. Moreover, **the existing tax structure disproportionately impacts smaller companies,** with Value Added Tax (VAT) applied at multiple stages of the supply chain, creating additional costs that are difficult for enterprises to absorb. Meanwhile, larger conglomerates often find ways to evade taxes, further entrenching their dominance in the market. **Suggested reforms include implementing antitrust laws to address market concentration, introducing caps on commodity imports, and incentivising middle-level players in the supply chain.** Additionally, a promising area for reform is improving bilateral relations with key importers, such as Brazil, and focusing on domestic production of key agricultural inputs, including seeds. Currently, a large portion of seeds is imported, leading to a vulnerability in the supply chain that could be mitigated by better local production practices.

Moreover, the lack of digitisation in the agriculture sector is yet another barrier when creating pathways to reforms. **While the government has data on millions of farmers, much of it is still paper-based and inaccessible.** Digitising this data would allow for better integration between public and private sector entities, facilitating easier access to financial services for farmers and improving market

transparency. Public-private partnerships could play a crucial role in this process, providing the expertise and resources needed to create a comprehensive digital database of farmers.

Impact of Political Climate On Investor Sentiment

There is a general consensus that investor sentiment has shifted post-COVID. While global capital was more accessible during the pandemic, repatriation issues have led to growing concerns among investors. **The central bank's focus on bringing capital into the country, rather than facilitating its outflow, creates challenges for foreign investors, particularly those who invested pre-COVID and now face bureaucratic hurdles in withdrawing their capital.**

Investors are seeking stability, particularly in light of the political uncertainties surrounding the potential for a new government. **There is a strong expectation that the interim government will implement much-needed reforms, particularly in commodity trading and capital repatriation.** In addition, the interim government is expected to focus on developing digital infrastructure and data governance. The sector needs reforms that will improve access to accurate data, which is essential for decision-making in agriculture. Political instability is a persistent concern for businesses operating in Bangladesh, and agritech enterprises are no exception. **Although the political environment presents risks, most enterprises in the sector have managed to navigate these challenges with minimal disruption.** The movement of food trucks, for instance, has been largely unaffected by the recent political unrest, and companies have maintained their operations even during periods of instability.

However, the broader uncertainty created by political unrest dampens investor confidence. Investors need assurances that the regulatory and business environment will remain stable enough to protect their investments. **Companies have responded to this challenge by maintaining clear and constant communication with their stakeholders.** Transparency has been key to building and maintaining trust, both with investors and customers, during periods of political uncertainty.

Future Outlook For Agritech Entrepreneurs

Despite the challenges discussed above, the agritech sector in Bangladesh presents untapped opportunities. The size of the market is substantial, and organisations focusing on solving core issues such as supply chain inefficiencies, access to finance, and technology adoption are well-positioned to create a lasting impact. The integration of digital tools, coupled with targeted policy reforms, could unlock the sector's full potential and help it grow in line with regional peers.

On an interesting note, carbon financing represents another emerging opportunity. Although this area is at a very nascent stage and is not as accessible to early stage companies, it holds promise for creating an additional revenue stream for agritech companies whose interventions are contributing to reducing carbon emissions in agricultural processes. Whilst some organisations have already begun exploring partnerships to tap into this market, there is a dire need for credible on-the-ground partners to validate data and ensure that these initiatives translate into tangible financial benefits for farmers.

The sentiment among demand-side players in Bangladesh's agritech sector is both optimistic and cautious. Key players in the space are working to address long-standing inefficiencies in the supply chain, improve access to finance, and scale technological solutions. However, the sector's growth will depend heavily on regulatory reforms, improved investor sentiment, and the development of infrastructure that can support the digitisation of agriculture. Addressing these challenges will require a concerted effort from the private sector and the government to create a more enabling environment for enterprises. The insights gathered from these key players provide a roadmap for understanding the complex dynamics shaping the future of agritech in Bangladesh.

4.2. AGRITECH GROWTH THROUGH THE LENS OF PARTNERS & INVESTORS

While investors exhibit diverse strategies and risk appetites, several consistent themes emerge, including the importance of sustainable, impact-driven business models, the need to enhance the skill sets of local entrepreneurs, and the challenges posed by Bangladesh's economic and political environment.

Investment Opportunities and Sector Potential

The macroeconomic outlook for Bangladesh is generally positive, characterised by steady economic growth, rising consumption, and an expanding middle class. These trends are fuelling investment interest, as disposable incomes increase and demand for goods and services rises. However, there remains a strong awareness of the volatility within the market, which informs a careful, long-term approach to investments.

Nevertheless, investors emphasise the importance of sustainable business models that do not rely solely on grants or development funding. They assert that agritech firms must demonstrate profitability alongside their impact objectives to secure long-term success. The overall market opportunities are evident, although investors take different approaches to investment horizons and risk tolerance. Some emphasise long-term investments of five or more years, viewing sustainability as essential for meaningful impact. Others highlight the potential for quicker returns through partnerships with financial institutions, noting the wealth of data agritech companies generate as an asset for the financial sector. However, investors agree that achieving real progress in agritech requires addressing both the sector's technological and financial challenges.

Comparative Performance of enterprises in the Region

When compared to regional peers, Bangladeshi enterprises often appear to lag in terms of technological adoption and ecosystem development. While there has been progress in fostering entrepreneurial activity, the country still lacks the infrastructure, mentorship, and institutional support that more developed startup ecosystems possess. **A notable gap in investment readiness has been identified, with many entrepreneurs prioritising funding acquisition over building sustainable operations.** This contrasts with other markets where enterprises demonstrate greater sophistication in their business structures and market strategies. Investors have noted weaknesses in governance, financial management, and execution capabilities among Bangladeshi founders, which can hinder

scalability and long-term growth. Therefore, while there is potential, many enterprises are still in early development stages compared to their regional counterparts.

Addressing the Skills Gap Among Entrepreneurs

A prominent issue among Bangladeshi entrepreneurs is the skills gap, particularly in operational expertise. Many founders excel at securing funding but often struggle with the complexities of building sustainable businesses. This gap is especially evident in governance, team management, and financial discipline, that are critical components for scalability.

Investors have observed that many enterprises operate with incomplete management teams, which heightens execution risks. Our findings reveal that support from accelerators and VC firms is often inadequate, as it tends to focus on superficial aspects rather than deep business development. Founders require more comprehensive support, including mentorship in leadership, strategy execution, and talent development. The transition from being a founder to a capable CEO requires careful nurturing, and investors acknowledged that this shift often does not happen organically. Another observation was that local entrepreneurs need to strike a balance between strategy and execution. Without a structured approach to business operations, even the most innovative ideas are unlikely to succeed. Addressing these gaps will require more active involvement from investors who can offer both financial backing and operational guidance. **Thus, structured support from accelerators and venture capital firms is necessary to help entrepreneurs develop from visionary founders to effective CEOs.** This involves mastering key business variables like strategy, structure, process, performance, and people, which are essential for executing actionable plans.

Integration of Agritech and Financial Institutions

One of the more promising developments in the agritech sector is the opportunity for collaboration between enterprises and financial institutions. **Financial institutions have a mandated requirement to lend to the farming sector, creating a natural synergy with agritech.** Agritech businesses, through their work with farmers, generate vast amounts of data that banks can leverage to create tailored financial products and services. Investors see this integration as a natural progression, particularly as it could help solve the financing challenges that persist in the agricultural sector. However, it is noted that technology alone cannot resolve the sector's challenges, improving access to finance is just as important. **For investors, the potential for bank acquisitions of agritech companies is seen as a viable exit opportunity, particularly as banks increasingly recognise the value of the data these businesses collect.**

Exit Strategies and Challenges

Investors hold varied views on the availability of clear exit strategies in Bangladesh. While some are optimistic about the potential for roll-ups and acquisitions by financial institutions, others express caution due to the relatively underdeveloped financial markets and the limitations on capital repatriation. Restrictions on moving funds and a lack of liquidity remain areas of concern for foreign investors.

To tackle this issue, **investors have leveraged alternative exit mechanisms, such as secondary share sales or structured buybacks**. However, most agree that an initial IPO in the Bangladeshi market is unlikely to be a feasible exit route, given its limited accessibility to foreign investors and the lower valuation multiples typically assigned. As a result, companies may seek to list in more favourable markets abroad, though this approach comes with its own set of regulatory and operational challenges.

Private equity roll-ups and bank acquisitions are considered more realistic exit strategies, especially given the growing importance of data generated by agritech businesses. Investors are keen to emphasise that enterprises should focus on growth and operational sustainability, rather than becoming preoccupied with early exit discussions, which could signal a misalignment of priorities.

Challenges such as restrictions on foreign capital flows and the complexities surrounding the repatriation of funds are significant barriers to attracting foreign investment. Although initiatives like Startup Bangladesh Limited (SBL) aim to foster a conducive environment for enterprises, broader regulatory reforms are necessary to make the market more accessible to international investors. **In summary, while the macroeconomic fundamentals are encouraging, policy enhancements are essential for creating a more favourable investment climate.**

Political and Economic Risks

The political and economic climate in Bangladesh, while challenging, does not deter investors entirely. The agritech sector is viewed as relatively insulated from political shifts, given its importance to the broader economy. However, logistical and regulatory challenges, such as infrastructure bottlenecks and inconsistencies in policy implementation, are recognised as risks that could impact business operations. **Investors acknowledged that emerging markets like Bangladesh inherently involve higher levels of risk, but many are willing to accept this given the long-term growth potential.** While the political environment remains uncertain, the outlook for the country's economy is cautiously positive, with agritech considered a critical area for future development.

What's Next?

The country's growing MAC population and consumption base create fertile ground for business development, but realising this potential requires closing the skills gap among entrepreneurs, improving access to capital, and addressing systemic regulatory and financial hurdles. Overall, investors exhibit a blend of performance-driven and purpose-driven perspectives. They see opportunities for financial returns alongside social impact, particularly in agriculture and financial inclusion. **Nonetheless, there is a collective understanding that a higher level of risk tolerance is necessary to navigate the challenges inherent in the Bangladeshi market.** Investors are largely aligned in their recognition of Bangladesh's promise, but they differ in their approaches to managing risk and supporting entrepreneurs.

For Bangladesh to fully capitalise on its potential, the ecosystem will need more targeted support, both in terms of financial investment and operational mentorship. The long-term prospects remain promising, provided investors and entrepreneurs can navigate the country's complex economic and political landscape.

Figure 7: Summary Of Stakeholder Consultation Findings

Ground-Level Insights from Agritech Founders		Agritech Growth Through the Lens of Partners and Investors	
Gaining Farmer Confidence & Market Trust	Agritech firms face challenges building trust with farmers and financial institutions, often viewed skeptically in a market dominated by intermediaries.	Investment Opportunities & Sector Potential	Bangladesh's growing economy attracts long-term investments in agritech, but investors stress sustainable, profitable models over grant-reliant ones.
Supply Chain Complexity	Oligopolistic market control and inefficient handling of perishables hinder agritech startups' ability to scale and disrupt existing supply chains.	Comparative Performance of Startups in the Region	Bangladeshi startups trail regional peers in tech adoption and investment readiness, often struggling with governance and scalability.
Infrastructure & Technological Gaps	Limited logistics and storage infrastructure constrain agritech growth, with slow technology adoption and lack of modern equipment further impeding scalability.	Addressing the Skills Gap among Entrepreneurs	Founders in Bangladesh often lack operational skills, requiring deeper support from VCs and accelerators to transition into effective CEOs.
Financial Barriers & Investment Challenges	Agritech startups struggle with local funding due to high perceived risks, misaligned investor expectations, and limited exit options in Bangladesh.	Integration of Agritech & Financial Institutions	Collaboration with financial institutions offers agritech firms both financing solutions and potential bank-driven exit strategies, leveraging data as a key asset.
Policy & Regulatory Reform	Policy reforms, especially in taxation and IPO regulations, are needed to support agritech growth, along with digitisation and antitrust measures to level the playing field.	Exit Strategies & Challenges	Limited local exit options push investors toward bank acquisitions or foreign listings, though regulatory reforms are needed for smoother foreign investment.
Impact of Political Climate on Investor Sentiment	Political instability dampens investor confidence, though agritech firms generally navigate these challenges, with calls for regulatory reforms to ensure investment security.	Political & Economic Risks	Despite political and logistical challenges, investors are cautiously optimistic, viewing agritech as resilient and essential to Bangladesh's economic future.

5. REGIONAL INITIATIVES DRIVING AGRI-INNOVATION

Bangladesh's agritech sector can derive valuable insights from regional agricultural initiatives across South and Southeast Asia. These initiatives have highlighted effective models for driving productivity, resilience, and technological advancement, with specific approaches focused on agritech accelerators, mechanisation, digital platforms, regional hubs, and public-private partnerships.

Programmes like India's Agri Udaan and Vietnam's Agritech Accelerator offer a model for fostering enterprises that address local supply chain challenges. Mechanisation schemes, as seen in India's SMAM, could similarly boost productivity in Bangladesh by subsidising equipment access. Additionally, platforms like Pakistan's Kissan Card and India's AgriStack simplify access to essential resources and market opportunities, which could empower Bangladeshi farmers. Establishing regional training hubs, as seen in Thailand and the Philippines, would support workforce development, while public-private R&D partnerships, inspired by India and Pakistan, could drive innovation for Bangladesh's specific agricultural needs

In summary, these regional themes offer a multi-faceted strategy for overcoming agricultural challenges, blending innovation, capacity-building, and public-private partnerships. By adapting these strategies to the local context, Bangladesh can strengthen its agritech ecosystem, fostering sustainable growth and enhancing the resilience of its agricultural sector.

Table 5: Summary Of Regional Initiatives

Areas Of Support	Action Plan	Countries Involved	Name of Initiative
AgriTech Accelerators	Initiatives like Agri Udaan and Vietnam Agritech Accelerator support agritech enterprises by providing mentorship and resources, driving innovation in areas such as supply chain technology and sustainability. Establishing targeted incubators can nurture the agritech ecosystem, offering support to entrepreneurs focusing on local challenges such as supply chain inefficiencies.	India, Vietnam	Agri Udaan (India), Vietnam Agritech Accelerator (Vietnam)
Mechanisation Support	In India, subsidy schemes for farm equipment have encouraged mechanisation, resulting in increased efficiency and productivity. Bangladesh could benefit from similar subsidy or leasing programs through PPPs, facilitating the adoption of modern machinery to enhance productivity and yield.	India	SMAM Scheme (India)
Digital Agricultural Platform	Pakistan's Kissan Card Scheme centralises farmer data to provide direct subsidies on key inputs, reducing costs and improving yields. Similarly, India's AgriStack platform simplifies farmers' access to affordable credit, high-quality inputs, and expanded markets, while also helping government and relevant stakeholders streamline agri- initiatives and benefit schemes.	India, Pakistan	AgriStack (India), Kissan Card Scheme (Pakistan)
Regional Hubs	Agritech & Innovation Centres (AICs) in Thailand, led by the Ministry of Agriculture, provide farmers with region-specific training in productivity, waste reduction, and crop innovation. Similarly, the Philippines' Department of Science and Technology (DOST) supports agritech enterprises with funding and technical aid through initiatives like the Small Enterprise Technology Upgrading Program (SETUP).	Thailand, Philippines	Agritech & Innovation Centres (Thailand), DOST Regional Office (Philippines)
Capacity Building and Technical Training	India's Krishi Vigyan Kendras (KVKs) and Pakistan's Agricultural Training Centres have proven effective in training farmers on modern agricultural practices. Through workshops, demonstrations, and advisory services, these centres help improve productivity and farmers' livelihoods. Establishing similar centres in Bangladesh could support sustainable practices, boosting yields and reducing costs.	India, Pakistan	Krishi Vigyan Kendras (India), Agricultural Training Centres (Pakistan)
Public-Private Partnerships (PPP) in R&D	The National Agricultural Innovation Project in India and Pakistan's PPP Model in Agriculture has successfully leveraged collaborations between government and private sectors to drive agri-innovation, enhancing productivity.	India, Pakistan	National Agricultural Innovation Project (India), Agriculture PPP Model (Pakistan)

6. RECOMMENDATIONS AND WAY FORWARD

The roadmap outlined in **Table 6** provides a comprehensive set of recommendations for agritech entrepreneurs. Each priority area addresses key aspects of strengthening agritech ventures, from **securing diverse funding sources to optimising investment readiness and promoting community engagement.**

Table 6: Roadmap For Stakeholders

Priority Area	Recommendation	Timeline
Impact-Linked Finance solutions	R1: Funding mechanisms such as the Impact-Linked Finance instruments that incentivise additional impact through non-repayable funding in combination with equity or debt investments to de-risk projects, appealing to both development and private sector investors.	Short-to-Medium Term
Investor Relationship Management	R2: Foster long-term relationships with investors by providing quarterly updates/semi-annual updates to share milestones and achievements, showcasing commitment and growth.	Short-to-Medium Term
Data Licensing	R3: Monetise collected data by licensing it to governments, research institutions, and agribusinesses needing insights into crop cycles and productivity patterns. This strategy can help generate an additional revenue stream and enhance investor appeal.	Long-Term
Exit Strategy Planning	R4: Map out potential exit opportunities, such as acquisitions by larger agribusinesses or mergers with complementary enterprises. Clearly articulate this exit strategy to investors, helping them understand potential returns and timelines.	Long-Term
Data Transparency	R5: Prepare detailed financial projections that include revenue forecasts, cash flow needs, and ROI for potential investors. Prioritise transparency and ensure that projections account for local challenges like seasonal revenue variations.	Medium-to-Long Term
Capacity Building	R6: Partner with accelerators or training programmes to enhance technical and business skills, aligning with sector goals and attracting investors.	Short-to-Medium Term
Mechanisation and Service Delivery Models	R7: Develop leasing/rental models for machinery to support seasonal agricultural needs without high ownership costs for smallholder farmers.	Short-to-Medium Term
Impact Investment	R8: Position the business as an impact-driven enterprise by highlighting rural development metrics to appeal to impact funds.	Medium-to-Long Term
Funding Runway Management	R9: Implement robust financial management practices to monitor cash flow, expenses, and runway regularly, adjusting strategies as needed.	Medium-to-Long Term
Market Research and Validation	R10: Collaborate with industry mentors to validate product-market fit and identify customer needs, helping to refine offerings and demonstrate demand to investors.	Short-to-Medium Term
Local Community Engagement	R11: Foster relationships with local farming communities to enhance trust and gather insights that can inform product development and marketing strategies.	Medium-to-Long Term

For agritech entrepreneurs, the path forward includes not only attracting impact-driven investors through transparent and mission-aligned business practices but also diversifying revenue streams and validating product-market fit through industry mentorship and community engagement. By focusing on impact metrics that align with rural development and food security goals, entrepreneurs can tap into ESG and blended finance sources, ensuring their ventures remain resilient and adaptable. With continued innovation, strategic financing, and coordinated efforts from government, investors, and entrepreneurs, Bangladesh is well-positioned to unlock the full potential of its agricultural sector, benefitting both smallholder farmers and the broader economy.

7. ANNEX

Annex A – List of Key Informant Interviews (KIIs)

Demand-Side Stakeholders		
Name	**Designation**	**Organisation**
Qazi Bouland	Co-Founder & CEO	Agroshift
Diptha Saha	Co-Founder & COO	
Fahad Ifaz	Founder & CEO	iFarmer
Sakib Hossain	Founder & CEO	Fashol
Supply-Side Stakeholders		
Name	**Designation**	**Organisation**
Mohi Zaman	Principal	Anchorless Bangladesh
Mustafizur Rahman Khan	Partner	IDLC Venture Fund I
Md Farhad Zamil	Country Director	Syngenta Foundation for Sustainable Agriculture (SFSA)
Nazat Chowdhury	Partner & Managing Director	South Asia Tech
Robin Butler	Venture Partner	Sturgeon Capital
John Buckley	Angel Investor, Co-Founder & CSO	WeGro
Oussama Glilah	Managing Partner	Razor Capital