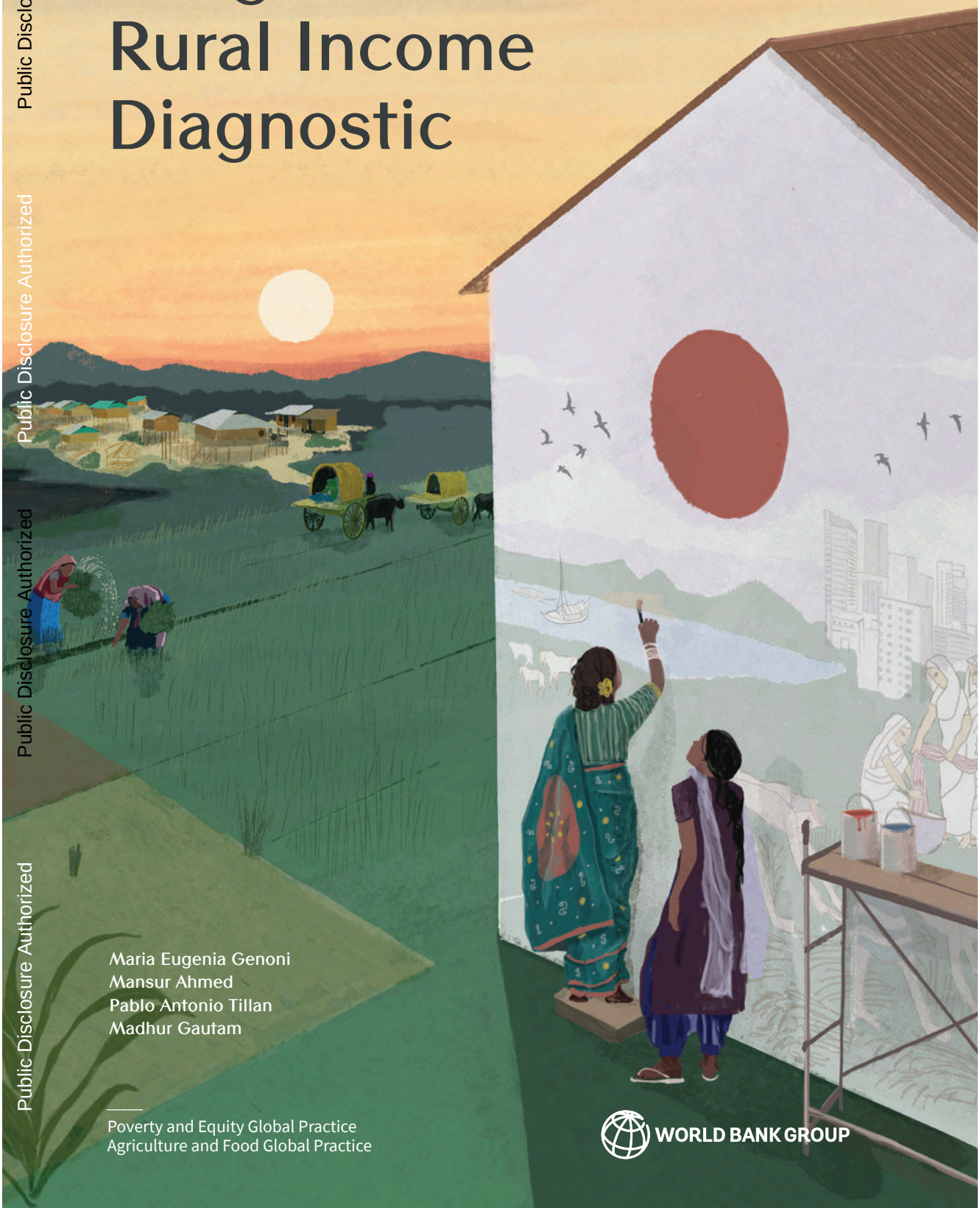
Bangladesh Rural Income Diagnostic

Enabling faster and more equal income growth in rural Bangladesh



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Abbreviations

ASA	Association for Social Advancement
BBS	Bangladesh Bureau of Statistics
BDP2100	Bangladesh Delta Plan 2100
BIDS	Bangladesh Institute of Development Studies
BIHS	Bangladesh Integrated Household Survey
BPDB	Bangladesh Power Development Board
BRAC	Bangladesh Rural Advancement Committee
BSA	Bangladesh Seed Association
CBN	Cost of Basic Needs
CPI	Consumer Price Index
DAE	Department of Agricultural Extension
DAM	Department of Agricultural Marketing
DLS	Department of Livestock Services
EBA	Enabling the Business of Agriculture
FAO	Food and Agriculture Organization
FAOSTAT	Food and Agriculture Organization Statistical Database
FDI	Foreign Direct Investment
FY	Fiscal Year
GCI	Global Connectivity Index
GDP	Gross Domestic Product
ha	Hectare
HIES	Household Income and Expenditure Surveys
HYV	High-yielding variety
ICT	Information and communications technology
IFPRI	International Food Policy Research Institute
kcal	Kilocalorie
kg	Kilogram
km	Kilometer
kWh	Kilowatt hour
LFS	Labor Force Survey
LTS	Lal Teer Seed
MSME	Micro, small, and medium enterprises
MT	Metric tonne
NGO	Nongovernmental organization
PKSF	Palli Karma Sahayak Foundation
QLFS	Quarterly Labor Force Survey
R&D	Research and development
RID	Rural Income Diagnostic
RMG	Ready-made garment
SME	Small and medium enterprises
TFP	Total factor productivity
TTL	Task Team Leader
US	United States of America
USAID	United States Agency for International Development
UTC	Universal Time Coordinated
WDI	World Development Indicators
WSA	Water spread areas

Executive summary

This Rural Income Diagnostic (RID) aims to answer the question: "What are the main opportunities and constraints to faster, sustained income growth for poor and vulnerable households in rural Bangladesh?" This analysis is motivated by recent evidence highlighting the centrality of rural areas for poverty reduction in Bangladesh and the need to update our understanding of rural income dynamics to better inform policy solutions.[1] The objective of the analysis is to inform the World Bank Systematic Country Diagnostic and government planning.

The analysis focuses on areas where progress can be made in the next five years, consistent with the country's long-term development path. The focus on short-term priorities to accelerate rural income growth needs to be implemented in a manner that is consistent with, and does not distract from, long-run goals and investments that will have very high future returns, especially for the poor. These include investments in child nutrition, health, and education.

The RID takes four steps to identify and prioritize opportunities and constraints for rural income growth:

- **Step 1: Evaluate context and key dimensions of heterogeneity.** What do we know about rural incomes and poverty in Bangladesh? How do rural households currently allocate time and assets across activities to maximize income and reduce variability?
- **Step 2: Identify opportunities for income growth.** What are the opportunities for agricultural growth and rural non-farm growth, and how may migration contribute?
- **Step 3: Prioritize constraints to achieving growth.** What are the most important constraints preventing poor households from taking advantage of opportunities to raise their incomes?
- **Step 4: Identify policy solutions.** What are feasible policy actions that would help poor households overcome these constraints and take advantage of opportunities for income growth?

[1] Hill and Genoni (2019).

Understanding context and income heterogeneity

Bangladesh's gains against poverty in rural areas have been remarkable. Although poverty remains high, and may have risen with COVID-19, Bangladesh has achieved strong reductions in poverty levels in the past decades. Bangladesh reduced its rural poverty from 52 percent in 2000 to 27 percent in 2016/17, according to the latest official statistics. About 80 percent of the country's poor live in rural areas.[2]

Economic transformation has allowed many rural households to diversify income sources and increase income and consumption, but gains remain fragile. All sectors of Bangladesh's economy have contributed to poverty reduction in the past, reflecting a rapidly transforming and interconnected economy, in which many households derive labor income from multiple sources. For all rural areas, on average 39 percent of households derive income from different sectors (i.e., agriculture, industry, and services). Importantly, these patterns do not differ substantially between poor and richer households in rural areas. However, many households transition in and out of poverty. About 4 in 10 rural Bangladeshi households belonged to the bottom income quintile at some point between 2000 and 2014. This highlights the importance for sustained rural development of focusing not only on the poor, but also on vulnerable non-poor households.

Recurrent movement in and out of poverty partly reflects the low quality of jobs and weather-related risks, combined with limited ability to cope with income shocks. Informal self-employment and daily wage activities largely dominate rural employment. Outside agriculture, the poor are more engaged in small-scale trading and lower-quality service jobs. A worker's type of employment (daily laborer, self-employed, or salaried) appears to better predict their household poverty than does their main economic sector of work. On the demand side, a large share of employment is based on informal and subsistence microenterprises.[3] In addition, Bangladesh's location renders it especially vulnerable to the adverse impacts of weather and climate change. The vulnerability in rural incomes is accompanied by limited ability to cope with income shocks. Negative shocks experienced by rural households are largely managed with the household's own resources. Due to lack of options, the poor rely more on reducing food consumption when facing a shock.

[2] Poverty estimates based on the official upper poverty line. See Ahmed et al. (2019); Hill and Genoni (2019).

[3] Farole and Cho (2017).

Even before the COVID-19 crisis, studies indicated that some of Bangladesh's traditional growth drivers were losing steam. The contribution of agricultural growth to poverty reduction has diminished since 2010, garment job creation has stagnated, and poverty in the informal service sector in urban areas has increased. In addition, recent poverty reduction has been uneven across regions, and spatial disparities have re-emerged, with urban poverty stagnating and Rangpur and Rajshahi divisions recently seeing rural poverty rise.[4]

The COVID-19 crisis highlights challenges linked to Bangladesh's current pattern of growth and poses significant risks for the fight to eradicate poverty. Reliance on the garment sector for employment creation and growth has turned into a source of vulnerability for Bangladesh. Remittances were central to supporting incomes but have now come under strain, with important localized effects. In addition, the large share of incomes derived from vulnerable and informal jobs means that many Bangladeshi households remain at risk of falling into poverty. Importantly, the economic impact of the COVID-19 crisis is not limited to major cities, as a large share of non-farm employment in Bangladesh's rural areas is also in the sectors hardest hit by the pandemic.[5]

Three features of rural incomes are key for identifying future opportunities:

- **First, rice dominates rural farm incomes, but the sector has been underperforming, limiting agriculture's contribution to poverty reduction.** Rice is by far the dominant crop for rural Bangladeshi households. However, growth in rice production has slowed significantly, a key factor in the overall slowdown of agricultural growth. While many crops offer farmers higher average returns than rice, the majority of farmers continue to grow rice, in part because cereal production involves lower risks. Public policy support in the form of input subsidies, procurement support, and research and development for food security contribute to the lower risk of producing cereals.
- **Second, there is still a deep gender divide in the rural labor market, and women's earning potential remains largely untapped.** Employment and earning sources differ sharply between men and women in rural areas. Female labor force participation in rural areas has increased steadily, but remains much lower than men's. Women's share in agricultural employment has grown over time, reflecting an increasing "feminization of agriculture." However, about 3 in 10 women who report working are engaged in livestock

[4] Hill and Genoni (2019); Farole and Cho (2017).
[5] Genoni et al. (2020).

and 11 percent in unpaid farm activities. In contrast, only 6 percent of men report deriving income from livestock, and only 2 percent are unpaid.

- **Third, location influences rural income inequality, as income opportunities vary across areas.** Greater engagement in agriculture in Western Bangladesh has tied poverty reduction there more closely to the performance of the agricultural sector.[6] On the other hand, Western areas and poorer parts of the East have higher agricultural diversification potential, which could boost agricultural incomes in these regions in the future.[7] To date, faster income gains among households engaged in garments and other manufacturing have increased spatial disparities, as these activities are concentrated in the Eastern divisions around the Dhaka-Chittagong corridor. Finally, migration incomes are important for poverty reduction, but the concentration of migrants in Dhaka and Chittagong adds to spatial differences in rural incomes.

Strategic household assets and services (education, land, seeds, irrigation, and access to electricity) and key markets (farm-product, land, credit, and insurance) offer levers for improving rural incomes. This report highlights substantial progress in household assets and access to services but also persistent gaps. For instance, half of the rural adult population is illiterate, especially women and people in Western areas. Land is fragmented into small farms with limited space for expansion, and land markets could function more efficiently to circumvent these challenges. Agricultural productivity faces both longstanding and emerging challenges related to irrigation, fertilizers, mechanization, and seeds. Two in ten rural households do not have access to electricity, and power cuts are frequent. Connectivity between the country's periphery and Dhaka-Chittagong—the dominant economic center—is compromised by inadequate transport infrastructure and limited broadband connectivity. Substantial improvements are needed in the commercialization of agricultural products, access to credit, and insurance markets.

Key opportunities for inclusive rural income growth

Agriculture needs to become more productive, not only to boost farm earnings but also to spur rural non-farm incomes. Despite the country's economic transformation, a large share of incomes in rural areas still depend on agriculture. The recent slowdown in agricultural growth is an important reason why poverty has

[6] Hill and Genoni (2019).
[7] Ahmed et al. (2021).

increased or stagnated in Western areas, so the performance of agriculture is crucial for reducing spatial welfare disparities. Boosting growth in agriculture is also important because of its multiplier effect on growth in rural non-farm incomes.[8] The spatial distribution of firms is highly correlated with non-farm incomes, indicating that agriculture's multiplier role can contribute to reducing income disparities across the country, especially in stimulating non-farm incomes in areas remote from large urban centers.

While potential for diversification through arable land expansion is limited, diversification could be achieved through higher production intensity and substitution of crops. Closing yield gaps in rice remains important. Analysis indicates that there is room to close remaining yield gaps in aman and aus rice. This can support freeing up suitable boro rice areas for a diverse range of high-value and more sustainable crops, while accelerating the development of the livestock, poultry, and fisheries subsectors, which have growth potential. The expanding domestic market for high-value agricultural products provides an opportunity to increase incomes by diversifying agricultural output into higher value-added crops, livestock, and fishing. Past trends and projections indicate that domestic consumption of rice is declining, while that of other, typically higher-value commodities is rising. This means there is room to expand output of other agricultural products, without compromising food security objectives.

Supporting the growth of urban areas outside Dhaka and Chittagong can boost rural incomes and distribute the benefits of internal migration more evenly. Bangladesh's urbanization and economic-activity development have been largely concentrated around the Dhaka and Chittagong corridor. Manufacturing has grown in peri-urban areas of Dhaka, but job growth in secondary cities and other urban areas has thus far been limited. Recent improvements in access to electricity and education have substantially narrowed gaps in education and infrastructure between Dhaka and other urban areas. This could open fresh opportunities for job creation and higher productivity in those areas, if other investment gaps are addressed. As internal migration is driven by the pursuit of economic opportunities, a more balanced urbanization that creates new economic openings in smaller cities can spread the benefits of internal migration across the country. Given the current size of Dhaka, locally led firm growth, and not the reallocation of firms, is more likely to drive growth in secondary cities and other urban centers.

[8] Shilpi and Emran (2016).

The existing spatial distribution of firms suggests that sectors that serve the internal market, in particular agro-processing, have more potential for short-term non-farm job creation in urban areas outside Dhaka and Chittagong. The current spatial distribution of agro-processing activities is more even across the country than is the case for other non-farm activities, highlighting the potential of agro-processing to create non-farm income opportunities in a more decentralized way.[9] Secondary and other urban centers are well placed to host value-added processing of agricultural products and can be a critical link to boost agricultural productivity and rural incomes.[10] Developing this sector should be seen as complementing broader efforts to expand quality job growth in urban areas along with other non-farm activities, including greater export orientation of non-RMG manufacturing activities.

Finally, supporting greater labor force participation and higher income productivity for women is another important avenue for rural income growth. Women's participation can ease pressures in the agricultural labor market and support crop diversification, as the availability of agricultural labor is central for this process.[11] The changing gender composition of the agricultural workforce suggests that even larger benefits can be achieved by further reducing barriers to women's participation. High unemployment among young women underscores the need to expand job opportunities for women in rural areas.

Constraints to rural income growth and policy levers to lift them

The RID identifies a series of constraints that, if addressed, could help Bangladesh take advantage of the rural income opportunities just described. The RID identifies and prioritizes constraints based on two main criteria: (i) strong evidence that current performance in the area is falling short; and (ii) strong evidence that tackling the constraint can substantially improve rural income growth. The evidence used comes from two sources: the descriptive analysis undertaken for this study and an extensive literature review. The report organizes the constraints under five areas for policy intervention: (i) policy focus and regulations; (ii) investment gaps; (iii) market-related constraints; (iv) knowledge and capacity constraints; and, (v) gender norms.

[9] Muzzini and Aparicio (2013) show that agro-processing and textiles contributed significantly to the growth of non-farm activities in rural areas between 2001 and 2009. Over that period, the share of agro-processing jobs located in rural areas increased from 42 to 55 percent, and the share of textiles jobs rose from 38 to 50 percent.

[10] Muzzini and Aparicio (2013); Farole and Cho (2017).

[11] Hoque and Ahmed (2020).

Following the identification of key constraints, the analysis identifies policy levers that can help lift constraints and trigger opportunities. The RID recommends policy solutions based on two features: (i) they are supported by a strong evidence base, and (ii) they are feasible within five years. In the current state of evidence, some policy areas are clearer and more specific than others. On some fronts, such as tackling gender norms, continued experimentation can be important to tailor approaches to the country context and for scalability.[12]

This report identifies three main constraints related to policy focus and regulations. First, as income growth and urbanization continue, agricultural policy will need to support a more diversified agriculture. The report highlights the importance of levelling the playing field across products by addressing bias against some high-value non-rice production in agricultural support. The evidence indicates that, with changing demand patterns and higher incomes, this can be done without compromising the country's food-security goals. Second, streamlining current regulations can create a more robust seed sector, with even higher private-sector participation and higher-quality seeds. Third, improving the coordination of transport policies and road safety enforcement can contribute to reducing transaction costs associated with congestion and the quality of the transport network.

Policy levers related to policy focus and regulations include:

Rebalance agricultural policies. Some actions comprise: (i) Review and reform input subsidies, especially on fertilizers, and leverage extension services to make fertilizer use more efficient; (ii) Rebalance the agricultural research and development (R&D) budget toward non-rice products; (iii) Revisit regulations preventing private-sector actors from breeding and producing seeds for notified crops;[13] (iv) Increase public-private coordination on quality seed supply for notified crops; (v) Increase market transparency on the quality and effectiveness of seeds.

[12] Evidence of existing successful approaches in Bangladesh was collected from evaluation documents, recent high-quality assessments, and through stakeholder consultations. Results were cross-referenced with extensive literature reviews on the effectiveness of existing policies and potential alternatives. The analysis highlights areas where evidence suggests that the policies now being used to improve rural incomes in Bangladesh can be enhanced to achieve greater impact.

[13] Notified crops are rice, wheat, potato, jute, and sugarcane, which are considered important in terms of food and national security. Seed segments for these crops are highly regulated.

Review policy actions and regulations that can lower transport and logistics costs.[14] Policy areas that can be tackled in the next five years include: (i) Assess roles to improve coordination across public transport ministries and agencies; (ii) Review outdated policies and regulations to move from development of infrastructure to also focus on the quality of services; (iii) Fully implement the Competition Act, which aims to prevent collusion in the logistic services market and price fixing by industry players; (iv) Strengthen enforcement of existing regulations to prevent road accidents and overloading of trucks.

The RID analysis also prioritizes water management, electricity, and transport-related investments. Given the extent of flooding in the country and the need for reliable water supply in off-monsoon seasons, better irrigation and drainage remain crucial for productivity and diversification in agriculture. Priorities to close investment gaps include: (i) Invest in high-efficiency irrigation coverage and flood protection, particularly in hilly and highland divisions; (ii) Invest in reliable drainage, particularly in low-lying areas where production of non-paddy crops is especially difficult; (iii) Continue promoting the shift away from boro paddy, as this crop is rapidly depleting groundwater storage. Renewed efforts in terms of energy and transport remain central for both farm and non-farm income growth. Actions to close electricity gaps in terms of coverage and reliability of the supply should continue. Closing transport infrastructure gaps is also central, with a stronger emphasis on infrastructure maintenance.

It is important to make the land market work better. With average land size very small and limited room for expansion, land markets need to be more efficient to help create economies of scale for investment. Land rental markets help landless farm households to access cultivable land. However, typical land rental tenure is limited to three years and largely informal. A specific policy area related to this point is reviewing the agricultural land rental market to identify specific market failures that hinder longer-term rental of agricultural land.

The report identifies knowledge and capacity constraints related to low skills and weak extension services. Despite recent gains, the human-capital base of Bangladesh's rural adult population remains low, constraining opportunities to improve agricultural productivity and access productive non-farm opportunities. Fully overcoming this key barrier will be a slow process, however, skills-development efforts should be pursued. Policy makers can also bolster extension systems to deliver more timely and relevant information to farmers.

[14] These recommendations build on the extensive analysis undertaken by Herrera Dappe et al. (2019).

Policy areas that can improve extension services include: (i) Revise the budget and service-delivery capacities of the Department of Agricultural Extension (DAE); (ii) Provide training to DAE extension staff on new agricultural knowledge and techniques for delivery; (iii) Increase support for private-sector-led training programs (e.g., PRAN); (iv) Support closer integration between DAE and the private sector, which could enhance impact despite limited resources.[15]

The report highlights gender norms that constrain women's ability to engage in more productive, paid farm and non-farm activities. The prevalence of early marriage is still high in Bangladesh compared to other South Asian countries, increasing the likelihood that younger Bangladeshi women will exit school or the labor force due to household responsibilities. Mobility constraints also limit women's ability to engage in non-farm activities and commercialization of farm products. Restrictions on women's ability to inherit property or obtain credit constrain their labor market participation.[16]

Policy areas to tackle gender norms: There is some recent evidence of progress in lowering barriers to income growth among rural women, particularly for younger cohorts. However, resolving constraints will require a comprehensive approach that tackles multiple barriers at once. In the short run, policy priorities include the following: (i) Invest in boosting productivity in women's livestock work; (ii) Engage men and communities to promote gender equality; (iii) Institute legal reform for women's inheritance of land, and address social norms that oppose women's land ownership and registration; and (iv) Target interventions to increase women's control of financial resources.

[15] World Bank (2020a).

[16] Cameron, Dowling, and Worswick (2001); Gonzales et al. (2015); Kabeer (1990); Amin (1997); World Bank (2012); Klugman et al. (2014); Srivastava and Srivastava (2010); Neff, Sen, and Kling (2012), Solotaroff et al. (2019).

Introduction and objectives of this review

In the past two decades, Bangladesh has achieved remarkable welfare gains for its people, both in monetary and non-monetary terms, registering rates of poverty reduction that rank among the most impressive in the world. Since 2010, however, the country's progress in poverty reduction has slowed, and spatial welfare disparities have widened. Bangladesh's earlier welfare progress was accompanied by robust economic growth, a sweeping structural transformation of the country's economy, and rapid urbanization. After 2010, however, while the country's economic growth accelerated, poverty reduction slowed. Even before the COVID-19 crisis, studies indicated that some of Bangladesh's traditional growth drivers were starting to lose steam. The contribution of agricultural growth to poverty reduction has diminished, garment job creation has stagnated, and poverty in the informal service sector in urban areas has increased. In addition, recent poverty reduction has been uneven across regions, and spatial disparities have re-emerged, with urban poverty stagnating and Rangpur and Rajshahi divisions seeing rising rural poverty.[17]

The COVID-19 crisis highlights the challenges linked to Bangladesh's current growth pattern and poses significant risks in the fight to eradicate poverty. Reliance on the garment sector for non-farm employment creation and growth is now a source of vulnerability for Bangladesh. Remittances, central to supporting incomes in the past two decades, are now under strain, with important localized effects. In addition, the large share of incomes derived from informal and more vulnerable jobs puts many Bangladeshi households at risk of falling into poverty. The economic impact of the COVID-19 crisis is not limited to major cities, as a large share of non-farm employment in impacted sectors is in Bangladesh's rural areas.[18]

Today, renewed efforts will be needed to continue Bangladesh's remarkable achievements in poverty reduction and advance the country's ambitious development goals. This report marshals evidence and analysis for strategies to

[17] Hill and Genoni (2019); Farole and Cho (2017).
[18] Genoni et al. (2020).

increase income growth in rural areas of Bangladesh, with a particular focus on the poor and those vulnerable to becoming poor. The recently completed World Bank Poverty Assessment[19] highlights the centrality of rural areas in the poverty reduction story in Bangladesh before the pandemic. By the latest official figures, from 2016/17, 1 in 4 Bangladeshi people lived in poverty, and about 8 in 10 of the poor were in rural areas. Shedding light on ways to reduce poverty in the rural space is not straightforward, however. It requires a comprehensive understanding of the income transformation process underway in rural Bangladesh, the links between rural incomes and changing conditions in urban areas, and how specific enabling factors can support rural income gains.

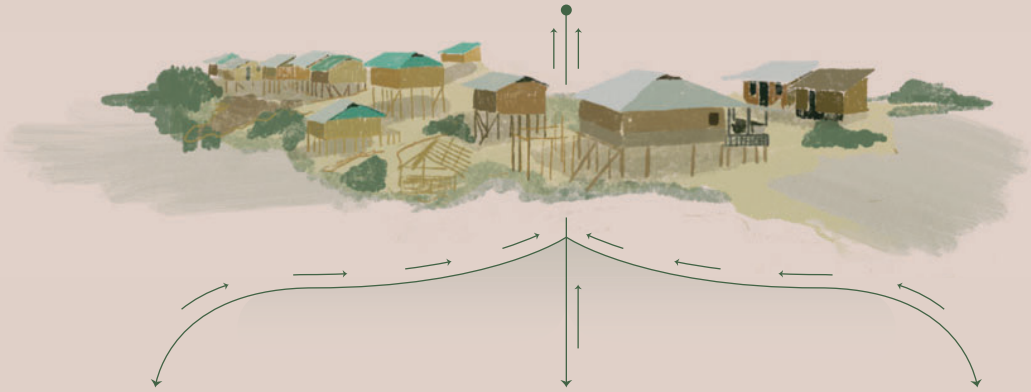
This Rural Income Diagnostic (RID) aims to answer the question: "What are the main opportunities and constraints to faster, sustained income growth for poor and vulnerable households in rural areas of Bangladesh?" The objective of the RID is to better understand how people who currently live in rural areas could have higher incomes, but it does not delve into the broader challenge of how to raise rural GDP. The focus of the analysis is on identifying areas where progress can be made in the next five years, while remaining consistent with the country's long-term development path. This means that short-term efforts to accelerate rural income growth should not distract from long-run priorities and investments that have very high long-run returns. This applies especially to investments that will disproportionately raise future welfare in poor communities, notably investments in child nutrition, health, and education.[20]

This report follows a common framework used across different countries undertaking rural income diagnostics.[21] The framework provides a structure and set of questions that draw on the literature on structural transformation, agricultural growth, and rural non-farm growth.[22] Building on the organizing and theoretical frameworks set out in Timmer (2008), Foster and Rosenzweig (2004), and McCulloch et al. (2007), the RID identifies three broad sources of labor income growth for rural households: growth in agricultural incomes, growth in non-farm incomes, and growth generated through rural to urban migration. Within these categories, it considers more specific sources of income growth that are presented in Figure 0.1.

[19] Hill and Genoni (2019).
[20] Hill (2018).
[21] Hill (2018).
[22] Including Christiaensen and Martin (2018); Barrett et al (2017); Dercon and Gollin (2014); Haggblade, Hazell and Reardon (2007); Timmer and Akkus (2008); Lanjouw and Feder (2001); and some of the references therein.

Figure 0.1:
Types of income growth for rural households

Labor income growth for rural households



Agricultural growth

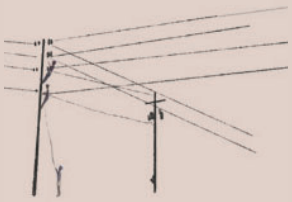
Smallholders obtain increased profitability from existing goods, through favorable changes in relative prices, more stable prices, yield growth, reduced yield volatilty, area expansion, more cost-effective production

Smallholders achieve greater market participation with existing goods, through commercializing a larger share of production, selling further up the value chain, engaging in contract farming or outgrower schemes

Smallholders transition into higher-value outputs from both crop and non-crop agriculture, including livestock

Growth in large-scale commercial farming increases demand for agricultural wage labor

Non-farm growth



Growth in **non-tradable goods and services** (wage or self-employment)

Growth in tradable goods through **mining, tourism, or rural manufacturing** (wage or self-employment

Migration

Temporary migration of family members to urban areas or internationally

Permanent migration of individuals or families

Commuting

The diagnostic takes four steps to identify opportunities and prioritize constraints within and across these types of income growth:

1

Assess context and heterogeneity: How do households currently allocate time and assets across activities to maximize income and reduce variability? How is this different for poor households? How does this vary across the rural space?

2

Analyze opportunities for income growth: What are the opportunities for agricultural growth and rural non-farm growth? What opportunties could emerge from migration?

3

Prioritize constraints to growth: What are the most important constraints preventing poor households from taking advantage of growth opportunities?

4

Identify feasible policy solutions: What are feasible policy actions that would help poor households overcome the constraints and take advantage of the opportunities for income growth?

Source: Hill (2018).

Households are often engaged in more than one type of activity in order to maximize incomes and reduce the volatility of incomes to external shocks. Growth of income from one source has impacts on the opportunities and constraints for growth from other sources.

This report applies the framework to identify opportunities, challenges, and policy options for boosting income growth among poor households in rural Bangladesh. The diagnostic incorporates results from a series of recent technical assessments, complementing these studies with descriptive analysis and benchmarking. Based on the available evidence, it proposes a set of policy recommendations to continue reducing rural poverty. The report's main contributions include systematic comparisons between poor and non-poor households and across the country's divisions and districts. This approach is motivated by recent policy discussions in Bangladesh that have highlighted the need to better differentiate opportunities and options geographically and across income levels.

The report's first section provides a descriptive analysis of the main sources of rural labor income and shows how assets and markets shape the capacity of households to earn income. Using the framework, the analysis distinguishes three broad types of earned labor income that have been the main income sources for rural households and key drivers of rural poverty reduction: income from agriculture, income from non-agricultural activities, and income from migration, i.e. remittances. The relative importance of these types of rural income varies across regions, influenced by agroecology, connectivity, human capital endowments, and other factors. Accordingly, the analysis emphasizes comparisons across divisions in Bangladesh. It also explores patterns across consumption quintiles to identify policy measures most likely to deliver strong benefits for the poor or near poor.

The second section identifies key opportunities and constraints for sustainable agricultural, rural non-farm, and migration income growth for rural households, especially the poor. Some constraints are specific to particular types of income growth, while others—such as the presence of macro-stability and the quality of institutions—broadly affect growth of all types. While these broad factors are critical, the analysis of macro-constraints and institutional and governance aspects is beyond the scope of this report.

The third section prioritizes the main barriers to reducing rural poverty in Bangladesh. These include market and policy failures that constrain opportunities for rural income growth. Constraints are prioritized in the analysis when

strong evidence shows that: (i) they limit rural income growth; (ii) they impact a large number of households, particularly poorer households; and (iii) they constrain multiple types of income growth important for reducing rural poverty. A constraint is also given more weight in the analysis when it operates as a bottleneck: that is, when progress in addressing several other barriers can be accelerated if this constraint is tackled first.

The report's final section identifies policy levers that can help lift some of the prioritized constraints. Evidence of existing successful approaches in Bangladesh was collected from evaluation documents and through stakeholder consultations. Results were cross-referenced with literature reviews on the effectiveness of existing policies and potential alternatives. The analysis highlights areas where evidence suggests that the policies now being used to improve rural incomes in Bangladesh can be enhanced to achieve greater impact.

It is important to note that the rural income diagnostic focuses on income that is earned by a rural household. Therefore, shortfalls in human capital will be identified where relevant, but the diagnostic does not specifically analyze constraints affecting fertility reduction or health, nutrition, and education outcomes. Similarly, macroeconomic factors and governance challenges are not examined in detail unless they affect specific proximal incentives for rural income growth (e.g., fertilizer subsidies).

To set the stage for the core analysis, the following pages describe data sources used for the RID, specify levels of analysis, and clarify the definitions of select key terms.

Data sources and levels of analysis

Main data sources

The descriptive analysis presented in this report relies primarily on three household surveys: the Bangladesh Integrated Household Survey (BIHS), the Household Income and Expenditure Survey (HIES), and the 62-village panel surveys (62-village panel). These data combined make it possible to compare patterns across areas and across household per capita consumption quintiles, a feature central for the analysis.

The BIHS is a rural representative household panel survey that collects detailed data on household-level demographics and assets, income and consumption, and plot-level agricultural production and practices.[23] This survey is representative of rural areas of each of Bangladesh's seven administrative divisions. The first round of the BIHS was conducted from November 2011 to March 2012 and is used as a reference point to measure progress through repeat surveys. The second BIHS round was conducted from January to June 2015. A third BIHS round was completed in 2018. The main analyses presented here rely on the 2018 round.

We complement the analysis with the HIES, which is a comprehensive, nationally representative survey used to measure monetary poverty in Bangladesh. The HIES 2016/17 is the fourth round in the HIES cross-sectional series conducted by the Bangladesh Bureau of Statistics (BBS). Previous rounds were conducted in 2000, 2005, and 2010. For the years 2000, 2005, and 2010, the survey was representative at the division level and by rural and urban areas. For 2016/17, the HIES is also representative of the country's 64 districts.[24] The longer time period covered by the HIES allows us to better portray changes since the 2000s. It is important to note that the 2016/17 survey has some limitations in terms of the quality of the income information collected,[25] and also lacks important details regarding agricultural practices and incomes, as they are not part of the core objectives of the survey.

[23] Ahmed (2016).
[24] Ahmed et al. (2017).
[25] Hill and Endara (2019b).

The 62-village panel allows for a deeper analysis of dynamics and drivers of rural income growth and income poverty across time. The panel surveys were undertaken to assess changes in rural poverty and livelihoods and identify the role of different factors in driving these changes, including technological progress, prices, and others. The panel data is a nationally representative sample of rural households in Bangladesh. The baseline of the survey was carried out in 1988, when 1,260 households from 62 villages in 57 districts of the country were visited. These households were revisited in 2000, 2004, 2008, and 2014. Besides revisiting the original households and their offshoots, researchers have adjusted the sample size in repeat surveys in each round to make the sample representative of the rural population for the survey year. The analysis in this diagnostic used the surveys in 2000, 2008, and 2014.

Each of these three surveys brings its own advantages and limitations to the analysis. Whenever possible, the analysis was repeated for all three surveys, and results are presented when findings seem to be consistent. The descriptive analysis in the next section will present figures using the best data for the particular purpose at hand. Specifically, we use the BIHS data to describe households' income sources, as this is a survey specifically designed to capture rural incomes. We use the HIES surveys to describe recent poverty trends across Bangladesh, migration patterns at the subnational level, analysis across time on urbanization and poverty, and for the analysis of household assets, such as education and electricity. We use the 62-village panel to better understand changes in income sources and their links to poverty and vulnerability by looking at the same households across time. Note that the BIHS data could have been used for the same purpose, however, the final round became available after most of the analyses for the RID were completed. Therefore, the dynamic analysis using BIHS was not included.

The report supplements findings from the three main surveys with information from other surveys conducted by the BBS, including the Economic Census 2013, the Agriculture Censuses, the 2018 Agriculture and Rural Survey, and Labor Force Surveys (LFS). The 2018 Agriculture and Rural Survey was used to provide more updated district-level statistics that cannot be obtained using HIES. LFS was used to analyze unemployment and wage gaps by gender. These sources are complemented with price data from the Bangladesh Department of Agriculture Marketing (DAM) and statistics from the World Development Indicators (WDI), FAOSTAT, and other sources for benchmarking.

Levels of analysis

The descriptive work undertaken here explores whether there are substantial distinct patterns across two dimensions: household per capita consumption and geography. The Bangladesh literature in general provides limited comparisons across the consumption distribution (i.e., between poor and non-poor households) or across regions in Bangladesh. The recent World Bank Bangladesh Poverty Assessment noted a reemergence of the country's East-West economic divide, with poverty in Western divisions stagnating or increasing, even as it has continued to fall in Eastern areas.[26] This highlights the need to better understand regional dynamics, as constraints and enablers of growth may differ geographically.

To explore differences across households with different levels of resources, we construct per capita household consumption quintiles. In HIES, the BBS official consumption aggregate is used to obtain these quintiles, defined only for households in rural areas. A similar approach is adopted for the BIHS. We opt not to compare just poor and non-poor households but also compare across the consumption distribution to provide a more nuanced profile. When comparing poor and non-poor households, we use the upper poverty line determined by the BBS.[27] For the 62-village panel analysis, we rely on household income as the welfare aggregate. Appendix 1 includes summary statistics presenting the variation in consumption and income across rural consumption quintiles to help the reader understand differences across these groups.

To shed light on geographic differences, the analysis incorporates division-level comparisons. In Bangladesh, divisions are the first-level administrative geographical partitions and are redrawn periodically. As of 2016, the country has eight divisions: Barisal, Chittagong, Dhaka, Khulna, Mymensingh, Rajshahi, Rangpur, and Sylhet. For this analysis, seven divisions are adopted (treating Mymensingh and Dhaka as one), to be comparable across time.

[26] Hill and Genoni (2019).

[27] Total household consumption is calculated as the sum of all food and non-food expenditures except for taxes and fees, wedding expenses, and interest and insurance expenses. Rent is included and imputed when missing. A household is considered poor if its per capita consumption is lower than the poverty line for the survey stratum in which it lives. Poverty lines vary across geographic strata to account for spatial differences in the cost of purchasing basic needs. The national upper poverty line is set at the cost of consuming 2,122 Kcal per person per day and an allowance for non-food expenditure. Poverty lines are updated between survey rounds using a food price index that captures food inflation in each stratum and the non-food consumer price index (CPI). See Ahmed et al. (2019).

Analysis below the division level is limited by the representativity of the HIES and BIHS surveys. However, when possible, district-level comparisons are applied. In that case, seven divisions are subsequently divided into 64 districts, or zilas. The division comparison aligns relatively well with differences in agro-ecology, population density, and connectivity to main urban centers (Box 1). Appendix 2 includes summary statistics presenting the variation in consumption and income across the rural areas of the divisions.

Rangpur division is located to the west of the Jamuna river and has low access to the large markets in Dhaka, as well as high rain intensity throughout the year. Rajshahi division is also west of the Jamuna river but has relatively easier access to large urban markets due to its proximity to the Jamuna bridge. This division has both rainy and dry seasons and is highly irrigated. Khulna and Barisal divisions, also west of the Jamuna, are less connected to Dhaka than other western areas. These two divisions have rainy and dry seasons (largely vulnerable to cyclones). Chittagong division is located in the southeast and is the second most urbanized region. Access to markets across Chittagong also depends on proximity to Dhaka. Those areas of Chittagong closer to the capital have better road networks. Chittagong division has some mountainous and forest areas. It also includes both areas with high rain intensity throughout the year and others with distinct dry and rainy seasons. Home to the capital, Dhaka is Bangladesh's most urbanized division and largest market. The southern portion of Dhaka still lacks good connectivity to the north, however. Dhaka has rainy and dry seasons. Sylhet division is located to the northeast and experiences high rain intensity throughout the year.

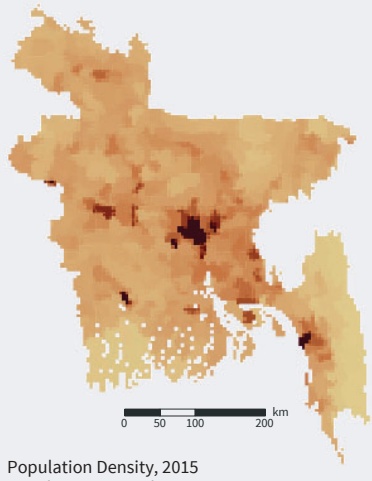
Box 1. Profile of Bangladesh's divisions

Temperature is stable around Bangladesh. Almost all of the country is at sea level or below (except for the south of Chittagong). Virtually the whole country is fit to plant rice or similar crops (again except the south of Chittagong). The Jamuna river has historically been identified as a natural boundary for the different regional patterns of economic growth seen in Bangladesh (Figure B 1).

Figure B 1. Spatial variation of key features in Bangladesh

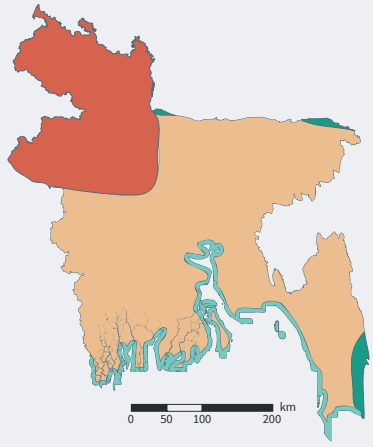
a. Divisions

b. Population



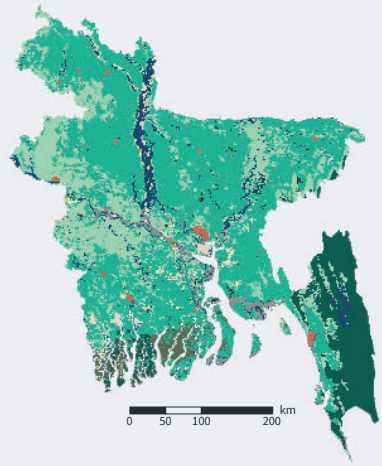
Population Density, 2015
People per square km
High: 90,000
Low: 22

c. Farming systems



Rice
Coastal artisanal fishing
Rice-wheat
Highland mixed

d. Land cover



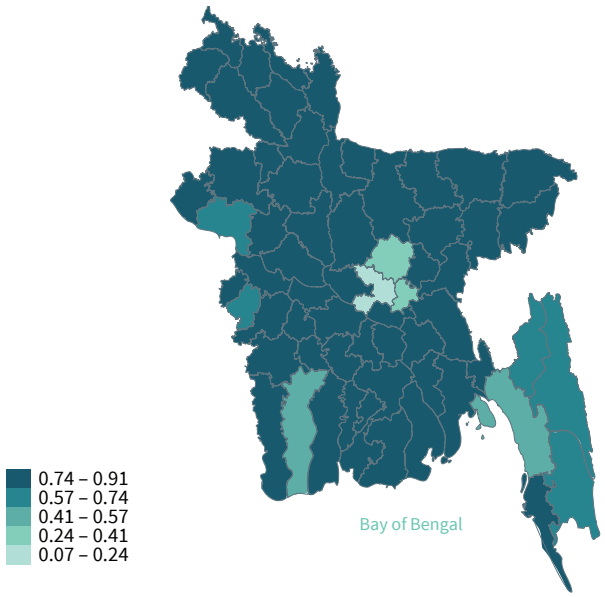
Developed
Rainfed Cropland and Pasture
Irrigated Cropland
Grassland/Shrubland
Savanna
Forest
Water
Wetland
Barren
Tundra
Other

Source: Maps b-d are sourced from the United Nations Food and Agriculture Organization (FAO). (http://www.fao.org/countryprofiles/maps/en/?iso3=BGD)

Key definitions

This report uses Bangladesh's official classification of urban areas. According to this definition, urban areas are those with more than 40,000 individuals within a mouza.[28] It is important to note that, due to this threshold and the fact that many urban areas are very dense, many households officially classified as rural in Bangladesh could be considered urban in other contexts. When using agglomeration indices rather than official definitions of urban areas, the proportion of people living in urban areas in Bangladesh is as much as 20-36 percentage points higher than official estimates.[29] Figure 0.2 presents the share or households living in rural areas across districts according to the HIES 2016/17. [30]

Figure 0.2. Rural population share, by district, 2016



Source: Authors' calculations using HIES 2016/17.

[28] Mouza, or mauza, is the lowest administrative unit with a separate jurisdiction and a well-demarcated cadastral map.

[29] Uchida et al. (2010) suggest an urban population share that is 20 percentage points higher, while Robert et al. (2017) show that agglomeration indices predict an urban population share 30-36 percentage points higher than official estimates. Other methods would suggest an even larger divergence.

[30] According to the WDI, the share of rural population in Bangladesh is similar to other comparator countries. While the country has 62 percent of its population living in rural areas, Vietnam, Pakistan, India, and the average for the South Asia region have 63, 63, 65 and 65 percent, respectively.

The HIES analysis applies some corrections to the classification of rural and urban areas to ensure comparability across time and reflect observed urbanization rates (Table 0.1).[31] The analysis using BIHS and the 62-village panel follows the same households across time, thus the information is representative of the rural population at baseline. Household-level attrition is relatively small in both panel surveys.

Table 0.1. Urban population share in Bangladesh, 2000-2016

	Urban share of population from census data (year) / projections	Urban share (HIES)
2000	23.8 (2001)	20.1
2005		24.7
2010	28.0 (2011)	26.3
2016		29.1

Source: BBS Population and Household Census 2001 and 2011 and HIES 2000, 2005, 2010, and 2016. For calculation details concerning the urban share in HIES 2016, see Hill and Genoni (2019).

Definition of agriculture. Agriculture is defined as the sector consisting of crops, livestock, agroforestry, and fisheries. In this report, the terms "agriculture" and "farm" are used interchangeably. High-value agriculture refers to fish, livestock products, fruits, vegetables, and spices that have a higher market value than traditional food grains. Non-farm activities include all rural economic activities outside farm agriculture, such as self-employment, wage employment (full-time, formal, informal, and seasonal), and non-farm production.

[31] Ahmed et al. (2019).

SECTION 1

Assessing context and heterogeneity

What do we know about rural incomes and poverty in Bangladesh?

This section synthesizes evidence to inform the analysis and policy recommendations presented later in the report. It characterizes the current state of rural incomes in Bangladesh, shows trends, and identifies key dimensions of rural income heterogeneity, for example across geographical regions and gender. The section also seeks to understand migration and labor patterns in rural Bangladesh. It draws on this evidence to address a series of questions that are important for policy decisions, in particular: Who and where are Bangladesh's rural poor, and how has poverty in rural areas been changing? How do rural Bangladeshis earn their incomes, and what risks do they face? What are the main factors shaping heterogeneity in rural incomes? How do key household assets and access to markets translate into rural income gains?

The section starts by summarizing recent trends in rural poverty and identifying the factors behind the poverty performance seen, particularly over the period 2010-2016. We emphasize the 2010-2016 period because the official poverty statistics for those years are the latest available. Some of the descriptive analysis reaches the year 2018. Macroeconomic conditions and sectoral growth trends suggest that the situation did not change substantially enough between 2016 and the advent of the COVID-19 crisis to affect the relevance of the findings. Lack of representative post-COVID-19 data in rural areas limits our ability to analyze poverty conditions following the crisis. Nonetheless, the features highlighted in this section are important in order to recognize vulnerabilities that existed before COVID-19 and so understand the pandemic's implications for the rural poor.

Strong rural poverty reduction but with increased spatial disparities

In the past two decades Bangladesh has achieved substantial reductions in poverty levels. Between 2000 and 2016, Bangladesh reduced its poverty rate from 49 percent to 24.5 percent. Rural poverty fell from 52.3 percent in 2000 to 26.7 percent in 2016. Over the same period, urban poverty declined from 35 percent to 19.3 percent (Figure 1.1). This represents about 25 million Bangladeshi exiting poverty between 2000 and 2016.

Despite improvements, poverty remains high, and the pace of poverty reduction has recently slowed in urban areas. The latest official statistics estimate that, as of 2016-17, about 1 in 4 Bangladeshi lived in poverty. About 80 percent of the country's poor lived in rural areas.[32] The rural poor numbered around 31.7 million, out of the total of 39.6 million poor people in Bangladesh.[33] Recent trends show that poverty reduction remained strong in rural areas, while poverty reduction in urban areas slowed down. Rural poverty fell from 35.2 percent in 2010 to 26.7 percent in 2016. This contrasts with trends in urban areas, where poverty rates declined by only 2 percentage points, with no reduction in urban extreme poverty during this period.[34]

Despite reductions in poverty, there was an increase in inequality in rural areas over the 2010-2016 period. The Gini coefficient increased from 0.27 to 0.29. This increase in inequality came because the bottom 10 percent of households in rural areas did not fare well, while richer rural households experienced higher consumption growth. Poverty reduction was largely explained by growth and not redistribution of consumption.[35]

The increase in inequality was accompanied by an uneven poverty reduction across geographical areas, with poverty recently increasing in the Western divisions. Between 2010 and 2016, poverty declined in the Eastern divisions, stagnated in Khulna and Rajshahi, and increased in Rangpur. The stronger rate of poverty reduction in the Eastern regions widened a welfare gap between Eastern and Western Bangladesh that had previously been narrowed between 2005 and 2010.[36]

[32] According to the 2016 HIES, about 71 percent of the population was rural.

[33] Poverty estimates based on the official upper poverty line. See Ahmed et al. (2019) and Hill and Genoni (2019). Note that poverty estimates are calculated using different poverty lines across the country to account for differences in the cost of purchasing a similar food basket.

[34] Hill and Genoni (2019).

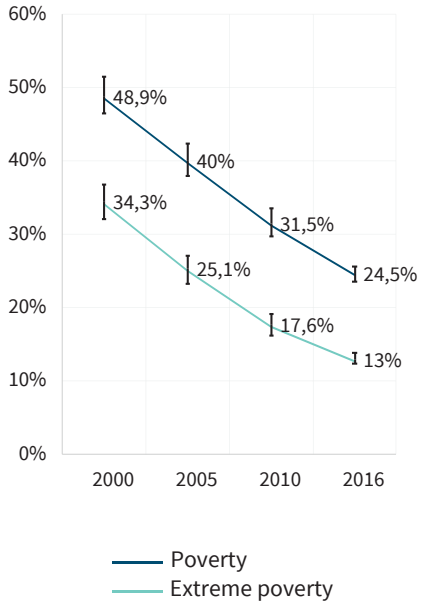
[35] Hill and Genoni (2019).

[36] Hill and Genoni (2019).

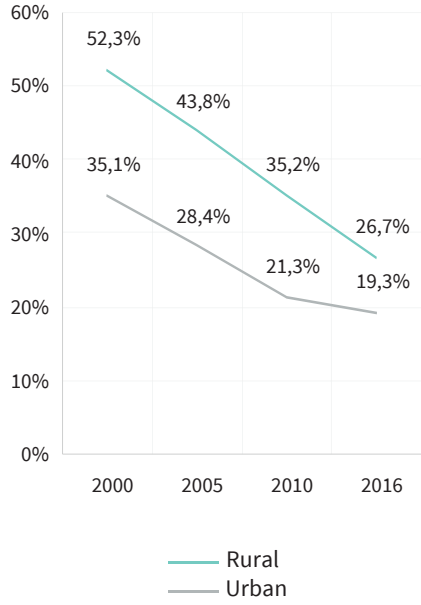
The re-emerging divergence between the East and West occurred largely in rural, instead of urban areas. Rural poverty increased by about 3.7 percentage points in Rangpur and about 1.6 percentage points in Rajshahi between 2010 and 2016 (Figure 1.2). Since 2010, district-level spatial disparities have also increased. The poverty rate rose by more than 10 percentage points in 11 districts of the country and decreased by more than 10 points in 25 districts (Figure 1.3). Districts with poverty increases or stagnation are largely concentrated in the Western part of the country and in Chittagong, while the remaining districts in the center, north, and east of the country performed better.

Figure 1.1. Poverty rates across time, 2000-2016

a. National poverty

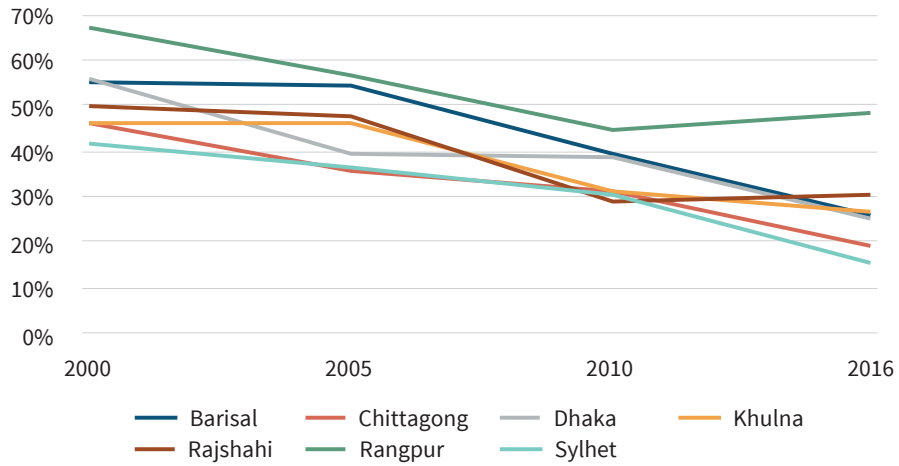


b. Urban and rural poverty rates



Source: Authors' calculations using HIES 2000-2016.
Notes: Poverty headcount rates are calculated based on the official upper poverty line using the Cost of Basic Needs (CBN).

Figure 1.2. Rural poverty rates by division, 2000-2016

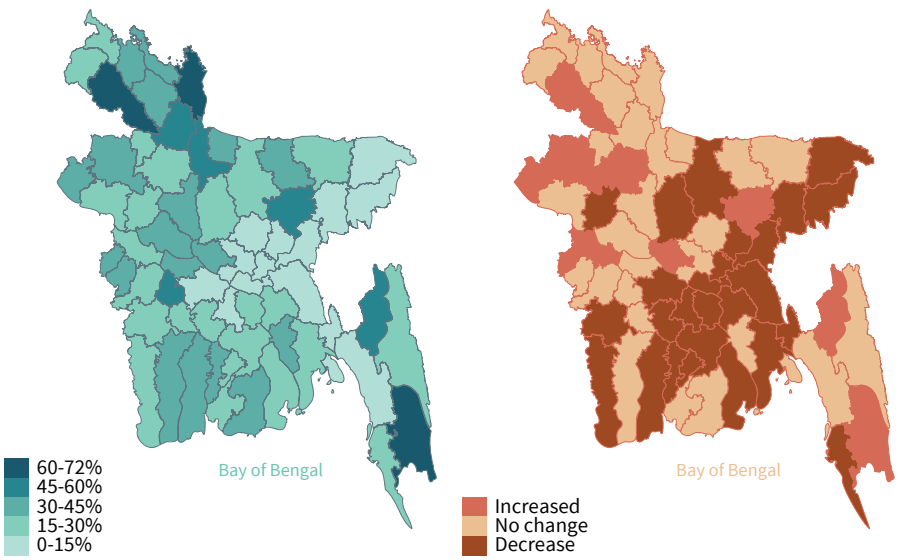


Source: Authors' calculations using HIES 2000-2016.

Figure 1.3. District poverty rates and recent changes

a. Poverty rates in 2016

b. Change in poverty 2010-2016

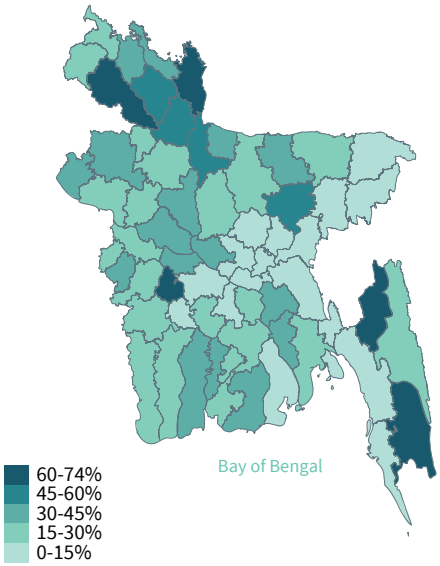


Source: Authors' calculations using HIES 2016 and 2010 poverty maps.
Notes: In panel b, changes in poverty are indicated in orange (increased) or brown (decreased), if they are statistically significant. Districts without statistically significant change are displayed in beige.

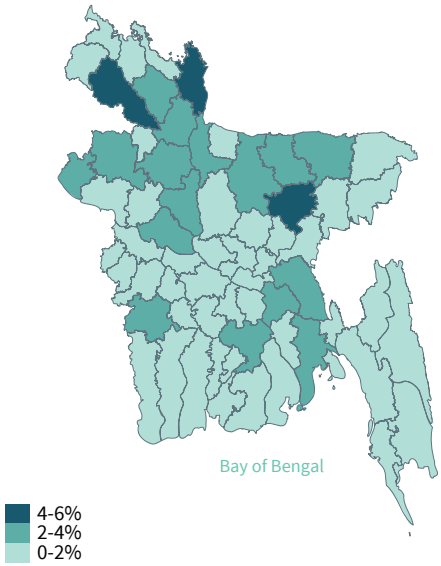
Rural poverty is spatially concentrated, with 11 districts out of the total 64 accounting for some 40 percent of the rural poor. Rural poverty is relatively higher in the Western half of the country, with the exception of three hilly districts (Bandarban, Rangamati, and Khagrachhari) in the Eastern division of Chittagong (Figure 1.4a). The district of Dinajpur in Rangpur is home to the largest share of the rural poor found in any single district (6 percent), followed by Kurigram, also in Rangpur, and Kishoreganj in Dhaka (with 5 percent each). Rangpur and Gaibandha in Rangpur division account for another 8 percent of the country's rural poor (Figure 1. 4b). A large share of Bangladesh's rural poor is located in northern parts of the country.

Figure 1.4. Poverty rates and distribution of the poor across districts, 2016

a. Rural poverty rate by district



b. Percentage of rural poor across districts



Source: Authors' calculations using HIES 2016.
Note: Panel (a) displays the district upper poverty rates. Panel (b) displays the distribution of the poor population across districts.

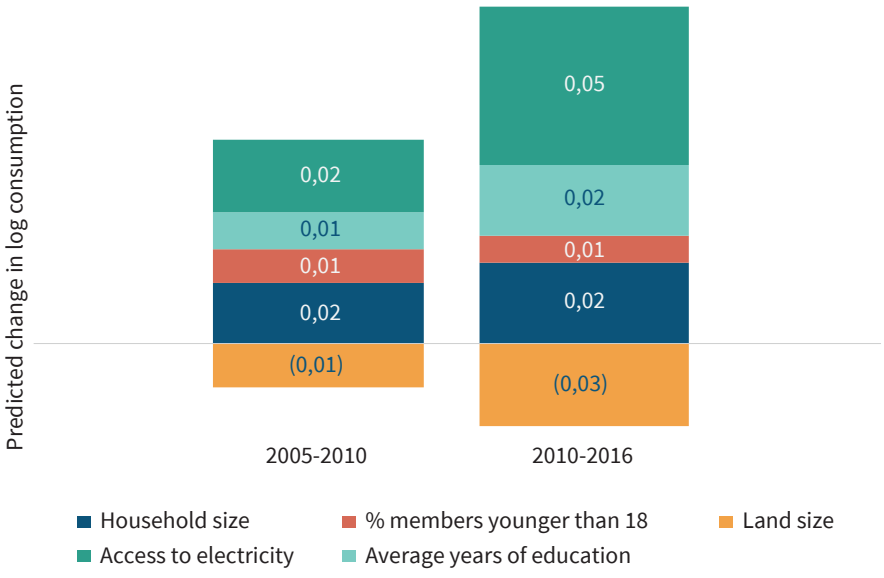
The role of different economic sectors in poverty reduction and East-West disparities

A decomposition analysis shows that improvements in education, reductions in household size, and expansions in access to electricity and other assets were sizeable enough to explain about 70 percent of all rural consumption growth between 2010 and 2016. This was a larger contribution from these sources than

in the period 2005-2010, when they explained about 53 percent of consumption growth. The increased importance of these factors in 2010-16 was largely linked to the faster expansion of electricity coverage in some areas of the country, as later sections of the report will show (Figure 1.5).

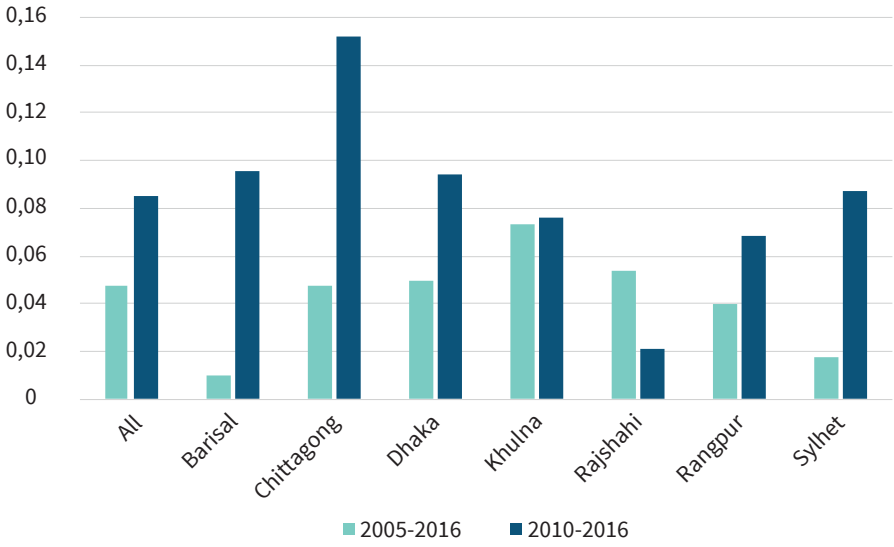
However, reductions in family size and gains in adults' education were slower in the Western divisions, partly explaining the West's slower progress in poverty reduction. Compared to the period 2005-2010, the contribution of gains in assets to consumption growth between 2010 and 2016 was proportionally much higher in the Eastern divisions (Figure 1.6). Hill and Endara (2019b) show that slower progress in reducing family sizes and in average education of adult members in the rural Western divisions is associated with the limited progress in poverty reduction in the rural West and the reemergence of the East-West welfare divide.

Figure 1.5. Estimated contribution of demographic and asset changes to consumption growth in rural Bangladesh, 2005-2010 and 2010-2016



Source: Authors' calculations using HIES 2005, 2010, and 2016.
Note: Results from an Oaxaca-blinder decomposition of changes in log consumption between two years. Y-axis measures the predicted consumption per capita growth over the reference period from changes in household demographics and assets (i.e., education of adult members, household demographics, access to electricity, and size of land ownership).

Figure 1.6. Estimated contribution of demographic and asset changes to consumption growth in rural Bangladesh: results by division in two periods



Source: Authors' calculations using HIES 2005, 2010, and 2016.
Note: Results from an Oaxaca-blinder decomposition of changes in log consumption between two years. The bars measure the predicted consumption per capita growth over the reference period from changes in household demographics and assets (i.e., education of adult members, household demographics, access to electricity, and size of land ownership).

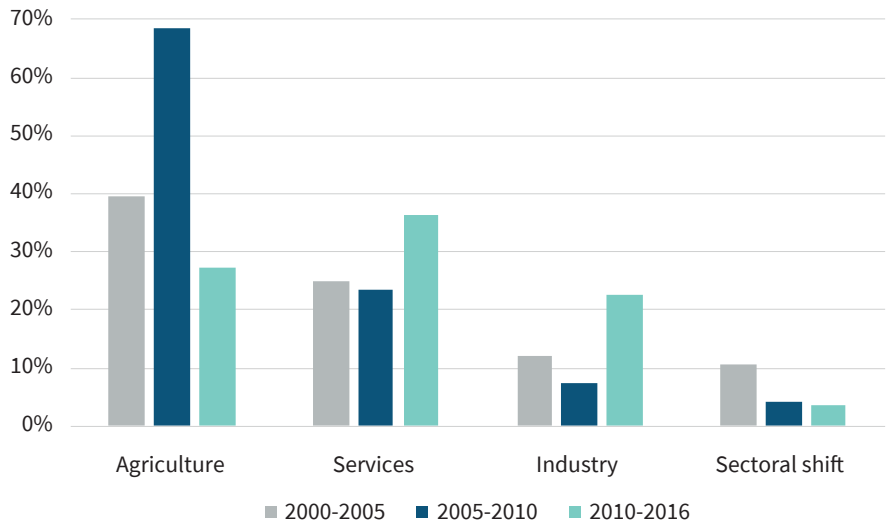
Another element behind the differential performance across areas was the smaller contribution of agriculture to poverty reduction compared to previous periods. Between 2010 and 2016, poverty reduction among households primarily engaged in agriculture was still positive, but considerably slower than in the past.[37] Even though about 47 percent of rural households were primarily engaged in agriculture, they contributed only 27 percent of poverty reduction. About 36 percent of the poverty decline in rural areas was led by households engaged in services, and 23 percent stemmed from households in industry. This contrasts with the period 2005-2010, when agriculture was the most important sector reducing poverty (Figure 1.7). During the period from 2005 to 2010, 69 percent of rural poverty reduction was among households primarily engaged in agriculture. [38]

[37] Hill and Genoni (2019).

[38] An income growth decomposition based on the 62-village panel shows that multiple sources of income contributed to faster income growth and poverty reduction between 2000 and 2014. For households that were poor at baseline, all sources of income (farm, non-farm, and remittance) contributed equally to households' moving out of poverty after 2000, indicating diversified and multiple pathways

The declining role of agriculture in poverty reduction is associated with the slow performance of the sector since 2010, particularly the crop subsector, which accounts for half of agricultural GDP. While the growth rates of agricultural output were above 5 percent between 2005 and 2010, they have been declining consistently since 2010 and remained much lower compared to the trend growth rates in the industry and service sectors (Figure 1.8). Total factor productivity (TFP) growth in agriculture has decelerated sharply in the same period. The TFP growth for the sector declined from an average 2.4 percent annually in 2001-10 to 1.0 percent in 2011-16.

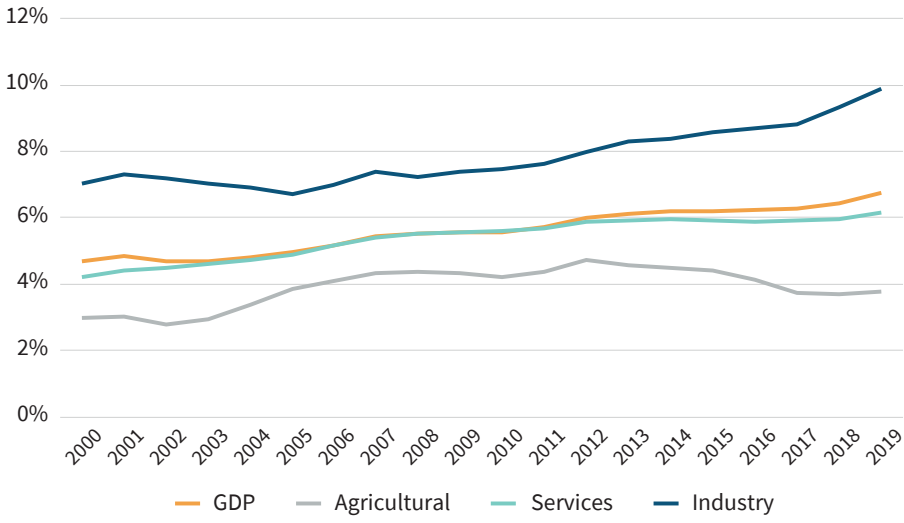
Figure 1.7. Contribution of economic sectors to rural poverty reduction across time



Source: Authors' calculations using HIES 2000, 2005, 2010, and 2016.
Note: Results obtained from Ravallion and Huppi (1991) decompose changes in poverty over time into intra-sectoral effects, a component due to population shifts across sectors, and an interaction (not displayed). Sector of employment defined based on reported hours of work in each sector. Sectoral shift is relatively small as it is defined at the household level.

out of poverty. Remittance incomes were the largest contributor of income gains for non-poor households. In more recent years, 2008 and 2014, non-agriculture income, particularly from businesses and services, gained importance in rural income growth and was the major driver of income growth for poor households. Within agriculture, between 2000 and 2008, income from all sources (rice, non-rice cereals, non-crop agriculture, and labor) made significant contributions to poor households' income. However, the role of non-crop agriculture has become much more prominent after 2008, while the role of crop agriculture (both rice and non-rice) for poor households has become modest in the same period (Ahmed and Gautam 2020).

Figure 1.8. Annual growth rates in total and sectoral GDP, 2000-2019



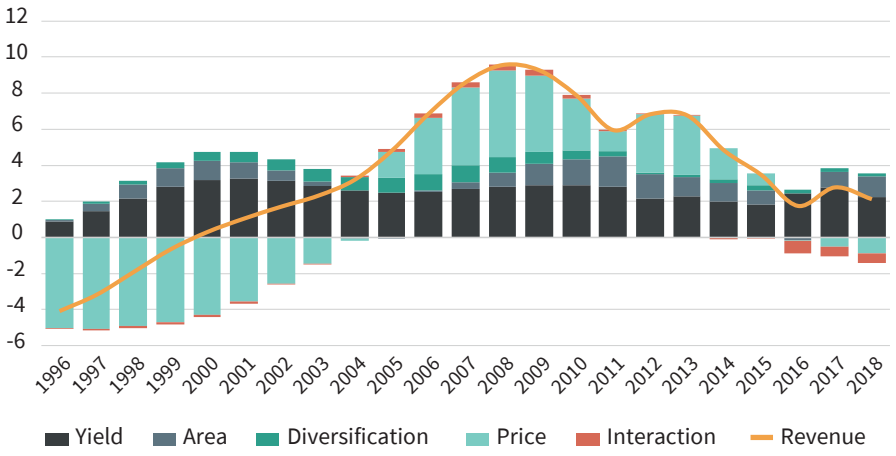
Source: Authors' calculations using WDI.

With a larger share of households engaged in agriculture in the Western regions, slower growth in agriculture contributed to the limited progress in poverty in those areas. As subsequent sections will highlight, households in the Western divisions (Khulna, Rajshahi, and Rangpur) are more likely than households in the Eastern divisions to report their main sector of work as agriculture. As agricultural growth was slower and less poverty reducing[39] between 2010 and 2016, differences in sectors of work between households in West and East seem to have played an important role in driving the increased disparities across areas.[40]

The slowing performance of agriculture is rooted in falling real prices since 2010. While the upward changes in real prices of agricultural commodities accounted for more than half of agricultural growth between 2005 and 2010, the real prices of agricultural commodities have declined after peaking in 2008. Prices rebounded briefly in 2012 and 2013 but have since fallen sharply, turning negative in 2016 (Figure 1.9).

[39] Agriculture was also less poverty reducing, as the elasticity between growth and poverty also declined between 2010-2016, compared to previous periods.
[40] Hill and Genoni (2019).

Figure 1.9. Decomposition of aggregate crop revenue growth, 1996-2018[41]



Source: Authors' calculations using FAOSTAT data.

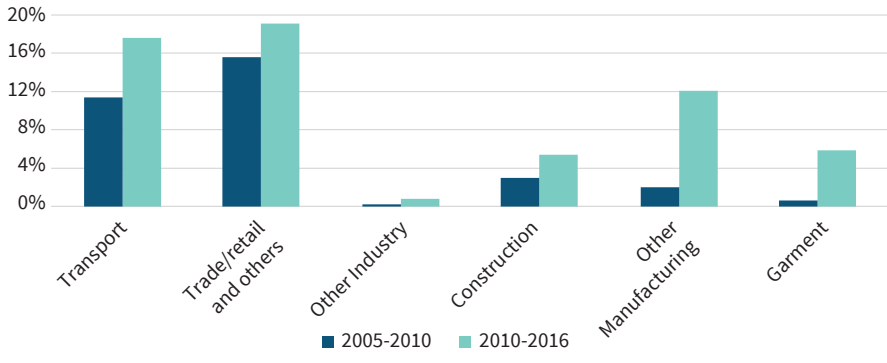
Despite the reduced contribution of agriculture to poverty reduction in recent years, faster progress in industry and services allowed rural poverty reduction to continue at a strong pace. Faster consumption growth among non-agricultural households supported a strong pace of poverty reduction of about 1.4 percentage points per year, though this was slower than the 1.7 percentage points per year observed between 2005-2010. Between 2005 and 2010, about 30 percent of poverty reduction was driven by industry and services. In contrast, between 2010 and 2016, households in these two sectors accounted for 59 percent of poverty reduction.

Stronger poverty gains among households engaged in garments and manufacturing also help explain increased spatial disparities, as these activities are concentrated in the Eastern divisions around the Dhaka-Chittagong corridor. Between 2010-2016, households in garments, other manufacturing, and transport showed much stronger contributions to poverty reduction than in the past (Figure 1.10). While garments and other manufacturing contributed about 3 percent of rural poverty reduction between 2005 and 2010, households in these sectors contributed 18 percent of poverty-reduction gains between 2010 and 2016. For households in transport, the contribution was about 7 percentage points higher in 2010-2016. More households in Eastern areas were primarily engaged in garments and manufacturing, and so benefited more from the gains in those sectors.

[41] For details on decomposition methodology, see Minot et al. (2006).

For instance, in 2016, about 16 percent of rural households in Dhaka division were primarily engaged in garments and manufacturing, compared to 8 percent in Khulna and 9 percent in Rangpur divisions. Benefits in the transport sector were more widespread, as employment shares in this sector are more evenly distributed across areas.

Figure 1.10. Contribution of sectors within industry and services to rural poverty reduction across time



Source: Staff calculations using HIES 2005, 2010, and 2016.
Note: Results obtained from Ravallion and Huppi (1991) decompose changes in poverty over time into intra-sectoral effects, a component due to population shifts across sectors (not displayed), and an interaction (not displayed). Sector of employment defined based on reported hours of work in each sector.

Understanding rural incomes

Having examined rural poverty trends, their underlying drivers, and key factors influencing East-West disparities in poverty reduction, we have a foundation for characterizing rural income dynamics more broadly. Accordingly, we now turn to look at how Bangladesh's rapid development has reshaped rural income patterns, enabling swift consumption gains for many households, but leaving many rural people still exposed to substantial risks. Progress in rural incomes has not been uniform, and identifying main factors shaping that heterogeneity is important for setting policy priorities.

Rapid income transformations—that remain vulnerable

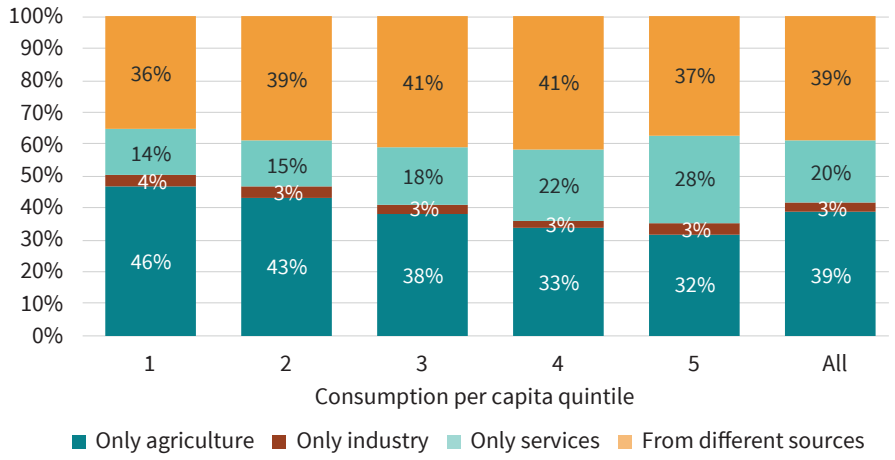
The fact that all sectors of Bangladesh's economy have contributed to poverty reduction in the past reflects a country that has been transforming rapidly. Since 2000, there have been large shifts in the sectoral distribution and geographical focus

of economic activity in Bangladesh. Bangladesh has moved at a faster pace than most other developing countries in this process of structural transformation.[42]

Many Bangladeshi households derive labor income from multiple sources. Considering all rural areas, on average 39 percent of households derive income from different sectors, while 39 percent derive income only from agriculture, and the remaining households only from industry (3 percent) or only from services (20 percent). Comparing across income quintiles shows that these patterns do not differ substantially between poor and richer households in rural areas (Figure 1.11), although differences are important in absolute terms. Median household per capita labor income was 2,255 Takas in 2018 and varied from 700 Takas for the poorest quintile to 5,000 Takas for the richest quintile.[43]

Figure 1.11. Percentage of total labor income derived from agriculture, industry, and services

Rural areas, by quintiles, 2018



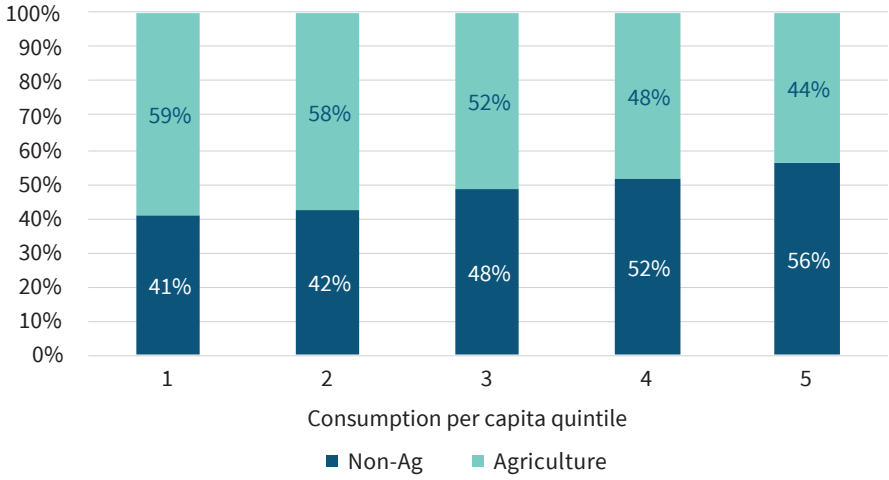
Source: Authors' calculations using BIHS 2018.
Note: The figures denote the average share of sectoral sources of income across consumption quintiles.

[42] Hill and Genoni (2019) show that, between 2010 and 2016, the share of employment in agriculture in Bangladesh fell about 24 percentage points, compared to 14 points in the South Asia region as a whole.
[43] Figures estimated using BIHS 2018. Household labor income is calculated by adding all the incomes of all activities performed by the individuals within the household.

The movement to off-farm activities has also been observed for the rural poor. Despite their stronger connection to agriculture, households in the poorest quintile have also moved out of agriculture as an exclusive source of income. Between 2012 and 2018, the percentage of households engaged exclusively in agriculture fell 5 percentage points. Sources of income by sector vary between poor and non-poor households (Figure 1.12), but not dramatically. Comparing the poorest and richest quintiles, the average share of income from agriculture declines from 59 percent to 44 percent.

Figure 1.12. Percentage of total labor income obtained from agriculture and non-agriculture activities

Rural areas, by quintiles, 2018

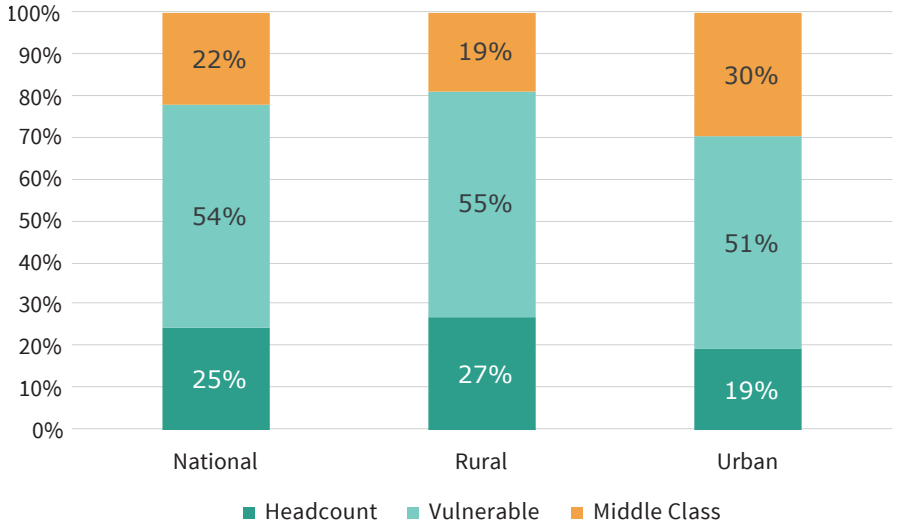


Source: Authors' calculations using BIHS 2018.
Note: Bars show the average percentages by consumption quintile.

This process of transformation has allowed many households to improve their income and consumption. However, a large share of households in rural areas still have consumption levels very close to the poverty line. In 2016, about 55 percent of rural households were not poor, but remained vulnerable, with consumption levels between the poverty line and twice the poverty line (Figure 1.13). When faced with income shocks, these households are at risk of falling into poverty. Median household per capita consumption in rural areas was 3,000 Takas, while the average upper poverty line for rural areas was about 2,300 Takas.[44]

[44] Figures estimated using HIES 2016.These patterns are robust if we use the 2018 BIHS consumption aggregate.

Figure 1.13. Poverty and vulnerability by area (percentage of the population in 2016)

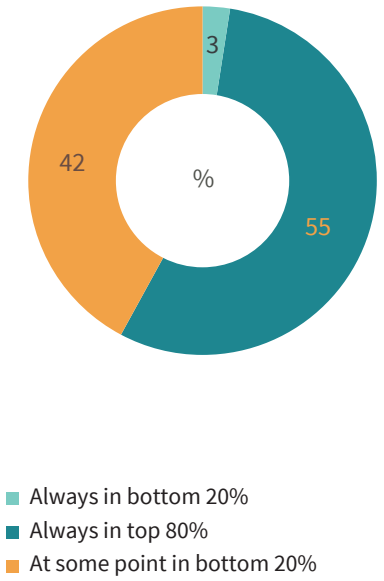


Source: Authors' calculations using HIES 2016/17.
Note: Poverty defined using the official upper poverty rate. Vulnerable households are households with per capita consumption between the official upper poverty line and twice the upper poverty line. Middle-class households are those with per capita consumption above twice the upper poverty line.

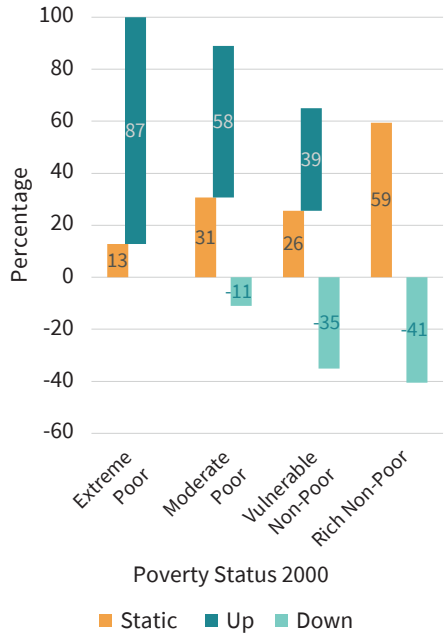
Panel data confirm substantial transitions in and out of income-based poverty. Household surveys tracking the same rural households over time indicate that 42 percent of households were in the bottom income quintile at some point between 2000 and 2014 (Figure 1.14a). Households appeared to have experienced significant mobility (both upward and downward) in the same period. The majority of those who were extremely poor or poor in 2000 were able to escape poverty by 2014 (almost 9 out of 10), while a substantial share of vulnerable non-poor households improved their economic status (Figure 1.14b). Among the households that were moderately poor in 2000, 58 percent moved out of poverty by 2014, while 11 percent of this group descended into poverty during the same period. Among the non-poor, 39 percent of households classified as vulnerable non-poor in 2000 were able to move up to the rich non-poor category by 2014, but a substantial 35 percent of the vulnerable non-poor fell back into poverty by 2014. Almost 2 out of 5 rich non-poor households experienced downward mobility to a lower economic status (Figure 1. 14b). This highlights the importance for sustained rural development of focusing not only on the poor but also on vulnerable non-poor households.

Figure 1.14. Household poverty transitions, 2000-2014

a. Percentage of households moving in and out of the poorest income quintile



b. Percentage of households moving in and out of poverty

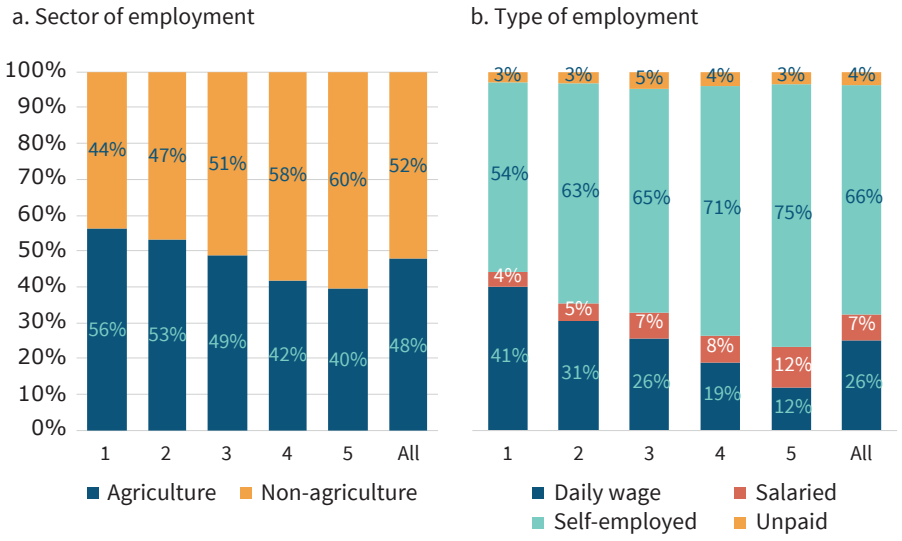


Source: Authors' calculations using 62-village panel.
Note: For details on methodology, see Ahmed and Gautam (2020). Poverty is defined using the income aggregate and the official poverty lines from BBS.

The substantial movement in and out of poverty partly reflects low quality of jobs in rural areas, largely dominated by self and daily-wage employment. A worker's type of employment (daily laborer, self-employed, or salaried) appears to be a better predictor of whether or not they belong to a poor household than is the main economic sector they work in. The share of workers in agriculture declines with consumption levels, but the drop is not substantial (Figure 1.15a). About 56 percent of bottom-quintile workers are engaged in agriculture, compared to 40 percent of the richest quintile. The largest factor that separates the poor from the non-poor is their type of employment: whether they are day laborers, self-employed, or salaried. About 41 percent of workers in the bottom quintile are day laborers, compared to 12 percent in the richest quintile (Figure 1.15b). In addition, about 7 in 10 rural workers are self-employed, either in farm or non-farm activities. Higher-quality salaried jobs only comprise about 7 percent of employment and are more likely for higher consumption quintiles.

When looking at younger cohorts, a substantial share of persons are working as day laborers. In 2018, 34 percent of young male rural workers (ages 15-29) were day laborers, and 15 percent were unpaid workers.

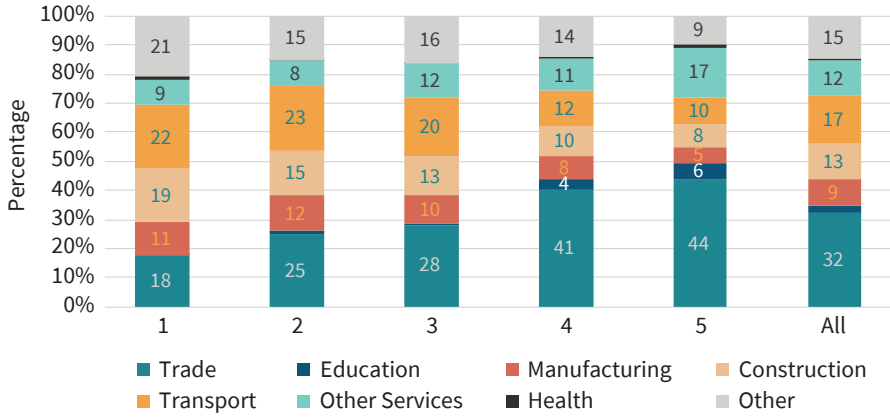
Figure 1.15. Sector and type of employment by quintiles, 2018



Source: Authors' calculations from BIHS 2018.
Note: Working-age adults (15-64 years old) grouped according to their household consumption quintile.

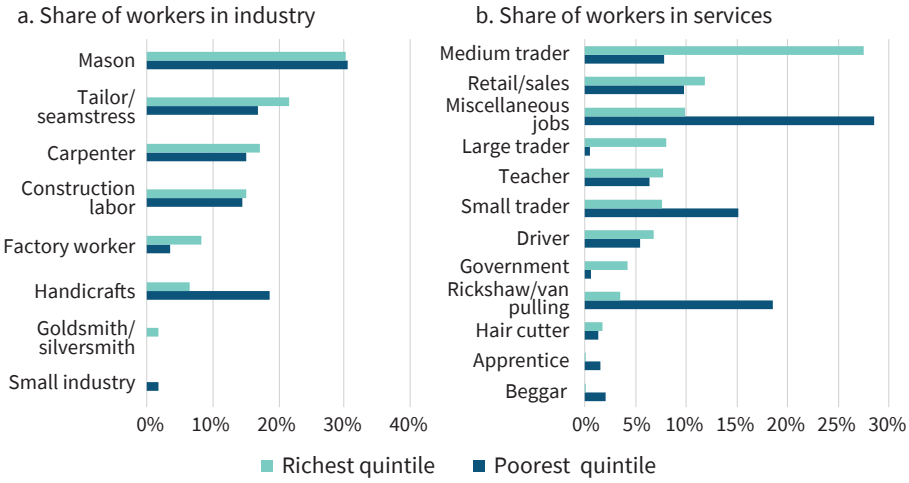
There is large variation in employment types between workers in poor and non-poor households. Within agriculture, 1 in 3 workers are daily workers. Day laborer status is much more prevalent among the poor (about 52 percent). Outside agriculture, the poor are more engaged in small-scale trading and lower-quality service jobs. Trade comprises 32 percent of rural employment outside agriculture, followed by transport (17 percent), construction (13 percent), and other services (12 percent). The poorest quintile is less likely to engage in trade and services (Figure 1.16). When bottom-quintile workers do participate in trade, they are more likely to be engaged in smaller-scale trading (e.g., roadside stands) or low-productivity jobs, such as rickshaw driving, maid services, and begging (Figure 1. 17). In contrast, the richest quintile is largely involved in medium and large-scale trading, as well as in sales within private enterprises. Within industry, the poorest workers are more likely to be in masonry, tailoring, construction, and carpentry.

Figure 1.16. Types of non-farm employment by quintile, 2018



Source: Authors' calculations using BIHS 2018.

Figure 1.17. Main non-farm occupations reported by poorest and richest quintiles, 2018



Source: Authors' calculations using BIHS 2018.
Note: A residual category, not displayed, includes activities involving fewer than 2 percent of workers.

On the demand side, a large share of employment is based on informal and subsistence microenterprises. According to Bangladesh's latest Economic Census, from 2013, 98 percent of firms in the country had less than 10 employees. Household-based enterprises are more prevalent in rural areas (42 percent of firms) than in urban areas (36 percent). Microenterprises account for about 55 percent of jobs in Bangladesh, which is higher than comparator countries.

Tanzania has a similar share of microenterprises, but those firms comprise less than 40 percent of Tanzania's employment. In Vietnam, while microenterprises represent about 70 percent of firms, they account for less than 10 percent of employment.

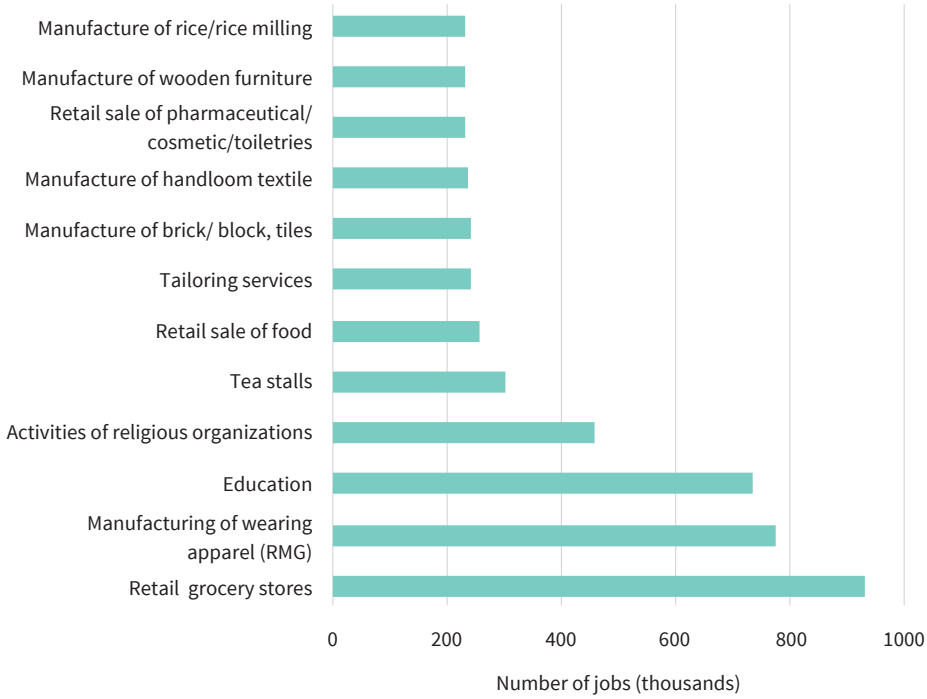
Most rural microenterprises are engaged in relatively unsophisticated activities and are largely informal.[45] A detailed breakdown of rural enterprise jobs (4-digit level) using the latest Economic Census shows that 12 activities account for about 6 in 10 rural enterprise jobs (Figure 1.18). While retail grocery stores comprise many rural enterprise jobs, some manufacturing activities such as ready-made garments (RMG), handloom, brick, and furniture manufacturing also play an important role supporting rural enterprise jobs. However, most of the enterprise jobs are in areas with limited space for growth. This includes grocery stores, tea stalls, and similar businesses. In addition, Gautam and Faruqee (2016) find that there has been very little change in the sophistication of nonfarm activities in rural areas over the decade 2003-2013, even though these activities are more likely to bring higher returns to households. Rural nonfarm enterprises' limited capacity to upgrade or benefit from improved connectivity suggests that, on average, these firms are not well positioned to expand and offer a major source of job growth.

Changing demographics and rapid urbanization will have a significant impact on labor market developments in the coming decades. Bangladesh's working-age population is expected to increase from about 67 percent to 70 percent of the total population between 2018 and 2030. This trend is already putting pressure on the labor market to absorb new cohorts of workers.[46] Rapid urbanization implies that, by 2030, about 46 percent of the population will be living in urban centers.

Rising rural unemployment, particularly among youth and women, is a concern. Since 2010, rural unemployment rates have increased, driven to a large extent by younger cohorts. Female unemployment rates are double those of males, and increases in unemployment have been greater for females. Figure 1.19 shows that female youth unemployment has increased about 300 percent, compared to a 50 percent increase for males across all rural areas. The spikes in unemployment are significant in Western divisions, including Barisal. In those divisions, unemployment rates also increased for older cohorts, although they remain at a very low level.

[45] Farole and Cho (2017).
[46] Farole and Cho (2017).

Figure 1.18. Leading rural enterprise activities, by number of jobs, 2013



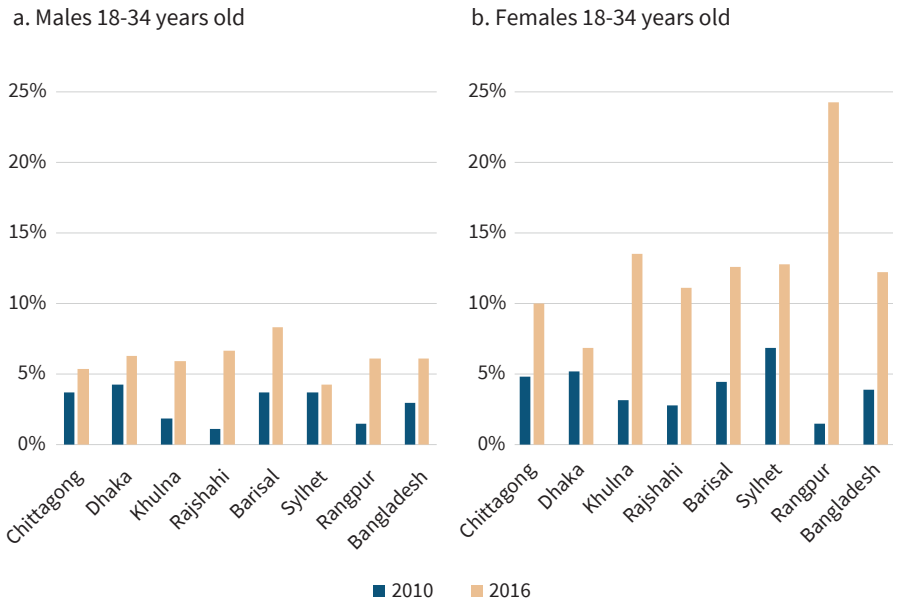
Source: Economic Census 2013.

The larger increases in the share of women looking for jobs may also indicate an increased likelihood of new, better-educated female cohorts' seeking to engage in the labor market. This is consistent with recent research.[47]

For better-educated workers, a recent rise in unemployment rates signals challenges in access to good jobs. The unemployment rate among youth who have completed secondary school and above is over 10 percent, and higher for females than for males; the unemployment rate among postsecondary-educated youth is close to 20 percent. Part of the increase in youth unemployment observed in recent years might be explained by a change in the educational composition of new labor-market entrants and the inability of the market to absorb those entrants. Better-educated youth who enter the labor market may have a high reservation wage, while high-paying jobs are unavailable, given the slowdown in the labor market in recent years.[48]

[47] Solotaroff (2019).
[48] Farole and Cho (2017).

Figure 1.19. Rural youth unemployment rates, 2010 and 2016, by division



Source: Authors' calculations using LFS 2010 and 2016.

As employment in agriculture falls, it is important to ensure that new sources of non-farm income are of high quality. The recent slowdown in job creation in manufacturing, particularly in the RMG sector, is a source of concern, as this can push new workers to engage in lower-quality service jobs. Evidence for urban areas indicates that this is already happening. The limited job creation in manufacturing observed since 2013 has reduced productivity among the urban self-employed in services, in turn significantly slowing poverty reduction in urban areas.[49] Attention to the quality of new employment is vital to ensure that structural transformation does not generate greater vulnerability, associated with low-quality or subsistence non-farm self-employment.

Weather and climate-change risks are another important factor behind the substantial movement in and out of poverty. Bangladesh's location at the lower end of the Ganges-Brahmaputra-Meghna delta renders it especially vulnerable to the adverse impacts of weather and climate change. Two-thirds of the country is less than five meters above sea level, hence susceptible both to sea level rise and tidal

[49] Hill and Genoni (2019).

flooding during storms. The Global Climate Risk Index ranks Bangladesh as the world's seventh most affected country over the period 2000-2019.

Agricultural incomes are particularly vulnerable to extreme weather events. Agricultural production in the country has already been adversely affected by climate change, including through temperature increase, sea level rise, saltwater intrusion, rainfall variability, and increased extreme weather events. These impacts are particularly marked in coastal areas and arid and semi-arid areas.[50] Climate change will further exacerbate the vulnerability and risks facing agriculture. Increased soil and water salinity due to sea level rise is projected to result in a 15.6 percent yield reduction in high-yielding rice varieties by 2050.[51] Climate change is also adversely affecting the fisheries sector, and about 15 percent of fishermen have already changed their occupation due to a decrease in fish collection rates in open water. More than 15 percent of livestock die of different diseases every year, and many producers are going out of business due to disease tolls that result in large economic losses.

This vulnerability is exacerbated by limited ability of households to cope with income shocks. Negative shocks experienced by rural households are largely managed with own resources.[52] According to HIES 2016, about 17 percent of rural households reported a negative event or income shock in the year preceding the interview, 81 percent of which were related to weather events (such as floods, droughts, or landslides). The main coping strategies reported were reducing food consumption (58 percent), using own savings or selling assets (66 percent), and getting help from friends (53 percent). About 33 percent of households reported obtaining government help and 20 percent reported using credit. According to FINDEX (2017), about 63 percent of all rural households reported that they could obtain emergency funds if needed. However, only 50 percent of households in the two poorest quintiles believed they could do so.

Due to lack of options, the poor rely more on reducing food consumption when coping with a shock. This is consistent with large transitions in and out of poverty. The likelihood of reporting negative shocks varies little between poor and better-off households or across divisions. However, poorer and better-off households use different coping responses. Households in the poorest quintile are more likely to adjust food consumption (77 percent), get help from friends (63 percent), and receive government help (52 percent). Across divisions, Rangpur households are

[50] Alam et al. (2018).
[51] World Bank (2019c).
[52] Genoni et al. (2020).

more likely to adjust food consumption and obtain government help. Using credit is reported more often in Barisal and Sylhet. Migration is also a means of coping with shocks, for instance in Chittagong (29 percent) (Table 1.1).

Table 1.1. Coping responses to shocks reported in the past year, percentage of households

	Own savings or assets	Help from friends	Reduced food consumption	Looked for more work	Migrated	Government help	Credit
Consumption quintile							
1	44%	63%	77%	25%	12%	52%	13%
2	63%	54%	66%	23%	16%	28%	20%
3	78%	49%	51%	19%	14%	28%	21%
4	74%	44%	46%	17%	14%	29%	27%
5	78%	50%	43%	10%	14%	22%	25%
Division							
Barisal	84%	64%	33%	3%	7%	15%	49%
Chittagong	67%	51%	36%	7%	29%	33%	28%
Dhaka	82%	54%	21%	17%	11%	33%	21%
Khulna	88%	37%	84%	37%	5%	7%	21%
Rajshahi	90%	22%	35%	24%	22%	28%	31%
Rangpur	25%	79%	84%	15%	7%	64%	5%
Sylhet	71%	51%	46%	19%	25%	9%	42%
Rural Bangladesh	66%	53%	58%	19%	14%	33%	21%

Source: Author's calculations using HIES 2016 for rural areas.

Three factors behind heterogeneity in rural incomes

When thinking about ways to increase rural income growth in an inclusive manner, three features or rural incomes are important to highlight. First, incomes within agriculture are still largely centered around rice production. Second, rural Bangladeshi women are still largely outside the labor market or performing unpaid work. Third, geographic location largely shapes inequalities in income due to differential engagement in agriculture and manufacturing, urbanization, and migration.

Rice is central for rural incomes, but the sector has been underperforming

Despite the growing importance of non-agricultural incomes in rural areas, agricultural incomes remain a large component of total rural incomes. On average, about 54 percent of household labor income still comes from agriculture.[53]

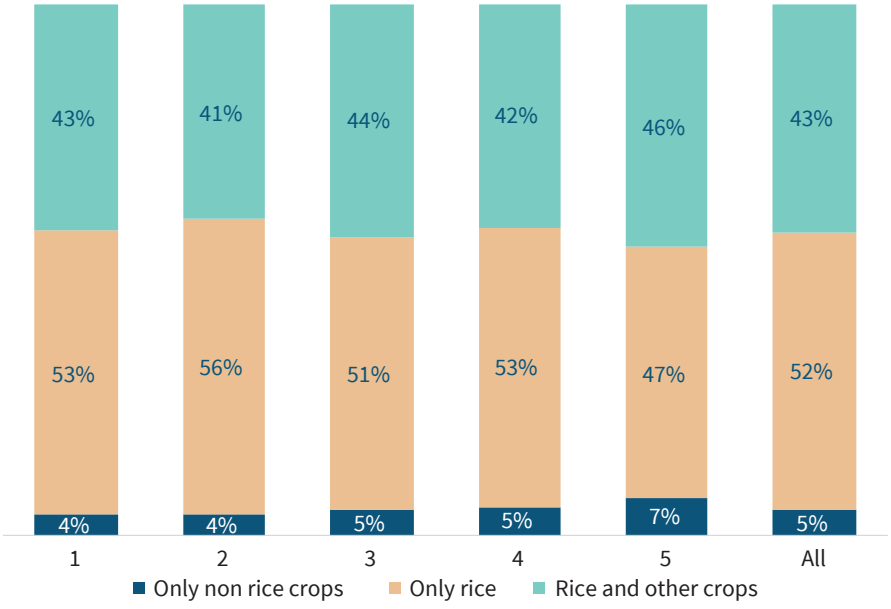
Rice production contributes a large share of agricultural incomes. Rice accounts for 71 percent of the country's cultivated area and 59 percent of total crop value.[54] Rice is by far the dominant crop for all rural households in agriculture. BIHS data indicate that about 95 percent of farmers across consumption quintiles grow rice (either alone or in combination with other crops). About 52 percent of farmers grow exclusively rice (which may include different varieties), and 15 percent grow exclusively one variety of rice. Farmers in the poorest quintiles are slightly more likely to produce exclusively rice than are farmers in the richest quintile (53 percent versus 47 percent) (Figure 1.20). The share of Bangladeshi households across all consumption quintiles growing rice (including in combination with other crops) is high compared to similar countries such as Vietnam. In Vietnam, rice is grown by 85 percent of households in the poorest quintile but only 49 percent of farmers in the richest quintile.[55]

Bangladesh has made many agricultural policy reforms since the 1980s with a focus on ensuring food security. These policy reforms were broad based and have contributed to the sustained high growth, including TFP in agriculture, from 1990s to about 2010. However, within the broadly admirable policy framework, food security concerns have also prioritized certain policies with a preferential treatment for rice which have tilted farmer incentives in favor of rice. These include a heavy focus on rice in R&D, which has raised rice productivity and lowered production risks.

[53] BIHS 2018.
[54] Ahmed et al. (2021).
[55] Cazzuffi et al. (2017).

In addition, public procurement for strategic reserves is exclusively focused on rice, which in competitive markets create a bias against other crops. Finally, strong returns to fertilizers with improved rice varieties and sustained fertilizer subsidies also tilt the benefit-cost ratios in favor of rice, compared to other crops. These policies have contributed to the country's success in achieving self-sufficiency in rice production but are now creating headwinds constraining the emergence of a more diversified production system.

Figure 1.20. Percentage of farmers growing only rice, across consumption quintiles, 2018



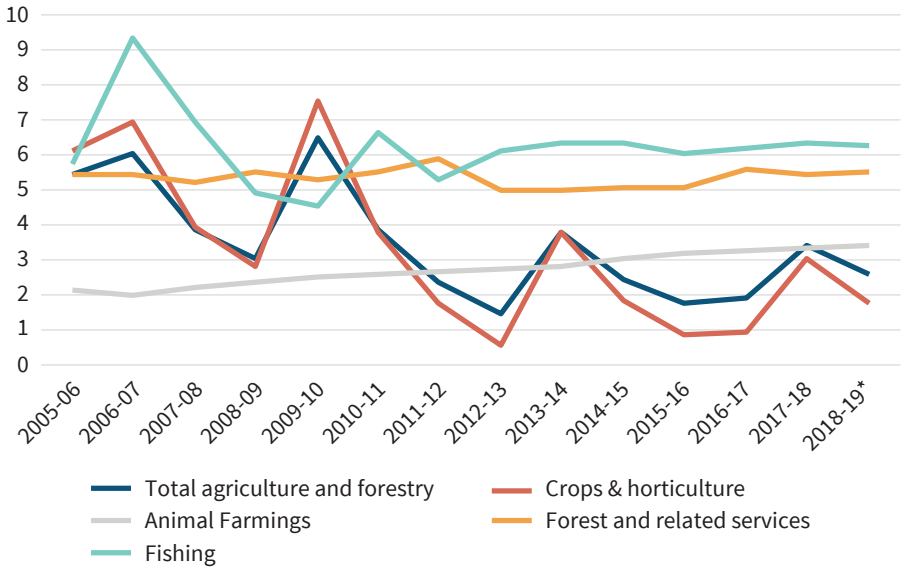
Source: Authors' calculations using BIHS 2018.

Despite the large share of farm households engaged in rice, the rice sector has not been performing well recently, and this has limited its contribution to income growth and poverty reduction. GDP growth in the rice subsector slowed from 5.1 percent per year in 2005-2010 to 1.2 percent in 2010-2016, contributing substantially to a slowdown in overall agricultural growth. This was mainly driven by a decline in real prices along with a slowdown in TFP growth. In contrast, the fishing and forestry sectors have performed well (Figure 1.21). As previously discussed, between 2010 and 2016, the contribution of agriculture to poverty reduction declined, partly due to the slowdown in agricultural growth substantially attributable to the crop sector.[56]

[56] Hill and Genoni (2019).

Analysis tracking the same households over the period 2000-2014 shows that income from agriculture accounted for about 40 percent of households' annual per capita income growth, but that this was not driven by the crop sector. Non-crop agriculture was the main source of income gains in agriculture (2 percent), followed by agricultural labor (0.1 percent). Income from crop agriculture (both rice and non-rice) registered negative growth over the same time period.[57]

Figure 1.21. Sectoral growth rate of real GDP, 2005-2019



Source: Authors' calculations using Ministry of Finance (2019).
Note: Real GDP is calculated with base year 2005-6. *2018-2019 provisional

While many crops offer farmers higher returns than rice, the majority of farmers continue to grow rice, in part because cereal production involves lower price risks. Bangladesh has seen some diversification toward non-paddy crops in recent years, but progress remains slow.[58] While potential gross margin is an important driver for farmers' cropping choices, risks also play a critical role in their decision making. While Bangladeshi farmers have significant know-how for rice production, rice also ensures farmers' own food security, as it is their main staple. Public policy further contributes to farmers' perception that rice carries less risk. Public policy support in the form of input subsidies, procurement support, and

[57] Ahmed and Gautam (2020).
[58] Ahmed et al. (2020).

R&D to ensure food security contributes to the lower risks of producing cereals.[59] In particular, the production of rice and wheat carries much lower price risks than other high-value agricultural commodities, as price volatilities for cereals are much lower than those of non-cereal agricultural commodities.[60] Both price volatilities across time and space are higher for non-cereal agricultural commodities. The government maintains a regular rice procurement program to stabilize falling paddy prices following harvest seasons and also manages the public food distribution system to keep rice prices stabilized throughout the year.[61]

Rural labor markets still show a deep gender divide

Employment and income sources differ sharply between men and women in rural areas. Female labor force participation has been increasing steadily, to about 36 percent. However, this is considerably lower than the 82 percent labor force participation of males. Bangladesh's female labor force participation outperforms the South Asia regional average (23.5 percent) but falls far short of figures in other comparator countries. For comparison, Kenya, with a similar per capita GDP, has 72 percent of females in the labor force. In Vietnam, female labor force participation is around 73 percent.[62] Bangladesh's female labor force participation is higher in rural areas than in urban areas. In 2016, women's labor force participation was 37 percent in rural and 31 percent in urban areas. Among divisions, female labor force participation is highest in Rajshahi (50 percent all areas and 54 percent in rural areas). It is lowest in Sylhet (19 percent all areas, 21 percent in rural areas) (Table 1.2).

Of women who work, about 60 percent are in agriculture, with a large proportion taking care of livestock or engaged in unpaid agricultural activities. Women's share in agricultural employment has been growing over time, reflecting an increasing "feminization of agriculture." Women workers accounted for 44 percent of total agricultural employment in Bangladesh in 2016, up from 34 percent in 2006. The number of women workers in agriculture increased from 7.7 million in 2006 to 11.2 million in 2016 (LFS surveys). However, 28 percent of women working

[59] World Bank (2020a).

[60] Hoque and Ahmed (2020).

[61] Considering the importance of this staple in the Bangladeshi diet and the focus of the government on ensuring food security, rice imports are an important mechanism for price stabilization in the local market. While Bangladesh maintains a 28 percent import duty on rice, it often reduces the duty or imposes a supplemental duty depending on the trend in domestic price. For example, the government cut import duty on rice to 2 percent in 2017 to address production shortages due to two consecutive floods; however, it raised the duty to 28 percent in 2018 following a normal rice production year and increased it further to 55 percent in 2019, following record domestic production of rice in 2019.

[62] WDI 2019.

in agriculture are engaged in livestock and 11 percent in unpaid farm activities. In contrast, only 6 percent of working men report deriving income from livestock, and only 2 percent are unpaid. Women's role in livestock tends to be primarily home-based activities such as feeding and milking cows, as well as raising small ruminants and backyard poultry. Women's involvement in marketing livestock is limited. Men are more likely to participate in the non-farm sector (Figure 1.22), though women have been increasing their participation.

Table 1.2. Men's and women's labor force participation in Bangladesh, 2016

	National		Rural Areas		Urban Areas	
	Male	Female	Male	Female	Male	Female
Chittagong	80%	32%	79%	34%	81%	27%
Dhaka	83%	33%	82%	33%	85%	34%
Khulna	84%	34%	84%	36%	83%	27%
Rajshahi	84%	50%	85%	54%	83%	36%
Barisal	81%	26%	81%	27%	82%	24%
Sylhet	82%	19%	83%	21%	81%	14%
Rangpur	85%	39%	85%	41%	84%	32%
Bangladesh	83%	35%	83%	37%	84%	31%

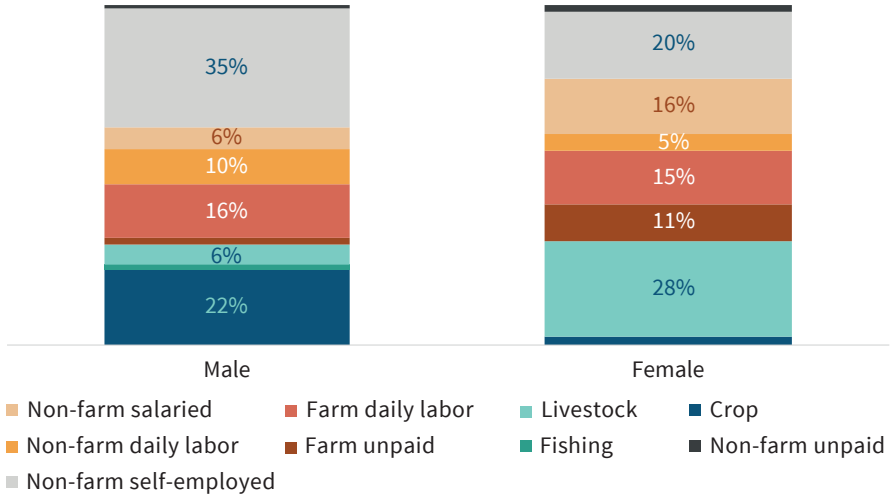
Source: Authors' calculations based on active-age population using LFS 2016.

Rural women engage in very few occupations within industry, while there is more variation in their occupations within services. Women who have completed secondary school or more are more likely to be employed in the industry or service sectors.[63] Women in off-farm activities within industry derive income mainly from two activities, seamstress and crafts (Figure 1.23a). Among women in the poorest quintile, the dominant job is seamstress (48 percent) followed by craftswoman (43 percent). In the richest quintile, seamstress is the most important activity (69 percent). Women's employment in the service sector is more varied (Figure 1.23b). Comparisons of occupations across time indicate very little change in the off-farm occupational profile of women in rural areas.

[63] Multivariate regression models using LFS 2016/17 for rural areas show that unskilled women are more likely to participate in the labor market, reflecting the large presence of women in unpaid agriculture and livestock. When assessing the probability of participating in nonagricultural sectors, married women and those living in larger households are less likely to participate. Women who have completed secondary school or more are more likely to be employed in the industry or service sectors.

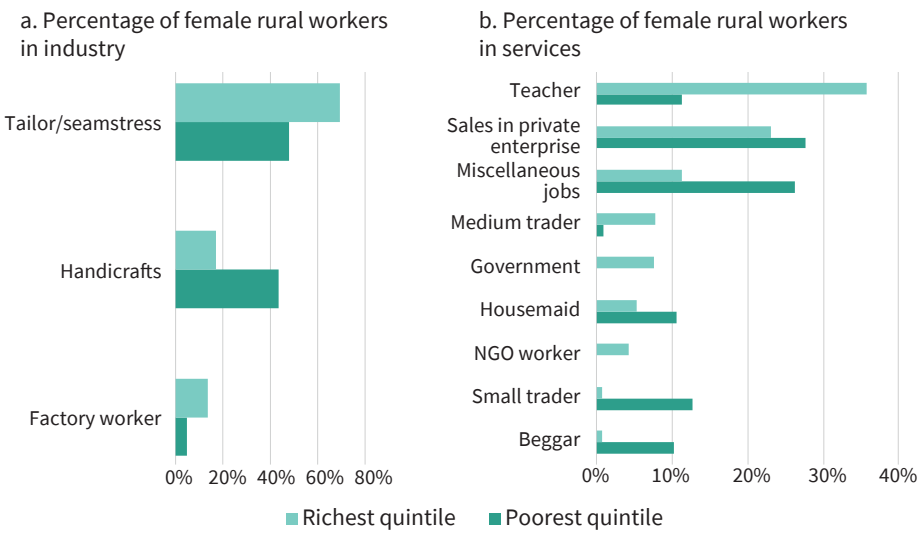
Figure 1.22. Types of employment for rural males and females, 2018

Percentage of workers by type of employment, by gender, 2018



Source: Authors' calculations using BIHS 2018.

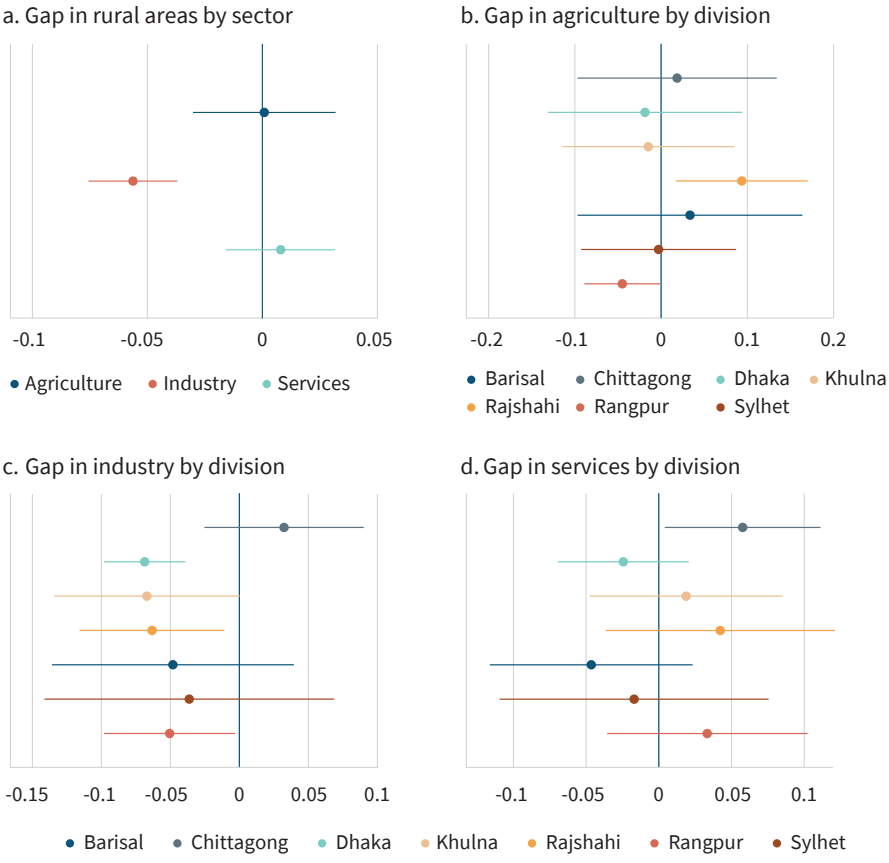
Figure 1.23. Main off-farm occupations among women in rural areas, 2018



Source: Authors' calculations using BIHS 2018.
Note: Bars present the percentage of women in different occupations conditional on being in industry (panel a) or services (panel b). Occupations with small or undefined sample shares are not included.

Women are engaged in different sectors than men, but once in the same sector, gender wage gaps appear to be small. The raw gender wage gap has decreased dramatically in the past years, from a 43 percent gap in 2013 to a 24 percent gap in 2016. In fact, Bangladesh has the smallest gender wage gap in the region.[64] Conditional wage gaps within sectors indicate no large difference between men and women, particularly in agriculture and services (Figure 1.24). This suggests that gender productivity gaps may be linked to women's engagement into different occupations and paid employment. Once those barriers are considered, and men and women are compared within the same sector, wage disparities are small.

Figure 1.24. Gender wage gap by sector and division, 2016



Source: Authors' calculation using LFS 2016.
Note: Dot indicates the point estimate of the coefficient for gender (female=1) in a log-hourly earnings regression controlling for district fixed effects, household characteristics, age, education, and type of employment (wage, daily, self). The lines indicate the 95 percent confidence interval.

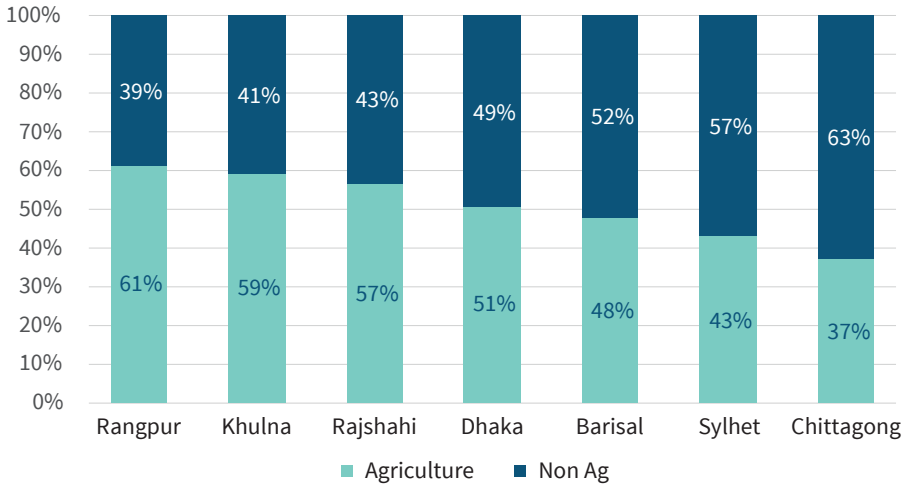
[64] Solotaroff et al (2019).

Location shapes rural income inequalities

Incomes in Western divisions still depend more on agriculture

The importance of agricultural income varies more across space than between poor and richer households. Labor incomes in Rangpur, Khulna, and Rajshahi still rely heavily on agriculture, compared to the national average. About 60 percent of average labor incomes in Rangpur, Khulna, and Rajshahi are derived from agriculture (Figure 1.25). This contrasts with the Eastern divisions, where Chittagong marks the other end of the spectrum, with on average just 37 percent of rural labor income coming from agriculture. Greater engagement in agriculture in Western Bangladesh has tied poverty reduction there more closely to the performance of the agricultural sector than in the country's Eastern divisions.[65]

Figure 1.25. Agricultural income as a share of total rural household labor income, averages by division, 2018



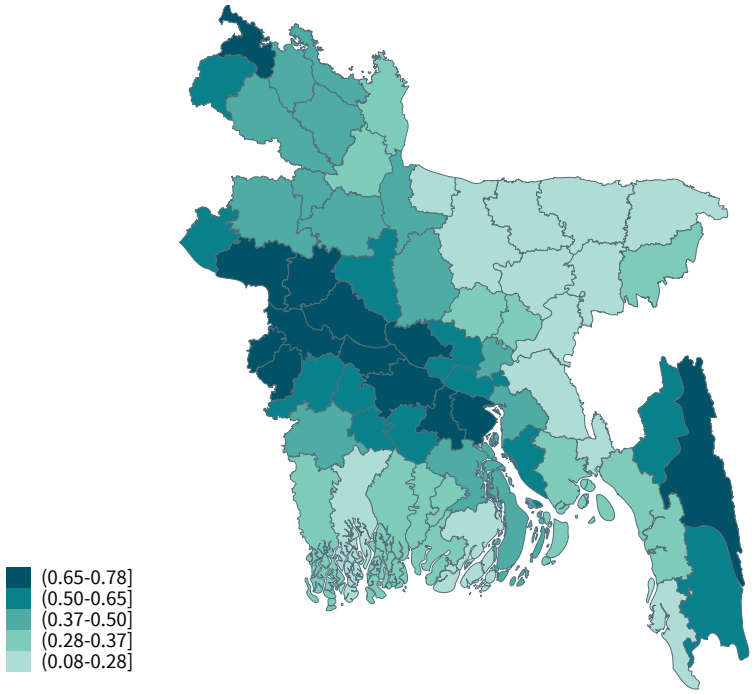
Source: Authors' calculations using BIHS 2018.

Western areas and poorer areas in the East have high diversification potential that could open a promising path to raise agricultural incomes in these areas. Diversification potential into non-rice crops varies across divisions, being more limited in Sylhet, northern Dhaka (Mymensingh), and Barisal divisions. In these areas, the proportion of low-lying wetland (*haor),* which remains under water for

[65] Hill and Genoni (2019).

much of a year, is relatively high. With favorable agro-ecological conditions and good irrigation coverage, districts in Western areas have higher agricultural diversification potential. An area-based diversification measure, known as the Simpson Index,[66] shows that the diversification of agricultural production systems is high among districts in the Western divisions, along with Dhaka division from the East region (Figure 1.26). While Rangpur division has even greater availability of highlands than Rajshahi and similar (or lower) exposure to droughts, it is less diverse compared to Rajshahi, primarily due to lower irrigation coverage (Figure 1.27). The low degree of diversification among districts in Sylhet, Mymensingh, and Barisal divisions reflect their large shares of lowland areas, where cropping intensity is also low. Sylhet consistently shows the highest share of farmers growing only rice (Figure 1.27). Most districts experienced positive changes in crop diversification between 2014 and 2018. The shift toward a more diversified production system was most prominent among coastal districts of Khulna and Barisal.[67]

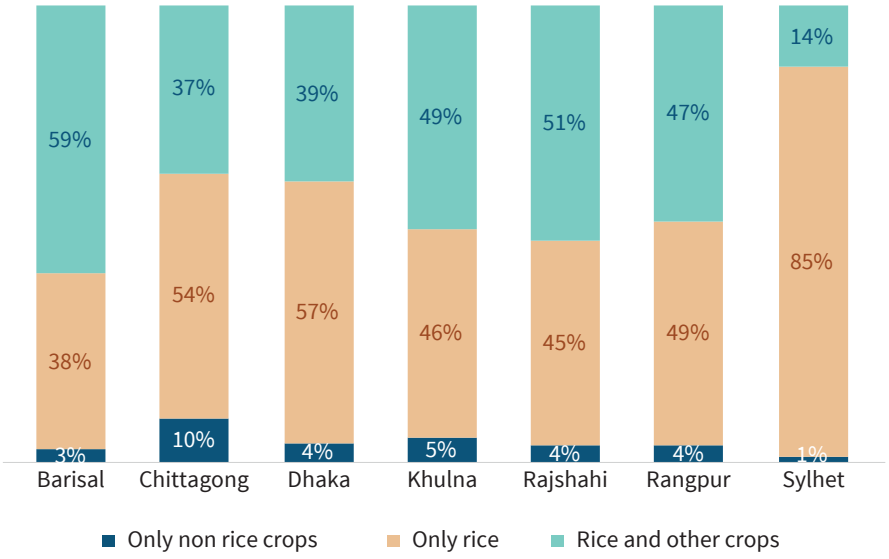
Figure 1.26. Simpson Diversification Index by districts, 2018



Source: Ahmed et al (2021).
Note: Darker shading indicates greater diversification.

[66] The Simpson diversification index is calculated as SID=1 – $\sum_{i=1}^{n} P_i^2$, where Pi is the proportionate area (or production value for a value-based index) of the ith crop in gross cropped area (total production value).
[67] Ahmed et al (2021).

Figure 1.27. Percentage of farmers growing rice and other crops, across divisions, 2018



Source: Authors' calculations using BIHS 2018.

The spatial concentration of off-farm manufacturing activities around Dhaka and Chittagong influences rural income opportunities country-wide

Economic transformation in Bangladesh has been accompanied by rapid urbanization.[68] Since 2000, urban population growth has exceeded 3 percent per year while rural population growth has been negative since 2014. The growth in the urban population has been faster than in most other countries in the South Asia region, with an average growth rate of 3.9 percent annually in Bangladesh since 2000, compared to 2.7 percent for South Asia.[69]

As the country urbanizes, an increasing share of households living in rural areas report working in urban centers. In 2016, about 20 percent of workers living in rural areas reported working in an urban area (19 percent for the poorest quintile and about 26 percent for the richest quintile). Between 2010 and 2016,

[68] Note that there is no sharp separation between urban and rural areas. This increase could also reflect more urbanization and not necessarily a change in the location of employment sources.
[69] United Nations (2018).

the share of rural workers commuting increased from 10 to 19 percent.[70] Workers who commute get higher wages, indicating that there is a higher return for those working in urban jobs. The median wage of a commuter is 9,000 Taka, compared to 6,000 Taka for the non-commuter. Conditional on other worker characteristics, those who commute receive about 33 percent higher wages. Among workers who commuted in 2016, only 8.8 percent were women. A simple regression analysis controlling for individual and household characteristics suggests that women are 38 percent less likely than men to commute for work. Mobility constraints affecting women may explain part of these patterns. More educated workers are also more likely to commute, conditional on other characteristics.

The rapid increases in rural-urban commuting since 2010 suggest that this pattern is not only due to fuzzy urban-rural distinctions but may reflect increased off-farm labor opportunities in the urban periphery.[71] A decomposition analysis of the sectors driving these changes indicates that about 37 percent of the rise is due to increased employment in manufacturing (garments and textiles) and another 31 percent to various types of services. These trends in commuting are consistent with evidence of a recent shift of firms toward the urban periphery, which could reflect responses to the relative advantage of locating in rural or urban areas.[72]

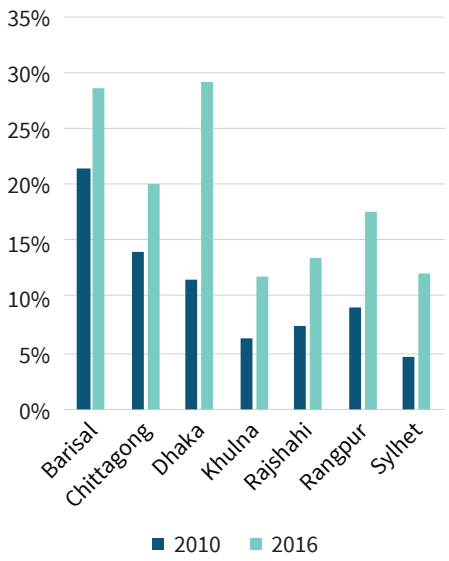
Commuting has been increasing across the country, again suggesting growing opportunities in off-farm activities linked to urban areas. However, rural workers in Dhaka and Chittagong divisions are more likely to benefit from this process than those in other divisions (Figure 1.28). Rural workers in close proximity to the large metropolitan areas of Dhaka and Chittagong comprise about 50 percent of all commuters. While in Dhaka about 1 in 3 rural workers have jobs in urban areas, this is true for about 1 in 10 rural workers in Khulna and Sylhet.

More generally, varying degrees of urbanization across districts strongly shape employment opportunities and poverty reduction. District-level panel data for the period 2000-2016 show a positive correlation between districts that have urbanized more rapidly and faster consumption growth. This correlation holds even when controlling for initial district-level conditions, as well as changes over time in district-level factors such as access to services, connectivity, and population.[73]

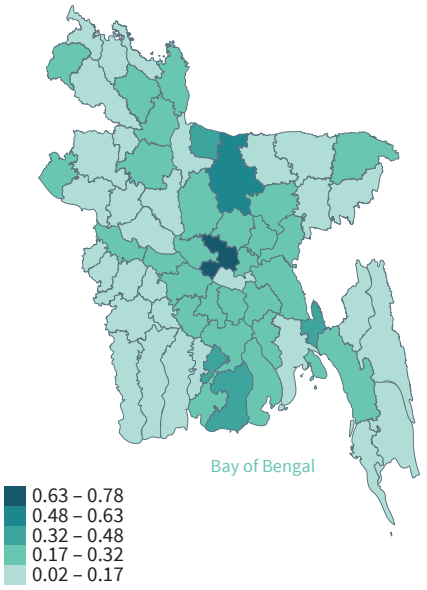
[70] HIES 2016.
[71] Asfar (1999); Rahman (2014); World Bank (2015a).
[72] Farole and Cho (2017).
[73] Authors' background analysis can be shared upon request.

Figure 1.28. Share of rural residents working in urban areas

a. By division in 2010 and 2016



b. By district in 2016



Source: Authors' calculations based on HIES 2010 and 2016.
Note: "Commuter" refers to workers who reside in a rural area but report working in an urban area.

Bangladesh's urbanization and economic activity development have been largely concentrated around Dhaka and Chittagong. The Dhaka-Chittagong corridor is the backbone of the export-oriented manufacturing sector in Bangladesh. As urbanization continues, a natural next step is reallocation of economic activity, particularly manufacturing, to peri-urban areas of large cities and then to secondary cities and adjacent rural areas.[74] However, compared to other urbanizing countries, Bangladesh's secondary cities remain disproportionally small compared to Dhaka and Chittagong.[75]

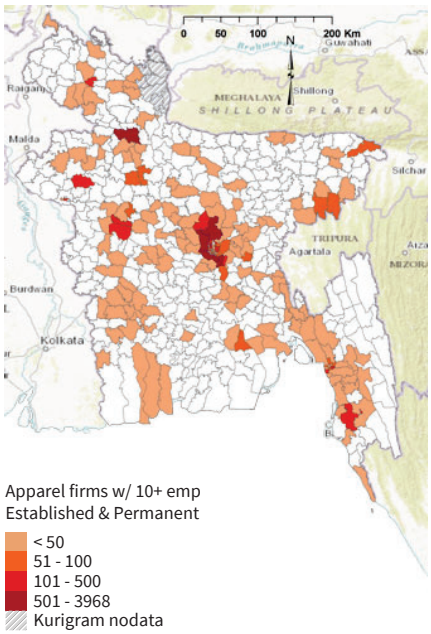
Sectors that serve the internal market, such as food processing, show a more even distribution of firms across the country. Figure 1.29 contrasts the distribution of RMG and food processing non-microenterprises across the country's upazilas. The location of RMG firms highlights the concentration of activity around Dhaka. This is also observed for other export-oriented firms in textiles and light manufacturing.

[74] Bird et al. (2018).
[75] Muzzini and Aparicio (2013).

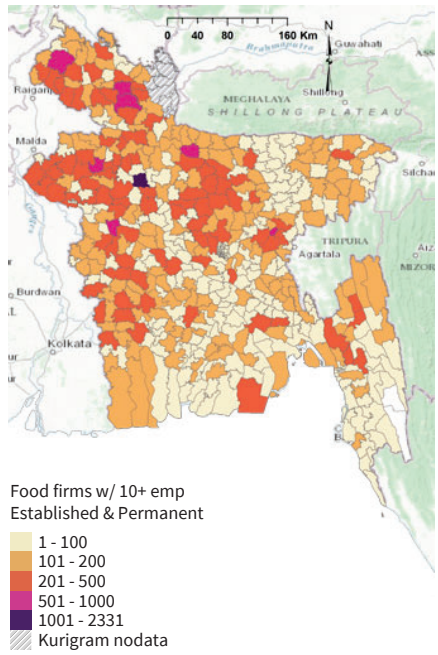
In contrast, the distribution of food processing firms is widespread, with a high concentration of firms in the Western divisions. The location reflects the proximity to agricultural production. The largest concentration of non-microenterprises in food processing is outside the city of Bogra (in Rajshahi division), and the largest concentration of microenterprises is outside of Rajshahi.[76]

Figure 1.29. Distribution of non-microenterprises by upazila, 2013

a. RMG



b. Food procesing



Source: Farole and Cho (2017) using the Economic Census 2013.
Note: RMG = readymade garments.

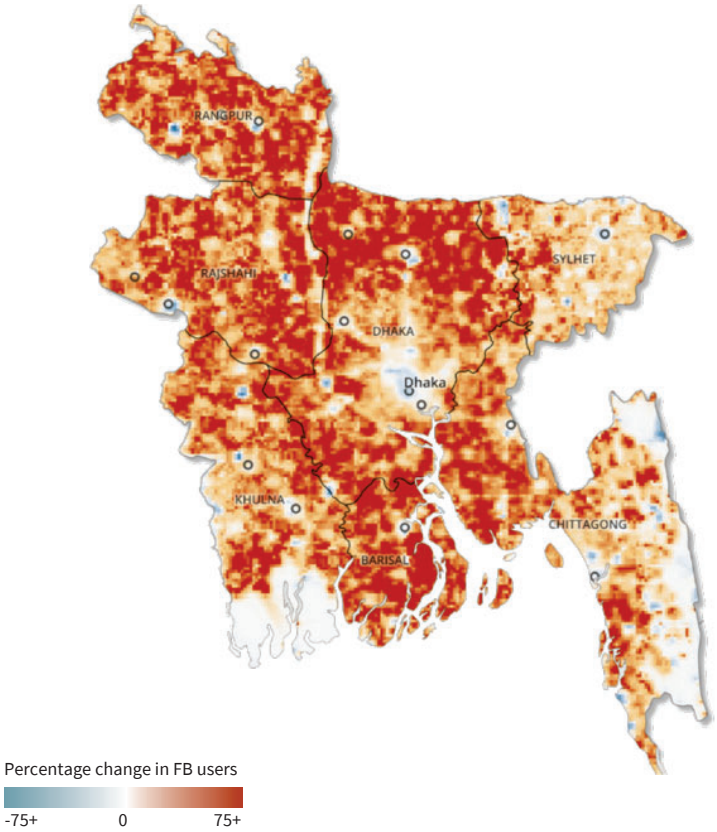
Migration patterns add to spatial disparities in rural incomes

The COVID-19 crisis underscores how, in Bangladesh, rural income dynamics are tied to income patterns in urban areas. Domestic migration is one important link in this association. At the onset of the COVID-19 crisis, the lockdown propelled a large movement of people out of Dhaka, including many economic migrants returning to their origin households (Figure 1.30).

[76] Farole and Cho (2017).

Results from a representative phone survey in poor urban areas of Dhaka and Chittagong indicate that about 10 percent of respondents changed their place of residence following the start of the crisis and the lockdown that began in late March 2020.[77]

Figure 1.30. COVID-19 urban-to-rural population movements across Bangladesh, March to May 2020



Source: Analysis of data based on Facebook Data for Good.
Note: he map shows the percentage change in mean (anonymized) Facebook users per 600m x 600m grid cell, compared to the 45 day mean prior to March 23, 2020. Users' locations are based on the mean recorded location of each user activating Facebook from 1600-2400 UTC on the selected day.

[77] Genoni et al., (2020).

A large share of rural households receive income from remittances (domestic and international). In 2016, about 6 percent of rural Bangladeshi households reported receiving international remittances, while 14 percent received domestic remittances (Table 1.3). Based on household reporting, median per capita remittance income per month was 1,389 Takas in 2018.[78] In terms of international remittances, Chittagong and Sylhet show the highest share of recipient households. For domestic remittances, the share of recipient households does not vary significantly across divisions, except in Sylhet. Overall, Western divisions are significantly less likely to receive international remittances. Compared to countries like India or Vietnam, Bangladesh has a higher share of the rural population receiving domestic remittances. According to FINDEX, in 2017, 22 percent of the rural Bangladeshi population older than 15 years received domestic remittances, while in India and Vietnam this share was 17 percent.

Poor households are less likely to receive remittances, but income from migration is pivotal for poverty reduction. At first glance, Table 1.3 suggests that poor households are less likely to receive international remittances. In addition, remittance amounts are significantly lower for the poorest quintiles (In 2018, median per capita monthly remittance income was 667 Takas for the poorest quintile compared to 4,375 takas for the richest quintile). However, a decomposition of annual per capita income growth (4.2 percent) between 2000 and 2014, based on the 62-village panel survey, shows that remittances contributed significantly to the rise in incomes (2.2 percent). This implies that, while poor households may have lower odds of receiving remittances, receipt of remittances increases the odds of moving out of poverty. In addition, remittances support incomes and poverty reduction indirectly by boosting local economies. Spending on local goods and services with remittance income boosts local demand, and wages can increase as local labor supply is reduced. From 2000 to 2016, poverty reduction was faster in districts where international migration was higher: for each additional 0.1 percent of a district's population migrating internationally, poverty in that district fell by 1.7 percent.[79] Using BIHS panel data and matching/IV methods, Tillan et al. (forthcoming) find that rural households that had a member migrating experienced faster consumption and income growth. Sen et al. (2014) find that differential rates of urbanization and international migration can help explain the spatial pattern of poverty reduction across districts in Bangladesh.

[78] BIHS 2018.

[79] Hill and Endara (2019a).

Table 1.3. Percentage of households receiving international or domestic remittances, 2016

	International remittances		Domestic remittances	
	All	Poorest 40%	All	Poorest 40%
Barisal	3%	2%	16%	18%
Chittagong	10%	7%	16%	11%
Dhaka	7%	3%	14%	13%
Khulna	3%	3%	13%	11%
Rajshahi	2%	0%	17%	14%
Rangpur	1%	1%	13%	12%
Sylhet	11%	4%	6%	5%
Rural Bangladesh	6%	3%	14%	12%

Source: Authors' calculations using HIES 2016.

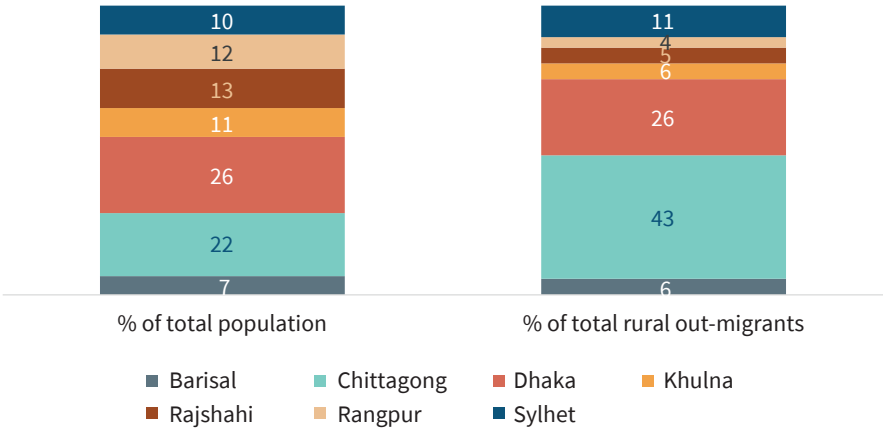
The geographic pattern of migration constrains its potential to reduce country-wide income disparities. Dhaka alone absorbs 60 percent of all recent migrants in Bangladesh and has the largest share of all types of migrant flows. Chittagong absorbs another 16 percent of migrants.[80] While Rangpur comprises about 12 percent of the rural population, only 4 percent of migrants come from that division (Figure 1.31). The majority of migration is concentrated in the Eastern areas of the country around Dhaka and Chittagong (Figure 1.32), and this has changed little over time. Greater Dhaka is the main destination for migrants from Barisal, Rangpur, Rajshahi, and Dhaka divisions (Figure 1.33). Chittagong and Khulna divisions show slightly greater variation in migration destinations, but greater Dhaka still concentrates about 50 percent of migrants. In Sylhet, most migration is within the division. The temporal persistence of these geographic patterns is consistent with the literature showing that migration is more likely in places where the stock of migrants is already high, as prospective migrants can rely on existing migrant networks.[81]

[80] HIES (2016).

[81] Hanson (2010); Litchfield et al. (2015).

Lower overall migration in poorer areas of the country may be linked to higher risks and costs of undertaking this opportunity. The literature on internal migration for Bangladesh indicates that internal migration largely reflects the pursuit of better economic opportunities and is strongly linked to the country's urbanization.[82] In some areas, seasonal migration is also important as a way to cope with weather shocks. According to HIES 2016, 14 percent of households experiencing an income shock (largely due to weather) used migration as a coping strategy. Experimental evidence in poor areas of Western Bangladesh shows that migration is profitable and may be an underutilized strategy to smooth incomes for poor households. Qualitative information suggests that incomes close to subsistence and lack of knowledge about returns to migration contribute to low participation in migration. Credit constraints may be another important factor preventing households from migrating.[83]

Figure 1.31. Spatial pattern of rural out-migration, by division, 2010 and 2016

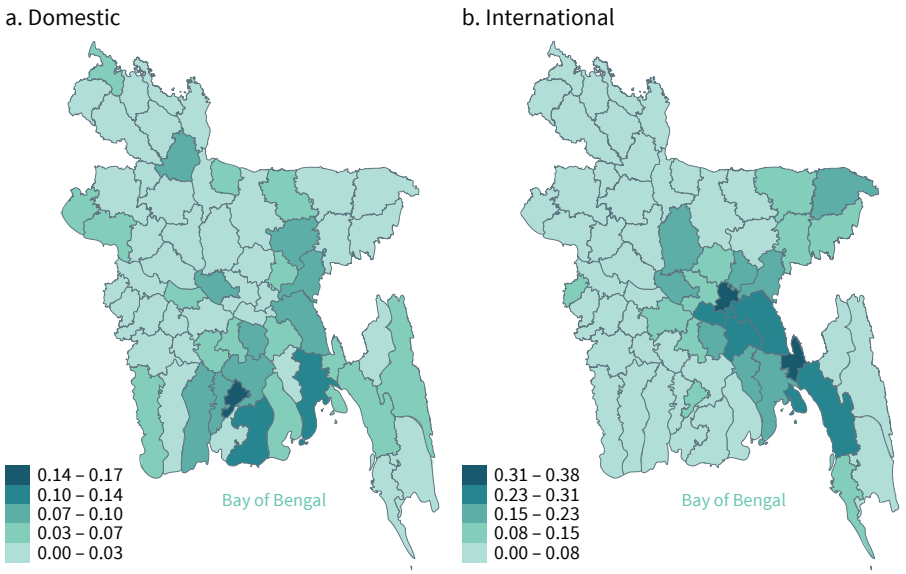


Source: Authors' calculations using HIES 2016.
Note: Percentage of rural households reporting a recent domestic or international migrant, by the division where the household was interviewed. "Population" bar indicates the share relative to the total population. "Migrants" bar reports the areas' respective shares of the total migrant population.

[82] UNDP (2013).

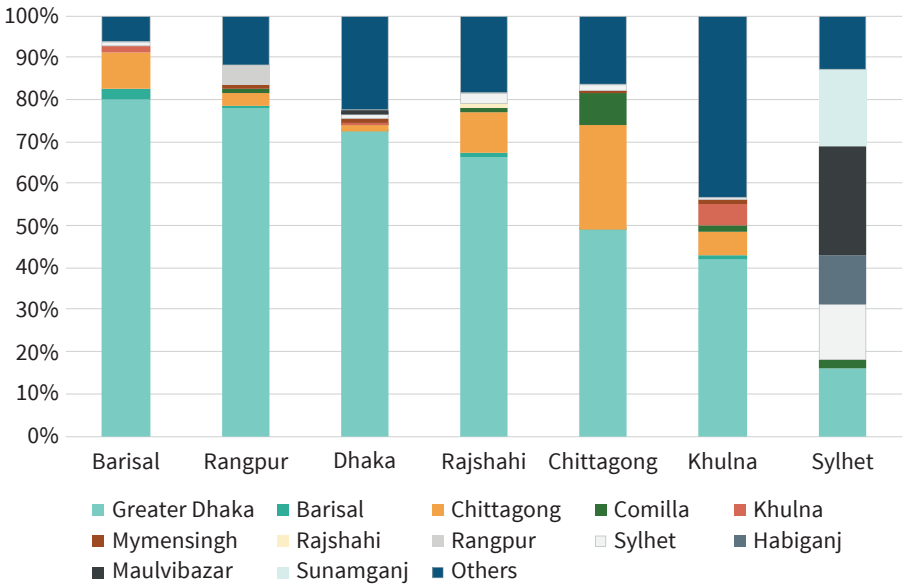
[83] Bryan, Chowdhury, and Mobarak (2014).

Figure 1.32. Share of households sending migrants, by district, 2016



Source: Authors' calculations using HIES 2016 for both urban and rural areas.

Figure 1.33. Main destination district of migrants by division of origin, 2016



Source: Authors' calculations using HIES 2016.
Note: Greater Dhaka includes Dhaka, Gazipur, Manikgabj, Munshiganj, Narayanganj, Narsingdi.

Rural income levers: household assets and markets

This section examines assets and markets whose availability and quality affect rural households' earning capacities. Key household assets that have been shown to influence earnings in rural areas include education and land. Markets important for rural incomes include farm-product, credit, and insurance markets. In the following pages, analyzing these and other strategic productive assets and markets gives a clearer picture of how people in rural Bangladesh earn their incomes, why rural incomes differ across regions and population groups, and what impedes rural households' efforts to improve their earnings. Results will inform the assessment and prioritization of opportunities to boost rural incomes through policy action—the heart of the RID. A stylized assets framework guides our analysis of assets and markets in rural Bangladesh.[84]

Education and earning power: literacy gaps hamper progress in the rural West

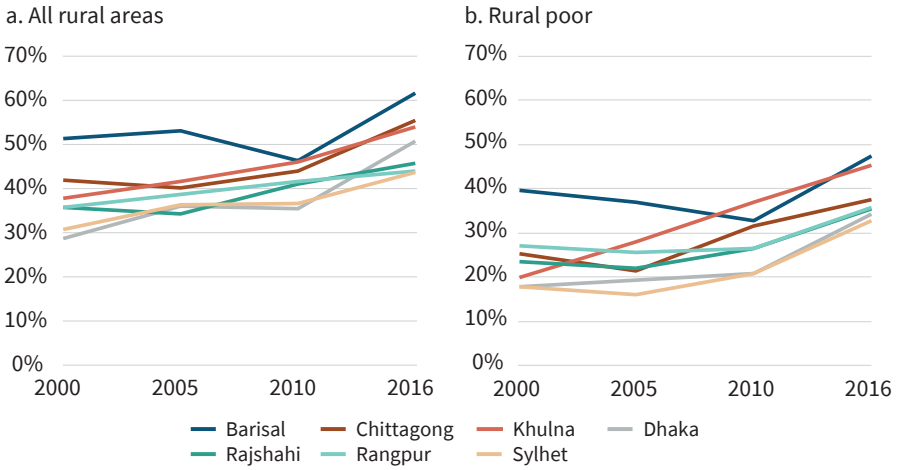
Despite progress, the rural adult population remains poorly educated. In 2000, about 64 percent of the rural adult populaltion was illiterate, defined as not being able to write a letter. In 2016, this was true for 50 percent of rural adults. When focusing on the poor, literacy rates increased by 14 percentage points between 2000 and 2016. However, in 2016, 6 out of 10 Bangladeshi adults living in poor rural households remained iliterate. Illiteracy rates for male farmers are particularly high, ranging between 70 and 75 percent.[85]

Educational disparities across areas remain large, and this partly determines income opportunities. Sylhet, Rajshasi, and Rangpur have literacy rates below the rural average, consistent with the higher poverty levels previously noted for districts in these divisions. Progress in the accumulation of education accelerated after 2010 across divisons and for the poor. However, as discussed above, progress in educational attainment has been slower in the rural West, slowing income growth in those areas. While urban literacy rates increased by 15 percentage points nationally between 2010 and 2016, literacy rates increased by only 2 percentage points in Rangpur, 5 percentage points in Rajshahi, and 8 percentage points in Khulna. Sylhet also showed limited progress, with a rise of just 7 percentage points (Figure 1.34). In 2018, about a quarter of the rural population older than six years had no formal education. The districts of Jamalpur (38 percent) and Gaibandha, Sherpur, and Kurigram (33 percent each) were the

[84] Lopez-Calva and Bussolo (2014).
[85] World Bank (2020a).

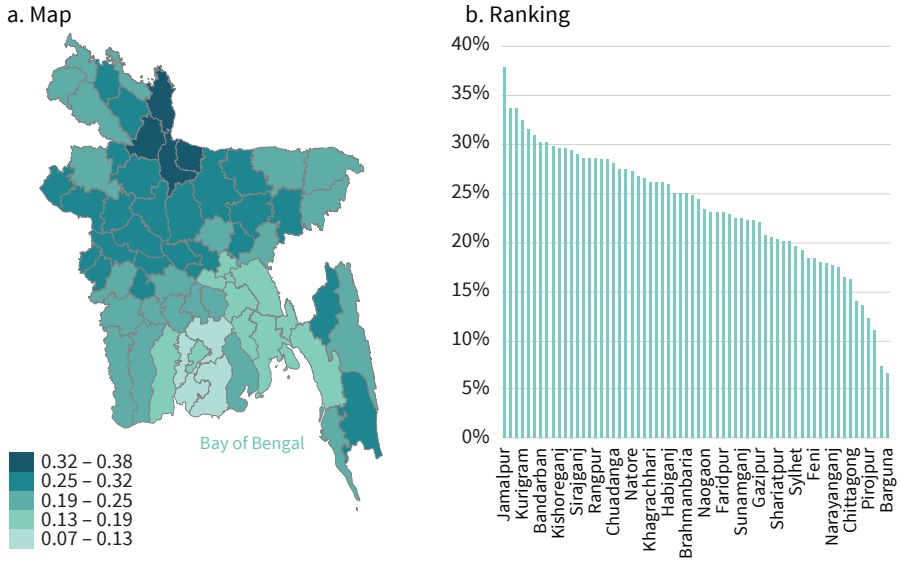
weakest performers. Their situation contrasts with Patuakhali and Barguna, where only 7 percent of the population older than six years had no formal education (Figure 1.35).

Figure 1.34. Literacy rates in rural areas, 2000-2016, by division



Notes: Authors' calculations using HIES 2000-2016. Sample are adults aged 15 and older. Literate is defined as being able to write a letter.

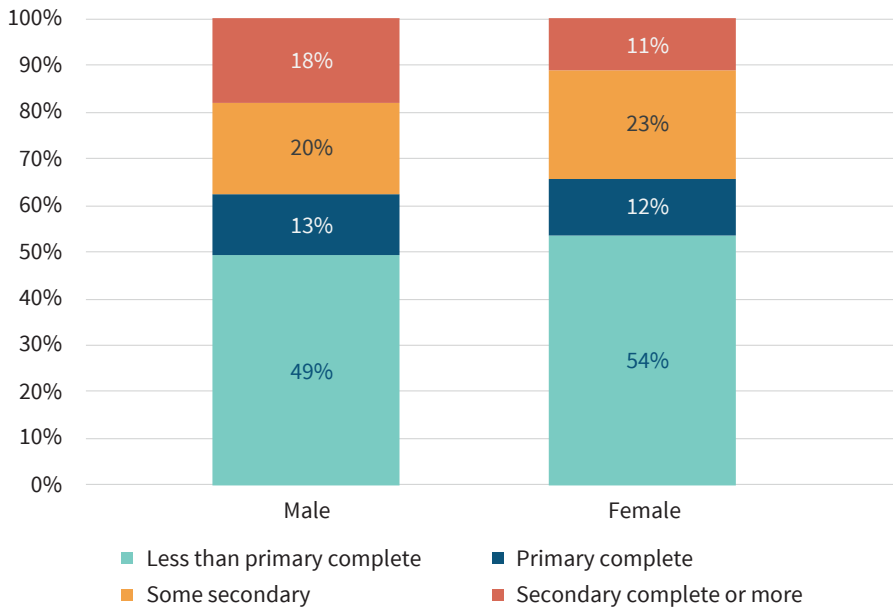
Figure 1.35. Percentage of the rural population older than 6 years with no education, 2018



Source: Authors' calculations using BBS (2018).

Adult women remain less educated than men. About 54 percent of adult women have not completed primary education, compared to 49 percent of men. In addition, women are less likely to pursue higher levels of education. Only 11 percent of adult women in rural areas have completed secondary school or above, compared to 18 percent of males (Figure 1.36).

Figure 1.36. Educational attainment by gender (percentage of adults older than 18), 2016



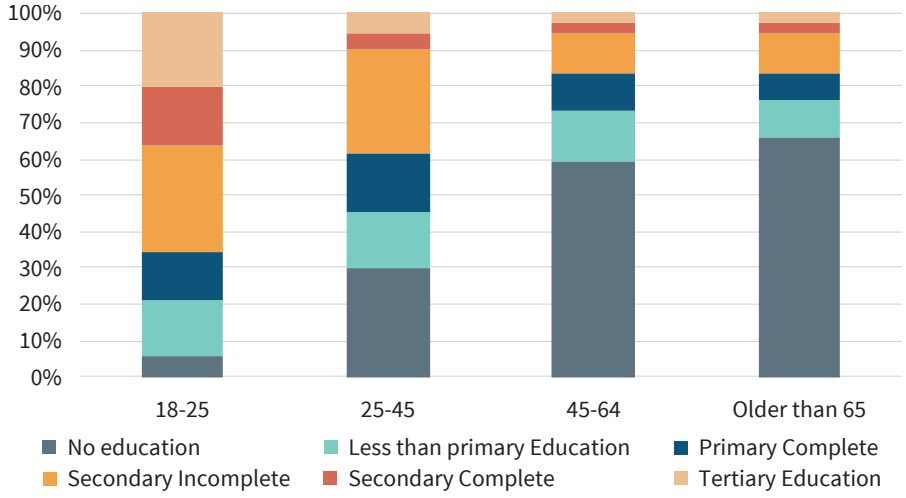
Source: Authors' calculations using HIES 2016.

Younger cohorts are significantly more educated, but the quality of education remains low. Figure 1.37 shows that only 6 percent of those 18-25 years old had no education in 2016, compared to 30 percent of those 25-45 and 60 percent of those 45-64 years old. This showcases the substantial improvement in education over time. However, the bulk of the youth workforce is still composed of individuals with relatively low skill levels: close to 1 in 3 youth aged 18-25 in rural areas are primary school completers or less. Recent analysis finds that, by age 16, close to half of young individuals are already out of school. Most females drop out of the labor force as they exit formal schooling. While a child is expected to complete

10.2 years of school by her 18th birthday, when factoring in what children learn, the average child can expect to receive just 6 years of school.[86]

Access to skills training beyond formal education is limited. The percentage of the Bangladeshi workforce that has taken training is low overall, with about 2 percent of the overall workforce and of youth reporting that they have received training in the past 12 months. Data suggest that access to skills development is limited for individuals from lower-income households, youth (ages 15–24), and less-educated workers, regardless of their desire for training opportunities. Training opportunities tend to be concentrated on better-educated urban males.[87] Apart from technical and vocational training, few other active labor market programs exist in Bangladesh to facilitate access to jobs for disadvantaged populations. Support instruments often targeted to unemployed youth in other parts of the world include wage subsidies, apprenticeship and internship, counseling or mentoring, job search assistance, and employment services. These tools are largely unavailable in Bangladesh. Interventions to promote entrepreneurship and self-employment, which may be more applicable in an environment where labor demand is limited, are also lacking.[88]

Figure 1.37. Educational attainment by age group in rural Bangladesh, 2018



Source: Authors' calculations using BIHS 2018.

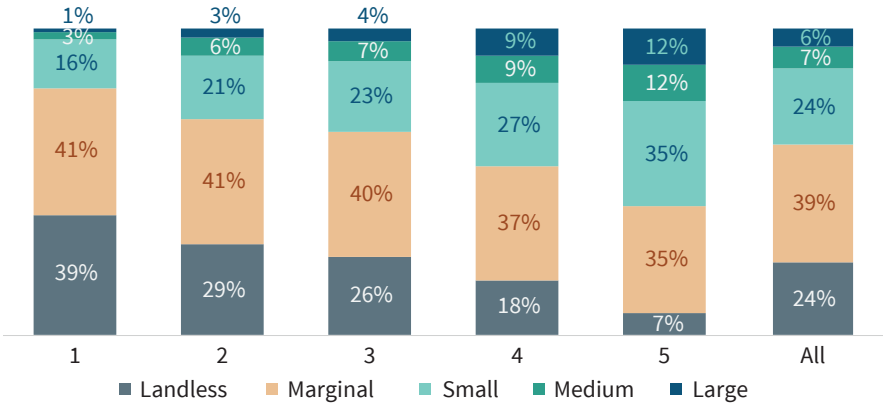
[86] World Bank, Human Capital Index 2020.
[87] World Bank (2019d).
[88] Farole and Cho (2017).

Average land holdings are small, and land markets could work better

In addition to education, land is another key asset for rural households in Bangladesh. About 63 percent of rural households own at least 0.05 acres of cultivable land. The rest either own less or have neither cultivable nor operated land. On average, a rural household owns 0.80 acres and operates 0.82 acres of land.[89] With 70 percent of agricultural land, Bangladesh holds the highest share of agricultural land as a percentage of total land area among comparators and is well above the 56 percent of the South Asian region. Indeed, Vietnam, Pakistan, and India have 39 percent, 47 percent, and 60 percent of agricultural land, respectively.[90]

There is a clear correlation between consumption levels and size of land owned, although overall land sizes are very small. Considering only households that report productive land, 79 percent owned that land, and 21 percent were landless.[91] About 63 percent of households own marginal or small areas, 7 percent medium-sized areas, and 8 percent large properties. In the poorest quintile, 4 in 10 households are landless, compared to 7 percent for the richest quintile (Figure 1.38). These patterns of land ownership have changed little in the past decade. Overall farm sizes in Bangladesh are among the smallest in the world on average, and there is limited room for expansion. [92]

Figure 1.38. Land ownership by land size and consumption quintile, 2018

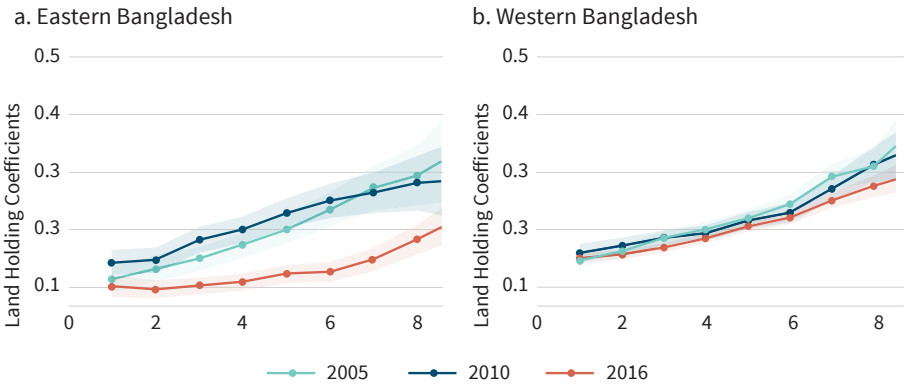


Source: Authors' calculations using BIHS 2018.
Notes: Landless are those with land size=0; Marginal: land size>0 and <0.20 hectares; Small: land size>=0.2 and <=0.6 hectares; Medium: land size>=0.61 and <1.01; Large: land size>= 1.01 hectares.

[89] BBS (2019).
[90] WDI (2020).
[91] Productive land excludes homestead land and other land not usable for production (BIHS 2018).
[92] FAO (2020).

The relationship between land ownership and consumption has become weaker in the Eastern divisions, signaling a faster structural transformation of those areas. Since 2010, the correlation (conditional on other factors) between land holdings and household per capita consumption has declined significantly for most households in the Eastern divisions (Figure 1.39a). This contrasts with Western areas, where this correlation has not changed across time (Figure 1.39b), reflecting the persistently strong engagement in agriculture in the West. As shown in Figure 1.25, Western divisions have a higher share of household income coming from agriculture than Eastern divisions.

Figure 1.39. Looser ties between consumption and landholding —but only in the East



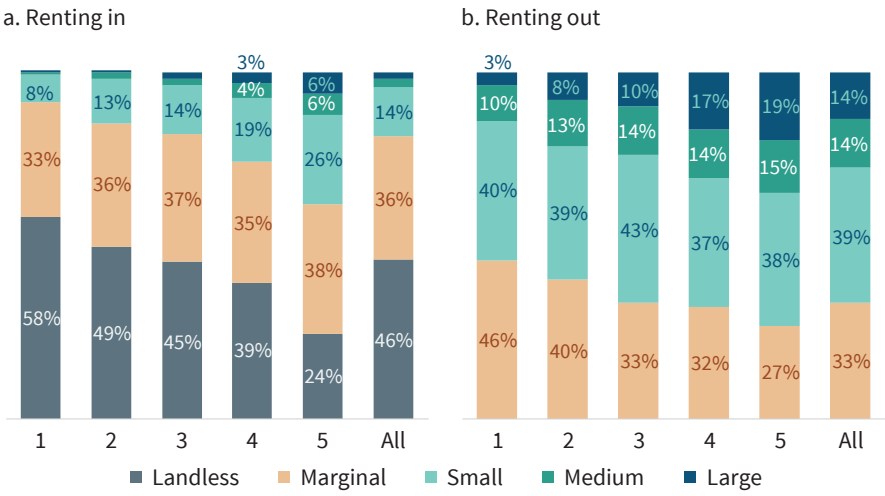
Source: Hill and Endara (2019b).
Note: Figures indicate how closely consumption levels were correlated with land ownership in 2005 (green), 2010 (blue), and 2016 (red). In Eastern Bangladesh, consumption became less tied to land holding over this period. In Western areas, this trend was much less pronounced.

With Bangladesh's rural population still growing, rural households appear to be working around the challenge of land fragmentation by establishing land leasing and tenancy relationships. Half of landless households rent land, making poor households relatively more engaged in land rental markets (Figure 1.40a). This reflects a longer-term upward trend in the share of cultivated land under tenancy and a noticeable rise in the share of landless tenancy.[93]

[93] In 1988, only 23.4 percent of cultivated land was under tenancy in rural Bangladesh; the matched share increased to 32.8 percent in 2000, rising further to 39.8 percent in 2008 and 47.5 percent in 2014. While 43.6 percent of households rented land from others in 1988, the matched share rose to 54.2 percent in 2000 and 58.3 percent in 2008. In 1988, only 6.7 percent of total cultivated land was under landless tenancy; the matched share increased to 12.4 percent in 2000, rising further to 23.1 percent in 2014 (Hossain and Bayes 2009, 2018).

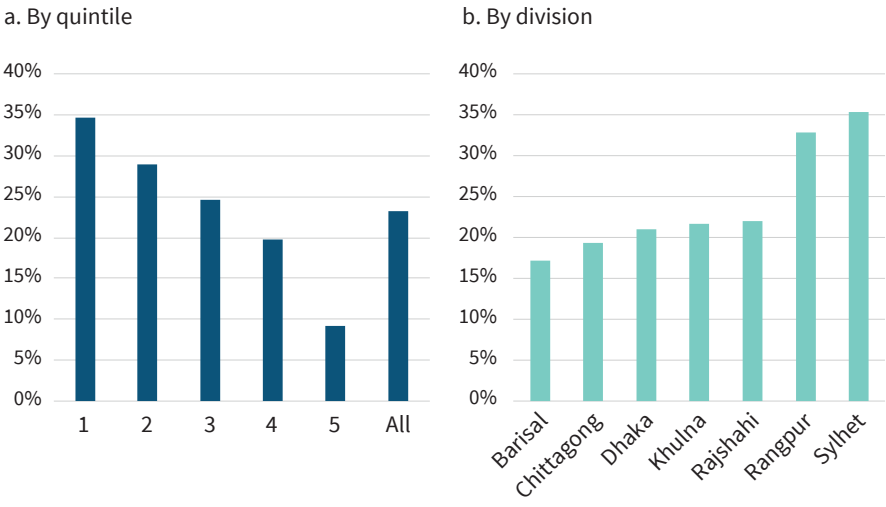
About 1 in 4 farmers rent land using sharecropping agreements (Figure 1.41a). The rate is higher for the lowest quintile (35 percent of those renting in) and in Rangpur and Sylhet (about 1 in 3 households renting).

Figure 1.40. Percentage of households renting land in and out, by land size and consumption quintile, 2018



Source: Authors' calculations using BIHS 2018.

Figure 1.41. Percentage of households renting with sharecropping agreements, 2018



Source: Author's calculations using BIHS 2018.

Land markets could work more efficiently to support higher-value investments and economies of scale. Two important findings related to land are that rented land is significantly and positively associated with higher efficiency, and that land fragmentation is significantly and negatively associated with farming efficiency.[94] Together, these results suggest that although land markets are functional, they remain inefficient. Better-functioning land and lease markets could allow more-efficient households to rent in land (or, perhaps equally important, allow inefficient households or absentee households to rent out land without fear of losing it), thereby reducing the efficiency premium currently associated with rented land. About 31 percent of households report not possessing legal documents for agricultural land.[95] It is likely that these households have little incentive to make investments that might enhance productive efficiency.

Gender gaps in ownership and rights over land and other household assets persist. Among rural women, 13 percent solely or jointly own agricultural land and 7 percent own nonagricultural land, compared to 70 percent and 86 percent of rural men, respectively.[96] Survey data also indicate that 96 percent of household land in rural areas is still owned by husbands alone.[97] The gender gap in land ownership is primarily attributable to male-biased practices in inheritance, the main channel through which land is acquired. Women inheriting land face obstacles in registering and legally owning their inheritance. Barriers include procedural obstacles; women's limited mobility to travel to government offices; and high fees for registering land. To cover registration fees, women may have to request money from their husbands.[98]

Key agricultural inputs: irrigation, fertilizers, seeds, and mechanization

Investment and reforms in the 1980s encouraged use of better inputs, promoted mechanization, and enabled improvements in irrigation. Efforts at that time gave a large share of agricultural households access to irrigation, mechanization, and quality inputs such as seeds. These policies had a strong, positive impact on labor and land productivity in agriculture.[99]

[94] Gautam and Faruqee (2016).
[95] BBS (2018).
[96] BIHS 2015.
[97] Quisumbing, Kumar, and Behrman (2018).
[98] Solotaroff et al. (2019).
[99] Mandal (2014); Gautam and Faruqee (2016).

Irrigation

Today more than 80 percent of agricultural land has access to water for irrigation on the edge of the fields.[100] Using a comparable definition of irrigation, in 2016, 60 percent of Bangladesh's agricultural land was irrigated, compared to 50 percent in Pakistan and 37 percent in India (last estimate 2013). Irrigation access is strongly associated with the level of diversification among marginal, small, and medium farmers.[101] However, irrigation coverage is very low in hilly and highland divisions, such as Rangpur, due to constraints in availability and accessibility to water. While Rangpur division has even higher availability of highlands than Rajshahi and similar (or lesser) exposure to droughts, it is less diverse compared to Rajshahi primarily due to lower irrigation coverage (32 against 90 percent). In 2016, over 95 percent of 7.6 million hectares of irrigated lands were irrigated with tube wells and power pumps.[102] Groundwater accounts for 75 percent of irrigation. However, groundwater storage is declining rapidly due to expansion of boro paddy. One estimate suggests a 32 percent decline in groundwater storage between 2003 and 2013.[103] Several districts in the northwest region and around Dhaka city have reached critical points for groundwater depletion.[104]

Fertilizer use

About 95 percent of farmers use fertilizers. However, technical analysis suggest that farmers are overusing them.[105] Fertilizer use has increased steadily over the past three decades. From 2003 to 2016, fertilizer consumption jumped from 160 to 289 kg per hectare of arable land, which implies an average annual growth rate of 5 percent. This compares with a South Asia average of 160 kg in 2016. During the same 2003-2016 period, India, Vietnam, and Pakistan had a growth rate in fertilizer use of 4 percent, 2 percent and 3 percent, respectively.[106] Significant subsidies dedicated to fertilizer use explain these excessive consumption rates. The strong focus of past policies on nitrogenous fertilizers led to an imbalance in the use of nitrogen relative to other nutrients. Subsidies were increased for potassium and phosphorous macronutrients in recent years to address concerns about resource degradation resulting from an overuse of nitrogen.

[100] Gautam and Faruqee (2016).
[101] Haque and Ahmed (2020).
[102] Pumping using electricity or solar power (not diesel).
[103] Khaki et al. (2018).
[104] BPC (2018).
[105] Gautam and Faruqee (2019) and World Bank (2020a).
[106] WDI (2020).

Evidence suggests that almost half of farmers are overusing fertilizer with apparently no additional output. Conversely, the overuse of fertilizer could have negative environmental, health, and even farm productivity consequences through resource degradation.[107]

Seeds

Improved seeds have driven past productivity, but quality seeds are now in short supply. Seeds embody technological change and are at the core of the productivity agenda. Improved varieties have driven past success in raising productivity and achieving food security.[108] However, the formal seeds sector supplies only 20 percent of total demand.[109] The remaining share is covered by farmers' own seeds (88 percent) and smuggled seeds from India (12 percent).[110] Supply gaps for formal seeds vary from crop to crop. For most crops, seed deficits are not caused by limited production capacity but rather dissemination constraints. In the potato seed supply chain, for instance, inadequate basic infrastructure (roads, electricity) and flawed logistics system prevent timely dissemination of seeds.[111] On the contrary, horticulture seed supply is constrained mainly due to farmers' limited access to finance, extension, and markets.[112]

At present, both public and private sectors are active in the seed industry. The public seed sector's focus is on notified crops, whereas the private sector covers above 90 percent of hybrid seeds for two notified crops (paddy and maize) as well as improved and hybrid varieties of vegetables (54 percent), pulses, and legumes.[113] As of 2013, there were around 200 seed companies with 17,000 registered and 50,000 mobile seed vendors with market value of over US$125 million. Most of these companies enjoy good access to international seed technologies through partnership with major international seed companies and seed exports/imports. However, only two companies - BRAC and Lal Teer Seed (LTS) - have complete seed value chains from research and breeding to extension. Private companies joined together to form the Bangladesh Seed Association (BSA), through which they collaborate with the government on seed policy and regulations.

[107] Gautam and Faruqee (2016).
[108] Gautam and Faruqee (2016).
[109] World Bank (2020a).
[110] BPC (2018); USAID (2014); BRAC (2019); and LTS (2019).
[111] World Bank (2020a).
[112] LTS (2019).
[113] USAID (2014).

Mechanization

Reforms in the late 1980s supported the expansion of mechanization,[114] exerting a strong, positive impact on labor and land productivity in agriculture. This allowed adopter farmers to release labor for other (mostly nonfarm) activities and diversify their incomes, while becoming more productive and efficient and achieving higher gross farm margins.[115] About 85 percent of land preparation is done mainly by power tillers and to some extent by tractors.[116] The shortage of family labor and access to electricity have been important drivers of farm mechanization, along with proximity to infrastructure and services.[117] Among comparator countries, Bangladesh has had the fastest growth of mechanization, measured by the stock of farm machinery in 40-CV tractor equivalents. In Bangladesh, mechanization grew at an average annual rate of 22 percent between 1980 and 2015, while in Vietnam, India, and Pakistan, the average growth rates were 12, 9, and 5 percent, respectively.[118]

Today most farmers use some type of mechanization. About 96 percent of rural farmers use some from mechanization (BIHS), and there has been a rapid convergence in mechanization across areas, with Barisal and Sylhet catching up to other divisions. Today, the high use of mechanization can also be seen across all districts. However, room for improvement remains. Agricultural mechanization is still used in an unbalanced way, largely for planting, threshing (rice), and processing.[119] The use of mechanized operations in non-crop agriculture (e.g., horticulture and livestock) remains very limited. This imbalance disproportionally affects female farmers, who dominate in post-harvest processing of crops.[120]

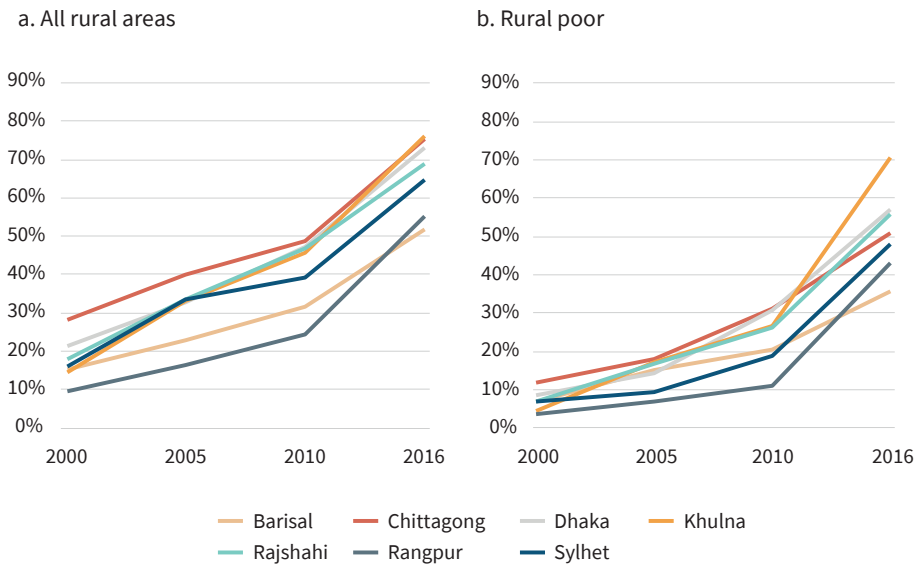
Electricity access has fueled consumption growth and poverty reduction, but gaps persist

Recently, rural electricity access in Bangladesh has expanded substantially, with Khulna showing an especially impressive performance. Between 2000 and 2016, the share of rural households with access to electricity increased sharply, and gains have been faster since 2010 (Figure 1.42). Khulna, for instance, showed an impressive gain in coverage for its whole population, including the poor.

[114] Mandal (2014).
[115] Gautam and Faruqee (2016).
[116] Tiwari et al. (2017).
[117] Ahmed and Gautam (2015).
[118] According to data from Fuglie (2012 and 2015).
[119] Hossen (2019).
[120] Alam and Khan (2017).

In 2000, only 7 percent of Khulna's poor households had electricity, but by 2016 that share had climbed to about 71 percent, well above the national average for the rural poor. Dhaka accounts for about 25 percent of rural households without electricity, followed by Rangpur with 21 percent. More recent data from the 2018 rural agricultural survey point to continued expansion in electricity coverage, with 82 percent of rural households using electricity as their main source of lighting. Kerosene and solar power are other sources of energy, with 10 and 8 percent of rural households relying on those sources, respectively. These gains in electricity access were associated with faster income and therefore consumption growth between 2010 and 2016. This indicates that closing remaining electricity gaps can support faster income growth.

Figure 1.42. Rural access to electricity, 2000-2016, by division



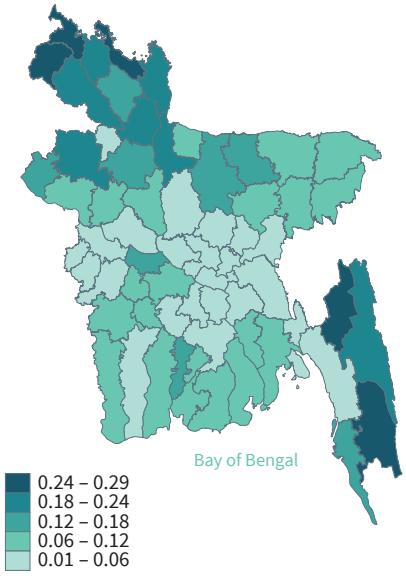
Source: Authors' calculations using HIES 2000-2016.

Access to electricity still varies geographically, with Barisal and Rangpur showing the largest gaps. Barisal has a much lower share of electricity use (65 percent) compared to other divisions but complements largely with solar energy (26 percent) and kerosene (9 percent). In contrast, Rangpur also reports a comparatively low share of households using electricity (73 percent) but largely relies on kerosene to compensate (21 percent), with only 6 percent of households using solar. Figure 1.43 shows the variation across districts in the use of electricity and other power sources.

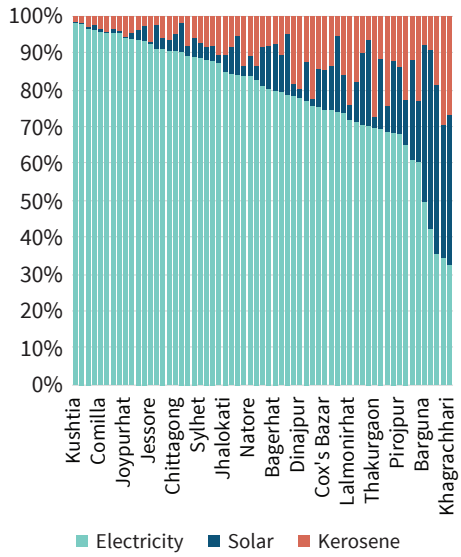
Poorer performers, with high rates of kerosene use at the expense of electricity or solar, are Khagrachhari, Thakurgaon, and Bandarban districts, where about 28 percent of households rely on kerosene. Use of solar power for agriculture is limited. As noted, spatial patterns of access to electricity are correlated with higher incomes and lower poverty.

Figure 1.43. Energy sources used by rural households, 2018

a. Percentage of households using kerosene



b. Energy sources across districts



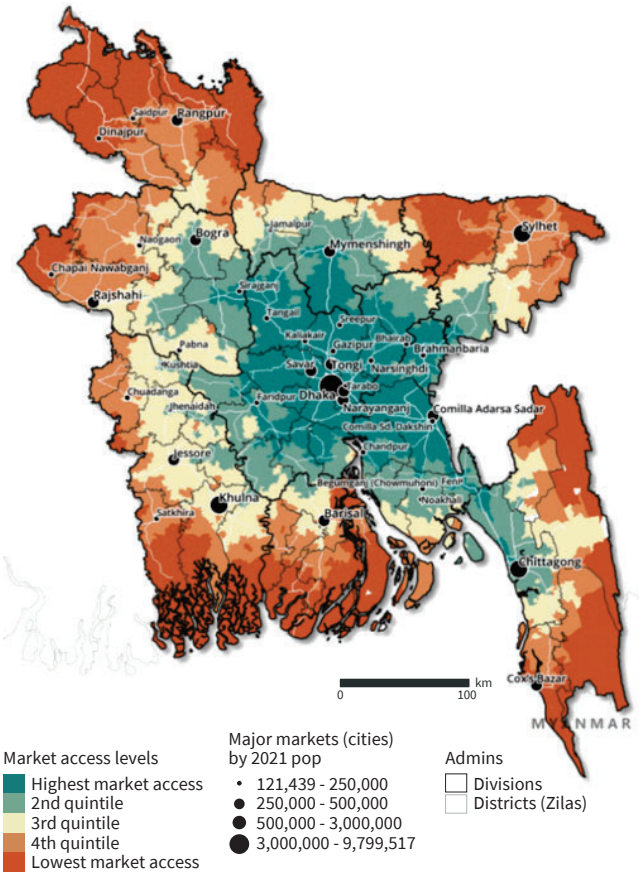
Source: Authors' calculations using BBS (2018).

Connectivity challenges go beyond infrastructure

There is a strong link between better accessibility to markets and urban centers and higher incomes. Figure 1.44 shows metrics of market accessibility and clearly highlights the disconnect between the country's periphery and its dominant economic centers (the Dhaka-Chittagong corridor). These maps correlate strongly with the location of a large share of the poor. Evidence based on regression analysis also points to a strong link between accessibility to urban areas and higher incomes and lower poverty.[121]

[121] Gautam and Faruqee (2016); Blankespoor and Yoshida (2010).

Figure 1.44. Market accessibility across Bangladesh in 2021



Source: Robert Steven Banick's calculations using road network and population projections data.
Note: The map shows each union's cumulative access to all markets, represented by Bangladesh's 43 recognized City and Municipal Corporations. Each market's accessibility to a given union is measured by weighting its projected population size in 2021 by the inverse of travel times to that market from the union (e.g., a gravity model). These 43 measures are summarized per union for a cumulative index of market accessibility.

Past improvements in physical connectivity in Bangladesh have been linked to faster income growth, higher productivity in agriculture, and increased off-farm income opportunities. For instance, the Jamuna bridge has contributed to integrating the country's northwestern areas by promoting diversification into high-value crops, improving access to credit, and increasing market participation for both tenants and owners.[122]

[122] Bayes (2007).

The construction of the bridge facilitated a farm to non-farm employment shift, along with lower household unemployment, in two adjacent districts connected by the bridge.[123] There is also evidence of a shift toward non-agricultural activities, especially in trade and transport.[124] The Jamuna bridge has reduced transport costs and improved access to key consumption centers, as well as access to basic services such as natural gas, electricity, and telecommunications.[125]

Poor inland connectivity remains an important barrier to rural income growth.[126] Road density in Bangladesh is low: a mere 0.13 kilometers per 1,000 population for highways and district roads, and 1.9 kilometers per 1,000 population if rural roads are included. These figures compare poorly with road density in Pakistan (1.5 kilometers per 1,000 population), India (3.5 kilometers per 1,000 population), Sri Lanka (5.5 kilometers per 1,000 population) and Bhutan (9.7 kilometers per 1,000 population).[127] Bangladesh is exposed to recurrent floods that can cause severe disruptions in the transport network. According to Multi-Hazard Risk Assessment reports by the Bangladesh Ministry of Disaster and Relief, more than 50 percent of all road types are exposed to different levels of flooding (Figure 1.45) increasing the relevance of road maintenance. In addition to the poor quality of the road network, important challenges include limited to nonexistent multimodality in the transport system and an uncompetitive logistic service market.[128] [129]

[123] Mahmud and Sawada (2014).

[124] Bayes (2007).

[125] Hossain, Sen, and Yasuyuki (2013).

[126] Only 27 percent of the country's rural roads and 40 percent of main roads are paved, and only half of paved roads are in good condition. Many parts of the regional road network are narrow and operating at or near maximum capacity. Many sections are incapable of handling more freight vehicles. Congestion on roads doubles standard trucking costs, while road crashes alone account for about 11 percent of truck operating costs in Bangladesh (Herrera Dappe et al. 2020).

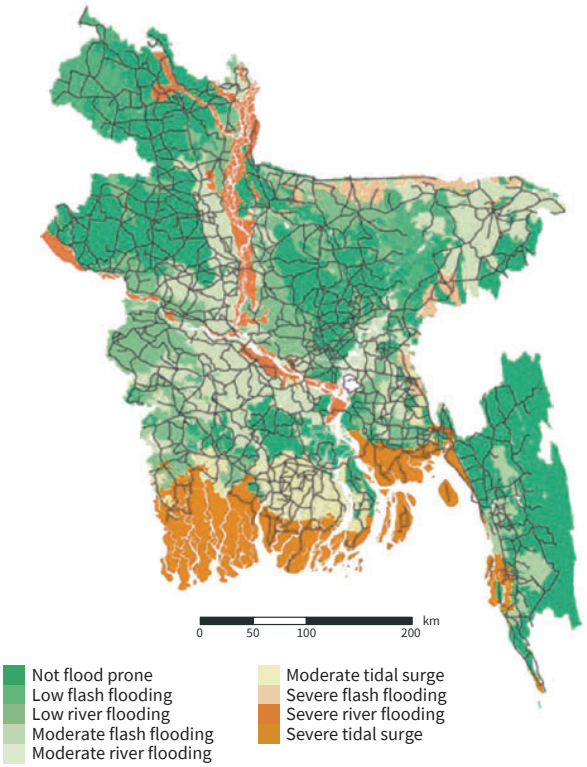
[127] Andres et al. (2013).

[128] Herrera Dappe et al. (2020). The core infrastructure for all modes of transport is in place, but intermodal facilities are lacking. About 91 percent of shippers surveyed reported few to virtually no instances in which logistics service providers use multimodal transport to reduce logistics costs. Shippers typically work with more than one service provider to complete each shipment. Trucking and inland water shipping operations are provided by thousands of agents, many of them using very small fleets or single units. Drivers' unions and associations set prices and control access to cargo, interfering with the market mechanism and preventing full competition. This weakens incentives among service providers, as they are not rewarded for the quality of their services.

[129] Road transport rates in Bangladesh are high compared to other countries (Herrera Dappe et al. 2020). For instance, facilitation payments, fuel, insurance, registration, taxes, and tolls cost 2 percentage points more in Bangladesh than in Vietnam. Repair, maintenance, and tires cost 5 percentage points more in Bangladesh than in Vietnam. Capital costs, administrative costs, and employment costs represent 4, 3, and 2 percentage points more in Vietnam than in Bangladesh.

Connectivity costs particularly complicate fresh-product value chains and increase transaction costs that may disincentivize farmers' diversification out of cereals. Transportation difficulties limit supply chains geographically.[130] Direct and indirect logistics costs are high in most sectors and are particularly large for horticulture. Transportation costs comprise the majority of direct logistic costs for the dairy sector. Low connectivity in the Western areas of Bangladesh limits the ability of farmers to diversify, even if diversification potential in the region is higher.

Figure 1.45. Flood exposure of Bangladesh's road networks



Source: TU Delft (2018).

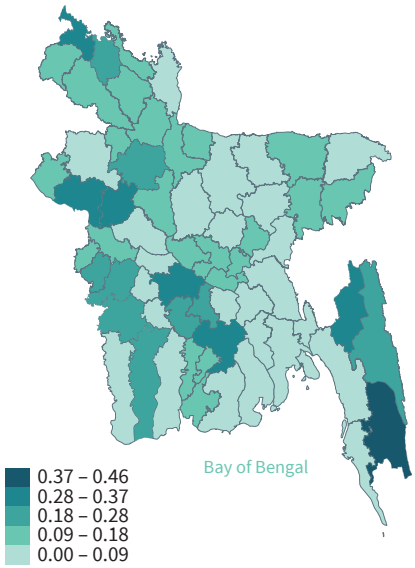
Small physical distances suggest that reducing congestion and logistic costs can have a significant impact on connectivity, thereby increasing rural farm incomes and expanding access to off-farm labor opportunities. Despite challenges in connectivity, local markets are still physically close for most Bangladeshi farmers.

[130] Gautam and Faruqee (2016).

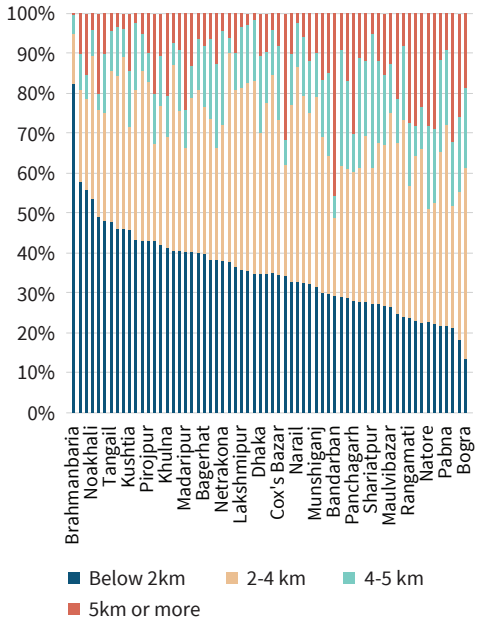
About 36.5 percent of rural households live within 2 kilometers of the hat-bazar (an open-air market), another 37.5 percent are between 2 and 4 kilometers, and 15 percent are between 4 and 5 kilometers (Figure 1.46). Although this metric does not reflect the actual extent of connectivity, it shows that physical distances are not large and suggests that transport costs are high primarily because of congestion and the suboptimal quality of infrastructure. It is estimated that reducing congestion on the national highways would cut logistics costs as a share of sales by 0.5 percentage points, increase exports by 3.7 percent, lead workers to migrate to and around Dhaka, thus concentrating employment there, and increase real wages in all districts.[131]

Figure 1.46. Physical distance to hat-bazar

a. Percentage of households where hat-bazar is further than 5km



b. Average distances by district



Source: Authors' calculations using BBS (2018).

[131] These estimates are based on a spatial equilibrium model for Bangladesh used to simulate the potential impacts that logistics interventions would have on prices, wages, and employment. The model has three building blocks—geography, economic activity, and workers—and is calibrated using survey and geo-coded transport data. Prices and wages adjust to clear the market following an intervention. In the present example, the introduction of a 40 km per hour minimum travel speed on national highways would reduce congestion, thus decreasing logistics costs (Herrera Dappe et al. 2020).

Mobile phone coverage has expanded rapidly in rural Bangladesh, providing an alternative way to enhance connectivity, but access to broadband connectivity is still very limited. In 2000, only 6 percent of rural households reported owning a mobile phone, and 0.5 percent had internet and email access. By 2016, these figures had reached 90 percent and 5 percent, respectively. This dramatic increase in access was made possible by significant declines in user costs. Since 2010, the cost of internet-enabled handsets has dropped significantly, and competition among internet-service providers has driven prices down, making it more affordable to connect. However, though 3G networks now cover 93 percent of the Bangladeshi population, mobile internet uptake is still low, at 21 percent in 2017.[132] A combination of demand and supply factors, including low literacy and access, help explain these patterns.[133] Citizens' broadband and smartphone penetration rates also remain relatively low, with only 20 percent of Bangladeshis subscribed to mobile internet and 31 percent of total connections being made using smartphones.[134] Comparing the number of secure internet servers per million people, Bangladesh is below the regional average and other comparator countries. Indeed, while in Bangladesh there are only 100 secure internet servers per million people, Vietnam, India, and the South Asia region as a whole have 2,596, 389, and 313 servers respectively (WDI).

Gender gaps in mobility and mobile phone use also constrain women's opportunities to earn higher incomes. As will be discussed shortly, social norms related to women's mobility increase their likelihood of working near home, reduce their participation in the commercialization of agriculture, and limit their access to off-farm labor opportunities. Lower use of mobile phones by women may also constrain their ability to access mobile banking and other digital resources.

Commercialization and financial markets

In this sub-section, we describe the current situation in rural Bangladesh in terms of commercialization of farm products and financial markets. Evidence on the functioning of these key markets, in addition to land markets, is central for better understanding the reasons behind the income patterns seen across space and gender, as well as potential constraints to income growth.

[132] GSMA (2018).

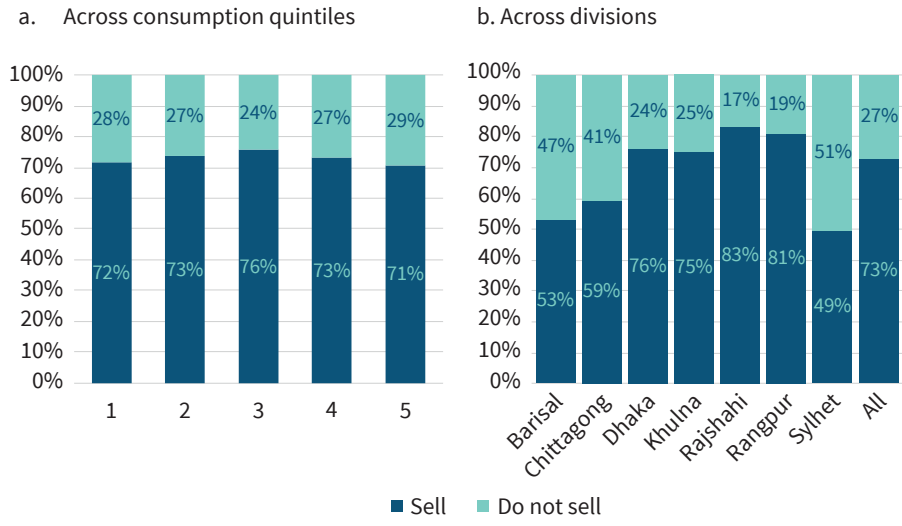
[133] On the Global Connectivity Index (GCI), Bangladesh improved its ranking from 76th among 79 countries in 2018 to 73rd in 2019. This progress reflects significant growth in smartphone demand and mobile broadband subscriptions over the years. User experience has also improved, with more affordable mobile and fixed broadband, better cybersecurity, and cloud services. However, slow progress has been reported in overall ICT investment, which is essential to build capacity.

[134] World Bank (2019a).

Most farmers commercialize their products through efficient but informal markets

Commercialization of farm production is high, with about 7 in 10 households selling part of their produce (Figure 1.47)**.** For those households that sell, about 41 percent of the production is sold. For those households not selling their production, the main use is own consumption (38 percent), followed by storage (31 percent), animal feed (15 percent), and sharecropping (10 percent). There is very little difference across consumption quintiles in terms of the percentage of households selling some production. However, the share of the production sold increases with the consumption quintile (35 percent for the poorest quintile and 46 percent in the richest quintile). Across divisions, Rajshahi and Rangpur have the highest shares of households selling, while Sylhet has the lowest.

Figure 1.47. Percentage of households selling their farm production, 2018



Source: Authors' calculations using BIHS 2018.

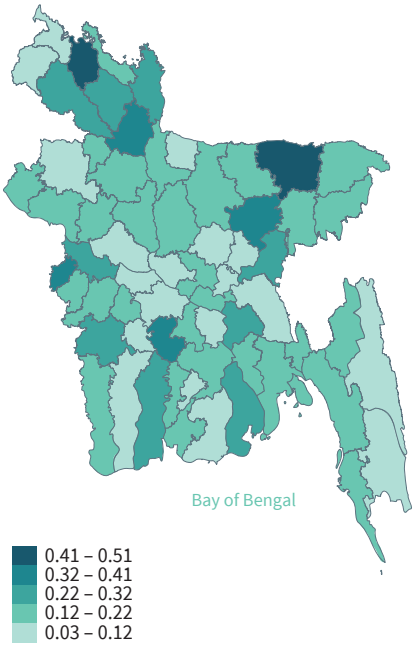
Farmers largely sell in the traditional village markets instead of at the farmgate (Figure 1.48). Given the fact that farm sizes are small, production is usually not large enough to justify marketing it directly to wholesalers. The large majority of farmers (74 percent) sell their products at the village market (hat-bazar). [135] Hat-bazar market access varies across districts, however. Some districts have a relatively high share of agricultural households selling at home.

[135] A Hat bazar is an open-air village market that serves as a trading venue for local people in rural areas.

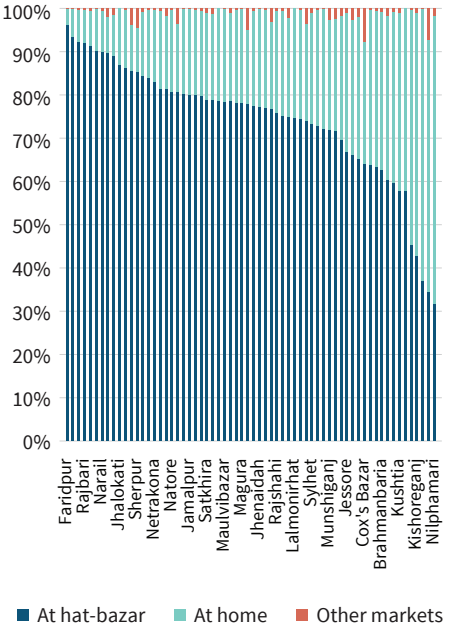
More than 50 percent of households in Gopalganj, Kishoreganj, Sunamganj, Meherpur, and Nilphamari sell their products at home, for example. In Nilphamari district, 2 out of 3 households sell at home.

Figure 1.48. Where farmers sell their produce

a. Share of farmers selling at home



b. Comparison across districts



Source: Authors' calculations using BBS (2018).

Commercialization of rice is lower than for other products, in particular for poorer farmers exclusively producing rice. The share of farmers only producing rice who sell their products is lower than the corresponding share among households that are producing both rice and other crops (62 and 96 percent, respectively). More importantly, while more diversified households across the whole consumption distribution are equally likely to sell their products, among households that only produce rice, those in the lowest quintile have a far lower probability of participating in markets than those at the high end of the consumption distribution (46 versus 64 percent). This reflects the fact that poor farm households are more likely to self-consume or store part of their rice and engage in sharecropping arrangements.

Agricultural exports still account for a low share of the country's total exports. In 2018, over 90 percent of Bangladesh's exports were RMG. The main agriculture-related exports were very small in comparison: frozen foods (1.3 percent), agricultural products (2 percent), leather and leather products (3 percent), and jute and jute goods (2 percent).[136]

Exports of rice are very limited. Despite near self-sufficiency in rice production in recent years, export of non-fragrant rice was banned for over a decade, likely depressing local prices relative to exportable price and reducing incentives to improve efficiency. Export of fragrant rice was only allowed on a limited scale. The government lifted the export ban in May 2019 amid a drastic fall in paddy prices, following a record domestic production of 37.2 million metric tons (MTs) of rice. However, since the ban was lifted, export of non-fragrant rice has not risen as expected, given the low rice price in international markets. On the other hand, export of fragrant rice has been slowly increasing in recent years, though it remains miniscule relative to the total volume of the country's exports. Export destinations for fragrant rice are limited to niche markets in settings with a substantial Bangladeshi diaspora. Bangladesh exported more than 22,400 MTs of rice worth US$ 17.7 million in fiscal year 2019, of which 100 percent was fragrant rice. The export in fiscal year 2018 had been 11,000 MTs, worth US$ 7.13 million.

Bangladesh's rice markets appear to be well integrated. Analysis using daily price data from the Department of Agricultural Marketing (DAM) suggests that prices of rice move in step across the country and that price disparities compared to Dhaka are not very large. Figure 1.49a shows monthly average retail prices of boro rice across divisions, relative to Dhaka. Overall changes in prices across months are correlated across markets, and prices move within 20 percent of the Dhaka average retail price. Figure 1.50a compares wholesale and retail prices for boro rice across markets and months and shows that rice markups are below 20 percent. This indicates that rice markets are integrated.

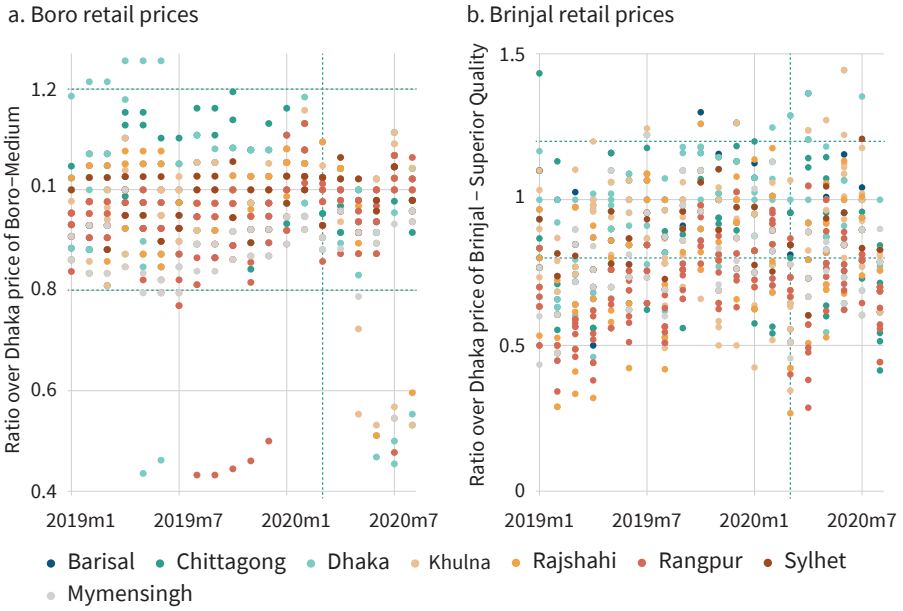
For more perishable products, such as brinjal (eggplant), prices and markups vary more across the country. Figure 1.49b shows price variations compared to Dhaka for brinjal. In this case, retail prices vary between 50 and 120 percent of the Dhaka average prices. For this product, markups vary more than for rice, though in many cases they are below 40 percent (Figure 1.50b).

[136] More than 50 percent of Bangladesh's food exports consist of fish and crustaceans, whether live, frozen, or prepared (World Bank 2020).

Higher variation is expected due to the perishable nature of the product and the more local nature of commercialization.

Price variations right after the COVID-19 lockdown also suggest that markets are reasonably able to smooth shocks in demand and supply (Figure 1.49 and Figure 1.50). After the March 25, 2020, lockdown, prices of rice across markets became more similar, reflecting the government response to protect rice supply and prices. Markups did not vary compared to previous months. Variations in prices and markups increased for brinjal, though not dramatically. Food inflation rates after COVID-19 have remained low. Recent studies also show that price information flows efficiently from traders to farmers, indicating that traders are unlikely to enjoy market power on the basis of asymmetric information.[137]

Figure 1.49. Prices of boro rice and brinjal across divisions, compared with Dhaka average, 2019



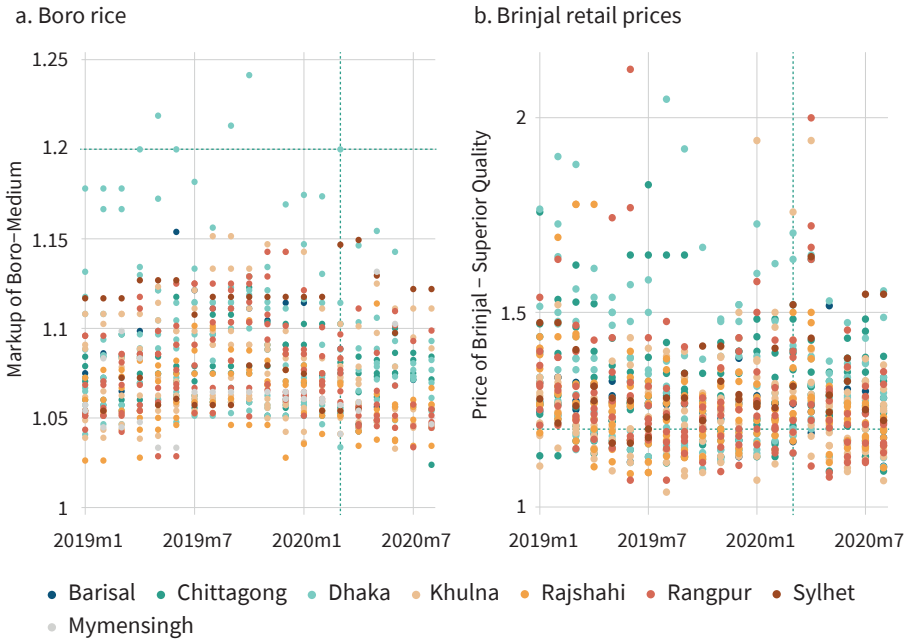
Source: Authors' calculation using DAM (2019).

However, the distribution and marketing of produce is still largely informal and localized. As Bangladesh's economy transitions toward an upper-middle-income economy, formal markets (e.g., supermarkets and large-scale processors)

[137] Gautam and Faruquee (2016).

will be needed to increase the value of commercialization. Almost 98 percent of agricultural goods transit via rural wholesale markets, larger wholesale markets around large cities, and wet markets and corner shops in cities. These markets face challenges of inadequate infrastructure, inconsistent quality, and lack of enforcement of food safety standards. Retail via supermarkets remains at a very limited scale (about 1 percent of retail sales of fruits and vegetables), making it harder to justify investments along the value chain. In some other countries, urbanization and efforts to improve standards and management systems have altered such dynamics. Approaches aiming to boost quality and safety at the primary production level have encouraged farmers in those countries to invest in better production, handling, and transport technologies.[138]

Figure 1.50. Markups for boro rice and brinjal across divisions, 2019



Source: Authors' calculation using DAM (2019).
Note: Markups are defined as the ratio between the retail price and wholesale price of the item in the same market.

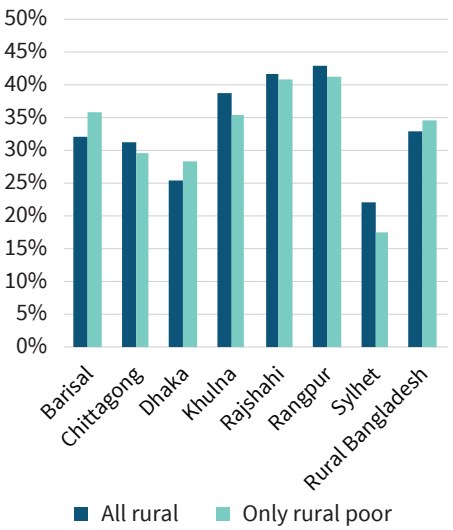
[138] World Bank (2020a).

Stronger credit and insurance markets can expand rural growth potential

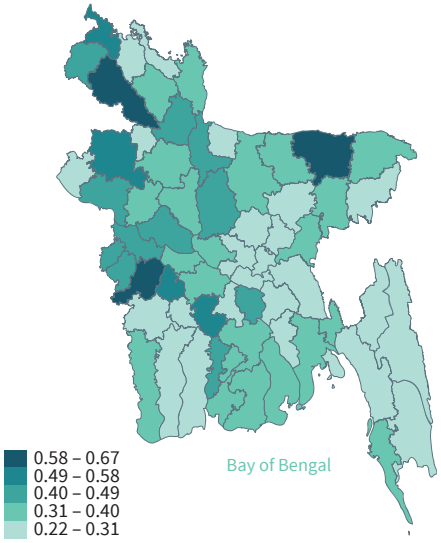
Recent years have witnessed a continued expansion in access to credit, with NGOs having a large presence in this market. Between 2015 and 2017, the share of rural households with access to a bank account increased from 30 to 50 percent.[139] [140] About 35 percent of rural households reported obtaining a loan in the past year (Figure 1.51a). Loans are mainly obtained from NGOs, with ASA, Grameen Bank, and BRAC being the most commonly used. The share of loans from informal sources, including moneylenders, is small (Figure 1.52).

Figure 1.51. Use of credit in rural areas

a. Percentage of rural households obtaining a loan in the past 12 months, by division



b. Percentage of households that obtained agricultural credit, by districtt



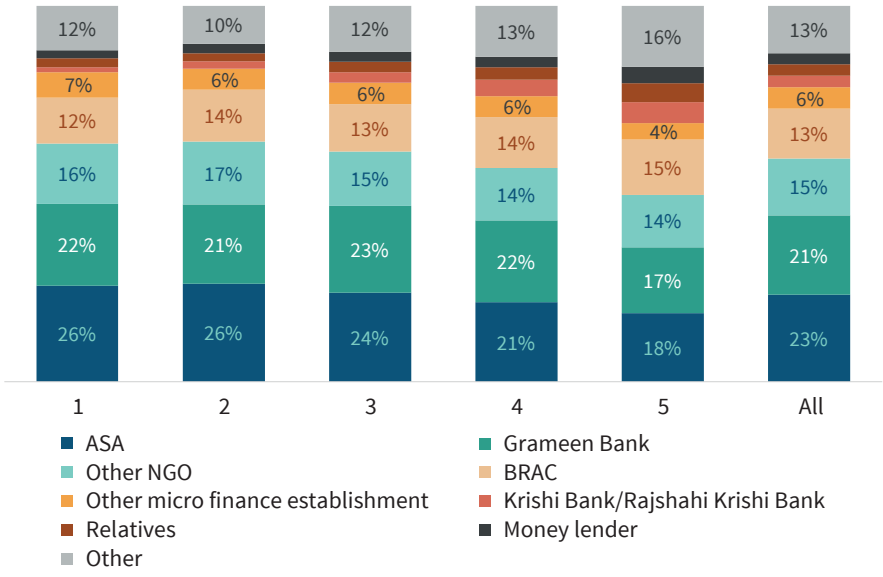
Source: Authors' calculations using HIES 2016 (panel a) and BBS (2018) (panel b).

The poor in rural areas report using credit at rates close to the rural average (about 33 percent for all households in rural areas, compared to 35 percent for the rural poor). The sources of credit used by the poor differ little from those accessed by better-off rural households, though ASA and Grameen Bank are used less often by the richest quintile.

[139] Findex (2015, 2017).

[140] Despite the expansion of credit, Bangladesh has a relatively low share of domestic credit to private sector as percentage of GDP. In Bangladesh this share is 45 percent, while in Vietnam, India, and South Asia as a whole the corresponding figures are 137 percent, 50 percent, and 47 percent, respectively (WDI, 2020).

Figure 1.52. Sources of loans for rural households by consumption quintile



Source: Authors' calculations using HIES 2016.

Solid progress in strengthening credit markets has not reached those in the middle of the demand spectrum. There is no evidence that simply lifting credit constraints will allow faster income growth. However, perceived lack of access to finance is identified as the third most important obstacle to doing business in Bangladesh. Lack of credit is systematically reported by farmers, key actors along value-chains, and household-based enterprises as a constraint for growth. According to HIES 2016 data, household-based enterprises reported lack of credit as their main constraint to growth. About 70 percent of households with enterprises mentioned inadequate capital or credit as their most important growth barrier. This is observed across all divisions. About 83 percent of households with enterprises reported financing operations with their own resources (for example assets, inheritance, or savings). Nearly half of small and medium enterprises (SMEs) report being fully or partially hindered in their access to credit.

Mid-size enterprises in particular are underserved by the formal financial system. Banks are mostly concentrated in urban areas and target larger corporations, while microfinance targets micro-businesses. Meanwhile, the middle segment remains underserved, with 48 percent of SMEs being fully or partially constrained

in access to credit.[141] The gap between the needs of SMEs and the funds available is estimated at about US$ 3 billion, and the interest rates that these businesses pay are about 4 percentage points higher than those available to larger enterprises.[142] A recent study points out that limited access to credit curbs the growth prospects of medium-sized enterprises in sectors with export potential (e.g., footwear, plastics, light engineering).[143]

Financial inclusion for farmers is focused on short-term or seasonal loan products. This may constrain investments in productive inputs or switching to higher-value products. Some of the constraints preventing greater financial inclusion for farmers include: (i) eligibility criteria requiring land ownership or guarantees from the landlord to use land as collateral; (ii) perception of high risks driving high interest rates; and (iii) a limited offer of financial products and services tailored to farmers.[144]

Entrepreneurs in key value chains important for agricultural diversification also cite access to credit as a major business obstacle. About 37 percent of traders along four key value chains (brinjal, Pangash fish, milk, and chicken) reported limited access to financing and the cost of financing as major or severe problems for their business. A further 24 percent identified them as minor or moderate problems. Access to financing ranked as the third top problem for traders in these value chains, after road conditions and roadblocks.[145]

Finally, women in Bangladesh have less access to and control over finance than do men. Analysis of Findex 2017 data reveals that only 35.8 percent of women had a bank account, compared to 64.6 percent of men. According to BIHS data, less than 4 percent of rural women and 11 percent of men used savings for productive purposes, though men were more likely than women to buy land. In addition, women have limited control over household financial assets and a limited role in deciding the use of these assets. Use of mobile banking by women is very limited.[146]

[141] World Bank (2020b).
[142] World Bank (2020b).
[143] Sumi and Reaz (2020).
[144] World Bank (2020a).
[145] Shilpi et al. (2015).
[146] Solotaroff et al. (2019).

Formal insurance markets are underdeveloped, and negative income shocks experienced by rural households are largely managed with own resources.[147] [148] As previously discussed, due to lack of options, the poor rely more on reducing food consumption when facing a shock. Response to large-scale weather events and natural disasters by government and development partners has been focused on dealing with ex-post losses. HIES data shows that government help is reported as a method for coping with shocks by 33 percent of households. Limited agricultural insurance constrains the ability to manage these risks ex-ante. Compared to India, weather insurance options are very limited. Most schemes, particularly around weather-index insurance, have operated on a small scale.[149] Important factors inhibiting development include the capacity of the regulator, sectoral fragmentation, the weak quality and capacity of many companies, and an erosion of public trust in the sector.[150]

Limited insurance markets may be discouraging farmers from investing in higher-return but higher-risk production. Commercial insurance in Bangladesh could help small- and medium-scale farmers stabilize and increase their crop income by up to 41 percent, if insurance unlocks credit and adoption of high-yielding varieties.[151] If farmers currently growing aman local or boro HYV switched to higher yielding varieties (aman HYV or boro hybrid, respectively), the increase in expected yield would largely compensate for the increase in input costs. A randomized control trial[152] assessed the effectiveness of an index insurance product designed to help smallholder farmers in Bangladesh manage crop production risk during the monsoon season. The study finds that purchasing insurance yields both ex ante risk management effects as well as ex post income effects on agricultural production practices. The risk management effects lead to an expansion of cultivated area with concomitant increases in agricultural input expenditures during the monsoon season. The income effects lead to more intensive rice production during the subsequent dry season, with more intensive use of both irrigation and fertilizers, resulting in higher yields and higher total rice production.

[147] The insurance sector in Bangladesh is heterogenous and fragmented, consisting of 62 companies that are a mix of public corporations and private entities. The sector is several times smaller than in many of Bangladesh's aspirational peers, such as Malaysia and Thailand. Within Bangladesh's insurance sector, around three-quarters of the market consists of life insurance products.

[148] As previously noted, Bangladesh's financial sector is characterized by low penetration of financial products and services beyond current accounts. Savings products represent just 18 percent of available financial products (PWC 2019).

[149] Aheeyar et al. (2019).

[150] World Bank (2020a).

[151] World Bank (2015b).

[152] Hill et al. (2019).

SECTION 2.

Analyzing opportunities and constraints for rural income growth

As the previous section showed, rural households pursue multiple livelihood strategies to raise their incomes. A strategy to support these households thus requires a balanced approach that enhances opportunities to accelerate growth in agriculture, but also opportunities for non-farm and migration income. This strategy needs to pay particular attention to location in a context of growing spatial income disparities, and it needs to tap the potential of women to earn higher incomes.

This section describes the opportunities to boost income growth in rural areas and identifies constraints to taking advantage of those opportunities. The discussion builds on the descriptive analysis presented in section 1 and on an extensive literature review, cited where relevant. It is important to emphasize that the role of macroeconomic factors, general business environment constraints, and governance challenges, which are also relevant to promote income growth, are outside the scope of this analysis. In addition, the diagnostic does not provide detailed analysis of constraints to fertility reduction, health, nutrition, and education, nor does it identify policy priorities to address these.

Raising incomes in agriculture

Agriculture in Bangladesh needs to grow faster and become more poverty reducing. Despite the country's economic transformation, agriculture still accounts for a large share of rural incomes. The recent slowdown in agricultural growth is an important reason why poverty has stagnated or increased in the Western areas of the country, so the performance of agriculture is also central for reducing spatial welfare disparities. Given Bangladesh's limited scope for arable land expansion and the current high intensity of land use,

agricultural growth will need to come from a combination of higher agricultural productivity, greater diversification toward high-value crops, and developing a modern agri-food supply chain.[153]

While potential for diversification through arable land expansion is limited, diversification could be achieved through higher production intensity and substitution of crops. World Bank (2020a) indicates that intensification could potentially be increased in almost all areas of the country. This requires closing investment gaps as well as addressing the current policy environment. Diversification through crop substitution can be achieved through closing the current yield gap. Evidence suggests that diversification potential in agriculture is considerable across all farming systems.[154] Considering that climate change is a major risk for the sector, the realization of agricultural growth potential hinges upon the introduction of climate-smart practices. This will include use of inputs and technologies that are more resource efficient, introduction of crops that are more resilient, and the modernization of agribusiness storage and logistics.

Currently, Bangladesh obtains low yields in many agricultural products and remains uncompetitive in these outputs. Bangladesh yields are below regional and world averages, with the exception of rice paddy, mangoes, and guavas. Bangladesh also underperforms in most livestock items (Table 2.1). Bridging these yield gaps will be essential to increase the production and cost competitiveness of agricultural products. A weak business environment contributes to these gaps (Box 2).

Closing yield gaps in rice remains important. The overall growth of the agricultural sector is linked to growth in rice production, which has been lagging. There is room to close remaining yield gaps in aman and aus rice to support freeing up suitable boro rice areas for a diverse range of high-value and more sustainable crops, while accelerating the development of the livestock, poultry, and fisheries subsectors. The gaps between agronomic potential yield obtained in research fields and yields in current farm fields are considerable, ranging from 25 percent for boro to 75 percent for aus and aman paddy.[155]

[153] World Bank (2020a).
[154] Masylkanova (2020).
[155] World Bank (2020a).

Table 2.1. Comparison of national crop and livestock yields, annual average, 2014-2018

	Crops (MT/ha)							
	Areca nuts	Bananas	Chilies, dry	Mangoes, guavas	Onions, dry	Potatoes	Rice, paddy	Wheat
Bangladesh	0.8	17	1	23	10	20	5	3
World	1	21	2	9	19	21	5	3
Afghanistan	--	--	--	--	12	15	3	2
Bhutan	1	--	5	5	2	10	4	2
India	2	36	2	9	16	22	4	3
Nepal	3	16	5	8	--	14	3	3
Pakistan	--	4	2	10	13	22	4	3
Sri Lanka	3	1	--	10	16	16	4	--

	Livestock (kg/an)						
	Eggs, hen	Milk, (cow)	Milk (goat)	Cattle meat	Chicken meat	Duck meat	Goat meat
Bangladesh	2	205	38	71	0.7	1	7
World	10	2449	87	219	2	1	12
Afghanistan	2	494	44	180	0.8	--	13
Bhutan	6	1387	--	103	1	--	9
India	13	1588	167	103	1	1	10
Nepal	5	612	67	85	0.8	0.8	12
Pakistan	5	1230	106	196	1	1	17
Sri Lanka	12	979	116	136	1	1	20

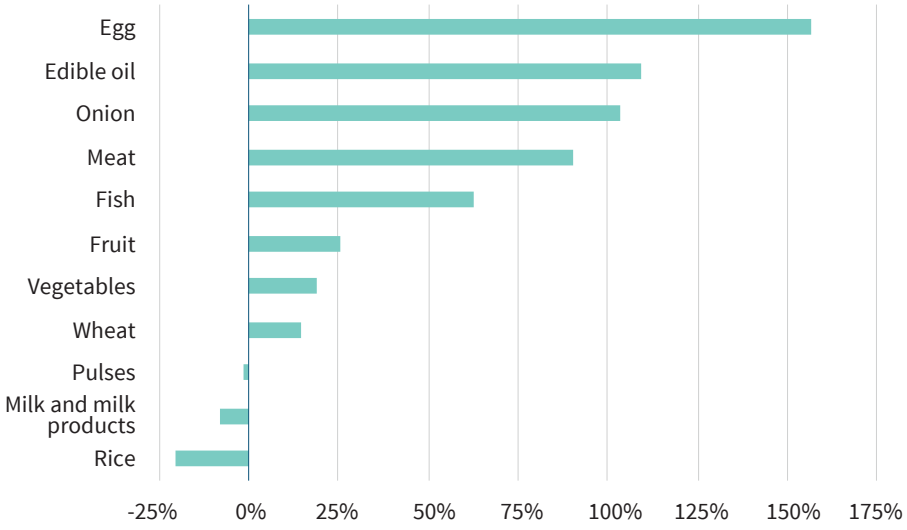
Source: FAOSTAT.

The expanding domestic market for high-value food provides an opportunity to increase incomes by diversifying output into higher value-added crops, livestock, and fishing products. With rising urbanization and increasing incomes, dietary patterns in Bangladesh are changing from cereals to nutrient-dense, high-value agricultural commodities, and there is a rapidly expanding local market for fruits, vegetables, proteins, and processed foods.[156] Since 2000, average daily rice intake per person has declined by 20 percent - from 459 grams in 2000 to 367 grams in 2016 - while consumption of vegetables, fruits, fish, meat, onion, and eggs increased considerably over the same period (Figure 2.1). If the current

[156] Dizon et al. (2019).

downward trend in rice consumption continues, total consumption of rice will decline by a further 9 percent by 2030. A projection of food demand shows that total demand for eggs, fruits, meat, and fish will grow 50 percent or more by 2030, compared to current levels.[157]

Figure 2.1. Change in food intake between 2000 and 2016



Source: Authors' calculations using HIES 2000 and 2016.

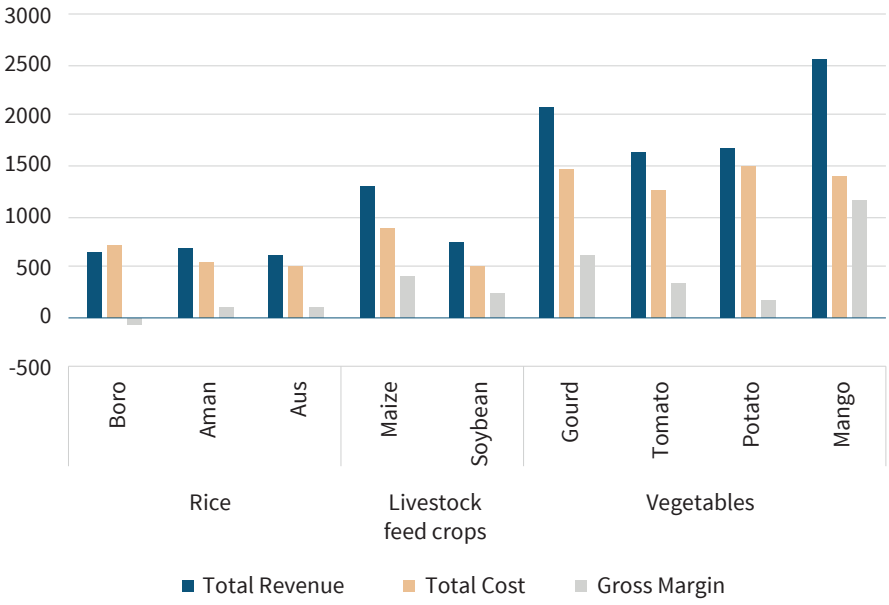
Projections show room for increasing outputs of non-rice products without compromising the supply of rice. As noted, the scope for improving rice yields is substantial, given current yield gaps, especially for aman and aus rice. With a continued focus on agricultural research to push the production frontier and build agriculture's resilience to climate and biophysical stress, there is significant potential to release land for much-needed crop diversification without compromising the production of rice and food security targets.[158]

A comparison of gross margins between rice and selected non-rice cereal, fruit, and vegetable crops indicates that non-rice production can provide higher profits than rice. Sergeant and Graffham (2020) estimated and compared gross margins for crops including rice, maize, soybean, gourd, potatoes, tomatoes, and mango (Figure 2.2). They found that many crops offer higher average margins than rice. This explains why many farmers are gradually diversifying toward non-paddy crops.

[157] Ahmed et al. (2021).

[158] Gautam and Faruqee (2016); World Bank (2020a).

Figure 2.2. Projected gross profit margins for rice and selected other crops in Bangladesh (US$/ha), 2020



Source: Sergeant and Graffham (2020).

The livestock subsector is small, but with significant potential. With the exception of poultry, livestock farming is largely smallholder, with low productivity and relatively slow growth compared to other subsectors. Growth in the livestock subsector has high potential to create rural jobs and livelihood opportunities for women, youth, and the vulnerable. About 80 percent of rural households are engaged in either livestock or poultry production, though mostly for own consumption. As shown in section 1, women make up a large share of the agricultural labor force, and they are mainly involved in livestock and poultry systems. In addition, a growing share of rural households without cultivable agricultural land are engaged in livestock.[159] Appendix 3 summarizes some of the main opportunities and constraints in the livestock sector.

The fisheries sector has emerged as a major growth driver, consistently contributing 6 percent of gross domestic product for the last decade. Fisheries have also become the second-largest foreign currency earner after the garment industry.

[159] The 2016 HIES, administered by the BBS, showed that the share of landless rural agricultural households involved in the livestock subsector increased to 66 percent in 2010, from 37 percent in 2000.

According to the 2019 agriculture census, 2.8 percent of households depended on fishing at some point during the year. The sector comprises three subsectors: aquaculture (56 percent of total production), inland capture fisheries (28 percent), and marine and coastal capture fisheries (16 percent). Aquaculture has experienced rapid growth during the past 30 years, amounting to a 25-fold increase in farmed fish production.[160] Bangladesh was the fourth-largest aquaculture producer globally, after China, India, and Vietnam.[161] Nearly all aquaculture production (94 percent) in Bangladesh is consumed domestically.[162]

World Fish has estimated that another 1 million hectares of inland waters in Bangladesh could potentially be developed for productive fishing. This would encompass flood lands (70 percent of the additional area), rivers and estuaries (10–15 percent), and inland closed waters (10–15 percent). Bringing this estimated incremental area under well-managed fish production could raise gross revenues from fishing by US$2 billion; generate an additional 1.5 million full-time equivalent jobs, mostly among the rural poor; and create significant upstream and downstream indirect jobs and enterprises. Appendix 3 summarizes some of the main opportunities and constraints in the fisheries sector.

Raising non-farm and migration incomes

Improving quality job creation across the non-farm sector is central to reap the benefits of the demographic dividend and reduce vulnerability. Increasing job creation in manufacturing remains central, as this has been a major driver of poverty reduction in the past. Boosting agricultural productivity is also important for non-farm job creation through its multiplier effects in manufacturing (food processing) and services (food service economy and domestic trade/marketing). This is an important pathway for structural transformation, as higher labor productivity also allows freeing up from agriculture to shift into these activities.[163]

Supporting the growth of secondary cities and other urban areas can help boost rural incomes and reduce poverty. Varying degrees of urbanization across districts strongly shape non-farm employment opportunities and poverty reduction, including in rural areas. To date, Bangladesh's urbanization

[160] Hernandez et al. (2017).
[161] FAO (2016).
[162] Hernandez et al. (2017).
[163] Shilpi and Emran (2016) find that Bangladesh's agricultural productivity growth has supported strong non-farm job growth and transformation toward wage jobs, many of them in social services located in nearby urban areas.

and economic development have been unbalanced and largely concentrated around Dhaka and Chittagong. Supporting economic activity in and around the country's smaller cities offers an important lever to raise non-farm incomes among rural households. Section 1 highlighted that industry and service jobs are largely informal, of low sophistication, and vulnerable. Bangladesh has seen manufacturing growth in peri-urban areas of Dhaka, but job growth in secondary cities and other urban areas has thus far been limited. Other urban areas are not yet attracting industrial investment, and access to quality jobs is limited outside the capital.[164]

Gaps in access to electricity and education have substantially narrowed between Dhaka and other urban areas, creating an opportunity for higher productivity and job creation in secondary areas. Urban areas outside Dhaka and Chittagong have traditionally had substantially lower levels of education and relatively poor access to health care and electricity, discouraging industrial investment and job growth in smaller cities. While gaps remain, particularly in terms of water and sanitation, progress has been important in reducing these infrastructure and human-capital gaps. For instance, in 2000, only 65 percent of households in urban areas outside Dhaka and Chittagong divisions had access to electricity, compared to 91 percent in urban Dhaka division. In 2016, more than 9 in 10 households in other urban areas enjoyed access to electricity (Table 2.2), However, as previously highlighted, accessibility gaps remain, creating high transaction costs for economic activity outside the country's main corridor.

Table 2.2. Access to basic services and level of education, 2016

	Access to electricity	Access to piped water	Household has sanitation	Access to mobile phone	Literacy rate	Secondary and above
Urban Dhaka	98%	57%	49%	97%	70%	28%
Urban Chittagong	92%	20%	45%	95%	64%	24%
Other urban	90%	11%	27%	94%	70%	29%

Source: Authors' calculations using HIES 2016.
Note: Access to electricity, piped water, sanitation, and mobile phone are estimated at household levels. An individual is considered literate if she/he can write a letter. Literacy rate and Secondary and above rates are based on individuals older than 18. Dhaka and Chittagong refer to the divisions, not only the metropolitan areas.

[164] Farole and Cho (2017).

Exploiting local comparative advantages can support income growth in urban areas outside the Dhaka and Chittagong corridor. Some earlier policy efforts tried to bring jobs to people by changing relocation incentives for firms in Bangladesh. However, these efforts have not succeeded in counterbalancing the powerful agglomeration forces that anchor many firms in Eastern areas and in turn encourage people to seek jobs there.[165] The current agglomeration economies indicate that local firm growth and not the reallocation of firms will drive growth in secondary cities and other urban centers.

The agro-processing sector in Bangladesh provides an opportunity for income growth and development of secondary cities and other urban areas. Secondary and other urban centers are well placed to host value-added processing of agriculture and can be critical links to support raising agricultural productivity and rural incomes. The current spatial distribution of agro-processing is more even across the country than is the case for other non-farm activities, highlighting its potential to create non-farm income opportunities in a more decentralized way. Muzzini and Aparicio (2013) highlight that agro-processing activities have significant potential, as they provide nearby production areas with easily accessible markets (Figure 2.3).[166] The sector has the capacity to create supply chains by linking different actors across service sectors such as trade, marketing, and transportation, among others. Agro-processing can also expand the market for the already well-settled agricultural sector.[167] Efforts to strengthen value addition in agriculture can be thought of as complementing broader efforts to expand quality job growth in urban areas.

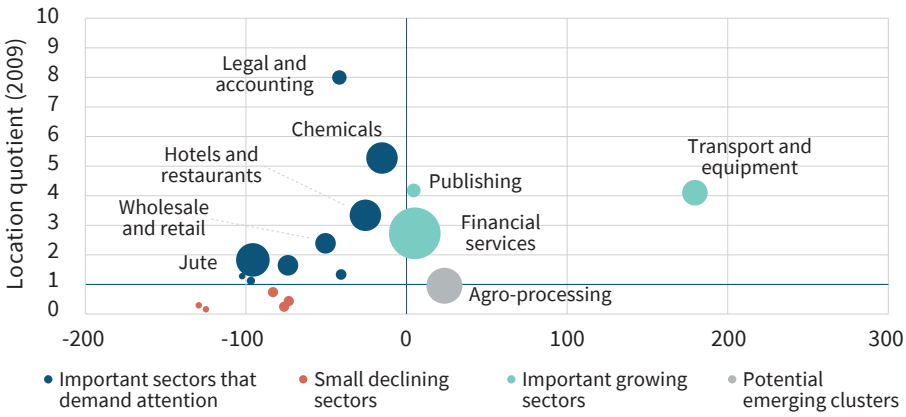
Agro-processing also has the potential to attract international investment and increase export diversification. Foreign direct investment (FDI) in domestic markets can help raise productivity by strengthening domestic competition and integrating domestic suppliers into their value chains. Similarly, outward-bound FDI by Bangladeshi investors allows firms to grow larger, become more competitive through exposure to foreign competition, and acquire new knowledge and technology. The COVID-19 crisis will lower FDI flows in the short term, but foreign investment will arguably be even more important for Bangladesh's ability to leverage exports in its recovery from the crisis.[168] While ready-made garments dominate exports, agricultural and related agro-processed goods represent the country's third export cluster.[169]

[165] Muzzini and Aparicio (2013).
[166] Muzzini and Aparicio (2013); Farole and Cho (2017).
[167] Rahian et al. (2017).
[168] World Bank (2020a)
[169] Atlas of Economic Complexity. https://atlas.cid.harvard.edu

Fish and crustaceans currently account for 50 percent of Bangladesh's agro-processing exports, but export products also include tea, vegetables, tobacco, flowers, fruits, spices, and dry food. FDI in food products has increased in recent years, underscoring the potential of agro-processing to attract international capital (Figure 2.4).

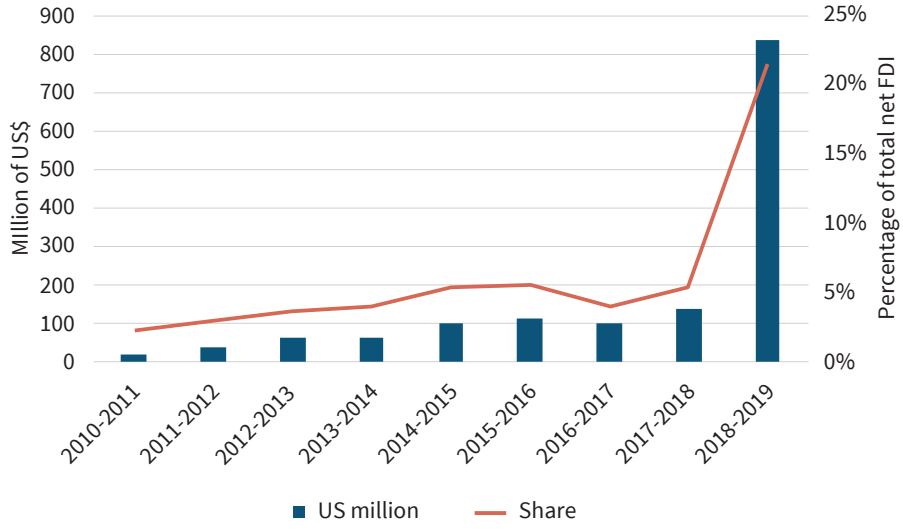
Figure 2.3. Economic base of secondary cities

Difference between local sectoral growth and national growth, 2001-2009



Source: Muzzini and Aparicio (2013).

Figure 2.4. Evolution of foreign direct investment in agro-processing, 2010-19



Source: Authors' calculations using Bangladesh Bank (2019).

The previous section highlighted the importance of migration for income growth and poverty reduction in Bangladesh. The COVID-19 crisis may reconfigure some opportunities and obstacles in this domain. However, the evidence indicates that expanding migration opportunities across areas of the country can be a way to spread the benefits of this process. More balanced urbanization and job growth in areas outside Dhaka and Chittagong are important elements to consider, as a main motivation for migration is the pursuit of greater economic opportunities.

Raising women's incomes

Increased female labor force participation can support higher incomes. Using panel data, Gautam and Faruqee (2016) show that female labor force participation is associated with about 14 percent higher household income. Heath and Mobarak (2015) report that greater opportunities for women in the manufacturing sector are associated with delayed marriage and childbirth and expanded female participation in education. The study shows that: (a) young girls become more likely to be enrolled in school as garment job opportunities that reward literacy and numeracy arrive; and (b) older girls become more likely to work outside the home in villages located in proximity to garment industry facilities.

Women can ease pressures in the agricultural labor market. Crop diversification and the use of agricultural labor are strongly linked.[170] Due to high migration from rural areas to both domestic cities and abroad, the rural labor market in Bangladesh is tightening, as evidenced by the agricultural wage growing faster than the general wage rate.[171] This may in part be driving women's increasing participation in agriculture. The changing gender composition of the agricultural workforce implies the need to tackle constraints that still hinder some women from taking full advantage of these opportunities.

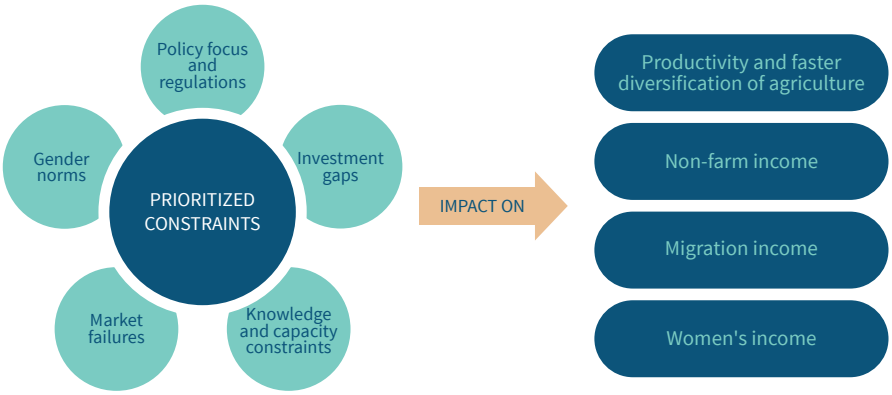
Constraints to increasing rural incomes

Current evidence indicates a series of constraints to take advantage of the opportunities outlined above. We classify these constraints in five areas: (i) policy focus and regulations; (ii) investment gaps; (iii) market-related constraints; (iv) knowledge and information constraints; and (v) gender norms (Figure 2.5).

[170] Hoque and Ahmed (2020).
[171] Bangladesh Economic Review (2019).

This grouping aims to organize and clarify the discussion. It is important to note, though, that some constraints may span multiple categories, so this classification is mostly for presentational purposes.

Figure 2.5. Constraints on rural income growth



Source: Authors.

Policy focus and regulations

Moving forward, redirecting agricultural policy and support will be key to balance the incentive structure across crops and promote diversification. The previous section noted that rice and wheat production carries much lower price risks than growing other high-value agricultural commodities, as the price volatilities for cereals are much lower than those of non-cereal agricultural commodities.[172] Since the 1980s, one reason behind lower price risks for cereals is the sustained agricultural policy focus on ensuring food security.[173] Today, agricultural policy continues to maintain incentives for rice production through input subsidies, output price support, and price stabilization. Such policy support for growing cereals has largely contributed to the country's achieving self-sufficiency in rice production. However, this approach also creates a bias against the production of non-cereal commodities. Farmers continue to grow cereals due to the low risks, despite lower gross margins compared to other options. Addressing bias in agricultural support against some high-value, non-rice crops can level the playing field and allow farmers to seek higher return opportunities without compromising food security goals.

[172] Ahmed et al. (2021).

[173] For details on agricultural policy reforms and their impacts on agricultural growth, see Gautam and Faruqee (2016).

Current fertilizer subsidy policy promotes the overuse of fertilizer but does not translate into additional output. The overuse of fertilizer raises environmental, health, and even productivity risks, with land degradation. The cost of agricultural subsidies is substantial, with the largest share allocated to fertilizer subsidies. In FY2018-19, around USD 1 billion were allocated to subsidized fertilizers and other agricultural inputs, about 40 percent of the total budget allocation for the agricultural sector.[174] This suggests an opportunity to redeploy support to other activities, such as R&D, that could boost productivity across crops more sustainably. More generally, support to farmers can also be provided in alternative ways that are less distortionary and that do not encourage the overuse or inefficient use of inputs involving large negative externalities. This support can take the form of providing incentives to use better, more resource-efficient and environmentally friendly inputs and practices.

A more robust seed sector is also central to support productivity and diversification. Recent research outlines steps to streamline seed regulations and develop a more robust seed sector. Studies have laid out steps to reduce remaining barriers in the seed sector.[175] First, public-sector research must focus more strongly on crops other than rice. Second, authorities need to level the playing field for the private sector to help spur the development of better varieties of open-pollinated crops, including through public-private partnerships. Third, policy makers can rationalize the cumbersome, lengthy process for registering new varieties, giving attention to harmonizing varietal testing with India and other countries.

Current regulations are largely favorable for the private sector's participation in the seed industry, but further opportunities exist to remove cumbersome restrictions. The private seed sector is prohibited from breeding and producing seeds for notified crops.[176] Another issue is the lack of a seed quality control mechanism. The seed market is supplied with low-quality seeds at lower prices, which increases farmers' mistrust toward certified seeds.[177] Measures that could improve farmers' access to and use of quality seeds include: removing the regulation that prevents private-sector actors from breeding and producing seeds for notified crops; increasing public-private coordination on quality seed supply for notified crops; and increasing market transparency regarding the quality and effectiveness of seeds. The Enabling the Business of Agriculture (EBA) index for Bangladesh indicates significant room for improvements in terms of seed regulations (Box 2).

[174] Bangladesh Economic Review (2019).
[175] Naher and Spielman (2014) and World Bank (2019b).
[176] Gautam and Faruqee (2016); USAID (2014).
[177] BRAC (2019); LTS (2019).

Box 2: Enabling the Business of Agriculture in Bangladesh

	Overall score	Supplying seed	Registering Fertilizer	Securing Water	Using machinery	Sustaining livestock	Protecting plant health	Trading food	Accessing finance
Bangladesh	44.5	18.5	47.1	20.0	49.9	56.7	60.0	43.7	60.0
India	62.2	73.2	57.8	20.0	79.0	33.3	60.0	74.6	80.0
Sri Lanka	50.2	74.0	64.1	0.0	91.1	91.1	60.0	25.4	40.0
Nepal	49.0	67.2	11.1	40.0	90.6	18.3	60.0	74.4	30.0
Pakistan	48.9	67.8	58.7	30.0	37.4	33.3	20.0	73.7	70.0
Vietnam	61.4	44.6	94.0	60.0	69.5	75.0	50.0	58.3	40.0
Afghanistan	31.5	18.5	73.4	20.0	0.0	0.0	40.0	70.2	30.0

The Enabling the Business of Agriculture (EBA) index measures how regulation affects the livelihood of domestic farmers.[178] EBA indicators show that Bangladesh is lagging behind its peers in South Asia in many areas.

Two important indicators concern the supply of seed and the registering of fertilizers. These indicators measure the quality of existing regulations, as well as the time and cost required to register new seed varieties and fertilizers. Results are significantly poorer in Bangladesh than in other South Asian countries. The EBA report shows that Bangladesh's seed sector is highly regulated, limiting private participation. In the case of fertilizers, Bangladesh has ensured almost universal access to fertilizers for its farmers. However, bureaucratic procedures create obstacles to improving fertilizer quality and introducing new varieties of fertilizers.

Bangladesh's trading food metric is also relatively low but improving due to recent reforms. This indicator measures the time and cost required to obtain permits to trade agricultural goods, as well as the quality of regulation in the food system. Recently, Bangladesh has begun to publish the official fee schedule for phytosanitary certificates online and in its legislation. This simple innovation facilitates access to crucial information for farmers, in turn facilitating trade in agricultural products.

Trade policies contribute to the unbalanced use of mechanization. Constraints behind the unbalanced used of mechanization have been identified on the policy, supply, and demand fronts.[179] Factors related to supply include prices and the availability of spare parts. Demand-side factors include farmers' knowledge of how to use machinery and their ability to access finance.

[178] World Bank (2019b).

[179] Alam and Khan (2017).

An important constraint identified in the literature is an unresolved tension between the government's dual policy objectives of increasing farm mechanization and supporting the local manufacturing sector. To achieve the first objective, policies facilitate mechanization through elimination of trade barriers and provision of subsidies, loans, and tax exemptions for machinery. To advance the second objective, the policy imposes trade barriers on imports of spare parts (e.g., 40-50 percent import taxes).[180]

Transport policies lack coordination, and road safety enforcement is weak, increasing congestion and transport costs. Several ministries and agencies responsible for the transport sector have overlapping functions, and agencies' service delivery and regulatory mandates may conflict. Different agencies have their own infrastructure development plans, with little coordination between them. In addition, weak enforcement of regulations regarding the licensing of drivers and vehicles defeats the purpose of the regulations. Unqualified drivers driving heavy vehicles provide facilitation payments to obtain licenses. Modified or unfit trucks are issued fitness certificates. Transport operators often overload their trucks by more than 50 percent. These practices have resulted in unskilled drivers, substandard trucks on the road, and overloading which affects the quality of road infrastructure and increases congestions costs.[181]

Weak local-level functions and capacity also constrain service delivery and local economic development. Dhaka's dominance as the country's main urban and economic center reflects not only its role as the nation's capital, but also policy choices that tend to bolster centralization. The fact that political, administrative, and regulatory decision-making powers are concentrated in Dhaka has facilitated the disproportionate development of the city over other urban areas.[182]

In order to meet high-end market standards and develop a strong food processing sector, Bangladesh needs to improve its food safety regulatory and oversight systems. Food safety and standards are a serious issue for agriculture in Bangladesh, due to unbalanced and excessive use of fertilizer and pesticides, along with a lack of good agricultural management practices. Food safety challenges have hurt Bangladesh's food sector in the recent past, both in domestic and export markets. Despite previous efforts to address these issues, compliance monitoring and law enforcement remain weak and irregular.

[180] World Bank (2020a).
[181] Herrera Dappe et al. (2019).
[182] Bird et al. (2018).

The government, for instance, does not have accredited laboratories for the full range of necessary tests and relevant products.[183] It is also important to support the private sector to adopt appropriate food safety standards and practices.[184]

Investment gaps

Diversification toward non-paddy crops requires closing irrigation gaps in some geographic areas and also enabling farmers to improve flood, drainage, and overall water control. The existing irrigation infrastructure can be reoriented to support other crop needs. The extensive access to water for irrigation on the edge of the fields is especially useful during the dry season and for other crops such as fruits and vegetable that are sensitive to water levels. World Bank (2020a) show that farms with irrigation access are more diversified. Bangladesh is subject to significant flooding during parts of the year, which provides space for crop and aquaculture production. However, there are also considerable risks from deep flooding, erosion, and drainage problems. In addition, in the post-monsoon period, surface water availability is significantly constrained. Combined with erratic pre-monsoon rainfall, this can cause serious soil moisture deficits, which must be addressed through irrigation. Between June and September, when about 90 percent of rainfall takes place, farmers need drainage and flood protection structures. In non-monsoon seasons, farmers need dependable irrigation. Existing small-scale pump irrigation can technically support required water control. However, declining groundwater availability is affecting pumping costs, as well as the availability of irrigation water, particularly in the northwest and in Dhaka.[185] The irrigation system, which began with large public irrigation projects, has gradually moved to private enterprises. Therefore, tackling declining groundwater availability and closing investment gaps will require both public and private efforts.

Bangladesh has succeeded in putting basic infrastructure in place, but gaps remain very large. The 2019 Global Competitiveness Report ranks Bangladesh 114th out of 141 countries on infrastructure quality, below the regional average. The lack of adequate transport and logistics infrastructure and reliable power supply leads to high production costs that constrain overall income growth. The country's total infrastructure needs through 2040 are estimated at US$608 billion. These needs include investment in infrastructure expansion,

[183] World Bank (2020a).
[184] Ahmed et al. (2021).
[185] World Bank (2020a).

modernization, and maintenance. Raising private finance will be essential. In addition, given high climate-change risks, adaptation measures need to be priced into future infrastructure assets.[186]

Closing electricity coverage gaps and improving the reliability of the supply can strengthen productivity, facilitate diversification, and support non-farm employment. Access to electricity is still far from universal in Bangladesh, and electricity supply is unreliable, with repeated outages. This is particularly constraining for perishable goods and food processing, as it damages equipment and requires supplementing the grid with generators. It also creates challenges to maintain cold chain operations along the value chain.

Compared to other countries, Bangladesh lags behind in electricity access and supply quality. The country remains below the South Asia average in terms of the share of the rural population with access to electricity (88 percent).[187] Despite improvements in generation capacity, less than 80 percent of existing power-generation capacity is operational, and power cuts are frequent. The 2019 Competitiveness Index of the World Economic Forum ranked Bangladesh 108th in terms of electricity access and 68th in terms of electricity supply quality, among 141 countries.[188]

The central issue in the energy sector is lack of cost recovery and inefficiencies. These elements undermine the sector's sustainability and discourage greater private sector participation. Like many other countries, Bangladesh subsidizes the consumption of electric power and natural gas. Despite gradual increases since 2009, retail tariffs (which average 6 Takas per kilowatt hour [kWh]) do not cover cost (8 Takas/kWh). The current electricity rate for farmers is 25 percent lower than the cost of the electricity supply itself and is lower than for individual users and businesses (US$0.03 per kWh for farmers against US$0.04 for individual consumers and US$0.08 for businesses). The consumer price of electricity is set at a level well below its long-run marginal cost of production. This has led to a situation in which the government needs to provide a direct (budget) subsidy to the Bangladesh Power Development Board (BPDB), the state-owned utility responsible for supplying electricity in the country. The gap between the supply cost and the tariff entails a subsidy that is directly transferred from the government to the BPDB.

[186] World Bank (2020b).
[187] WDI 2018.
[188] World Bank (2020).

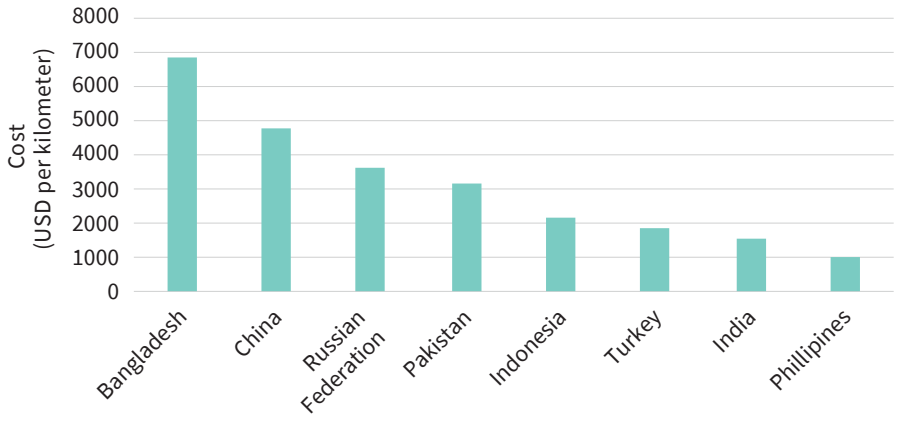
This transfer was US$800 million in 2012, equivalent to 0.6 percent of the country's GDP. In 2015, it had increased to almost US$1,200 million.[189] While the subsidies help poor households, almost every household receives electricity subsidies, creating an important leakage to non-poor households.[190] In addition, the obsolete state-owned power plants suffer from large inefficiencies, requiring almost twice the amount of gas for the generation of one unit of electricity compared to combined cycle generating plants The price paid for gas by power producers in Bangladesh has long been among the lowest in the world. At current prices, domestic reserves are declining, given lack of incentives for international private developers to invest in exploration.[191]

The quality of transport infrastructure needs to improve. Despite gains in connectivity, the overall quality of the road network remains poor. Congestion and floods are a challenge for maintaining a good-quality network. Inland waterway transport terminals are inadequately equipped, and airport infrastructure and railways need upgrading and modernization due to years of insufficient maintenance. It is also important to improve infrastructure maintenance practices.[192]

There is limited fiscal space to fund Bangladesh's transport investment needs. Annual transport infrastructure investment needs are estimated to be as high as 5 percent of GDP.[193] In contrast, total public investment in infrastructure has been less than 2 percent of GDP over the last decade. High construction costs compared to other countries are a challenge for Bangladesh (Figure 2.6). The country's elevated construction costs reflect expensive imported inputs, geological factors, and governance issues in infrastructure construction.[194] The lack of regular maintenance also increases costs, as the full reconstruction of poorly maintained roads is, on average, at least three times more expensive than adequate routine maintenance.[195]

[189] Sadeque and Bankuti (2017).
[190] HIES (2016).
[191] World Bank (2020b)
[192] Herrera Dappe et al. (2019).
[193] Andres, Biller, and Herrera Dappe (2013); World Bank (2015).
[194] Herrera Dappe et al. (2019).
[195] World Bank (2005).

Figure 2.6. Cost of building roads in selected countries



Source: Herrera Dappe et al. (2020), based on Asian Development Bank (2019).
Note: Road construction costs for a four-lane urban arterial road, including traffic-controlled intersections.

Market-related constraints

Improving land rental markets is important to better deal with land fragmentation. Many farmers actively rely on land rental agreements, but land rental markets are subject to limited rental tenures and do not seem to be working efficiently. Active rental markets are important, and many landless are able to engage in agriculture by relying on rental agreements. Evidence shows that larger farm sizes are correlated with more diversification. However, typical land rental tenure in Bangladesh is limited to three years and largely informal, which hinders diversification into certain crops that require sizeable upfront investments and a longer time to obtain returns (e.g., tree crops). Existing rental conditions also discourage the intermittent use of cover crops to replenish the soil, as farmers are not sure they will benefit.

Increasing access to finance can support agricultural diversification and non-farm incomes. The financial system in Bangladesh faces challenges to adequately support financial intermediation. Distortions and governance issues in the dominant banking sector, and the underdeveloped equity and bond markets, hinder financial intermediation, particularly for long-term finance. Banks' ability to provide long-term finance is constrained by asset-liability mismatches. The banking sector largely relies on short-term deposits

(roughly 75 percent are for less than one year), which limits their ability to lend long term.[196] Financial inclusion currently remains focused on short-term or seasonal loan products which often have constraining eligibility requirements and high interest rates that do not reflect the actual risk of investments.

Access to finance could help tackle cash constraints that may hinder migration. For the poor, lack of liquidity and insufficient knowledge about the migration process seem to be important barriers to grasping migration opportunities. Two randomized experiments in Rangpur division that incentivized poor households to send a seasonal migrant to an urban area showed that a small cash incentive led to a large increase in the number of seasonal migrants, that migration increased household expenditure by a third on average, and that households that sent a migrant continued to be more likely to migrate in future years. Lifting the liquidity constraint allowed households to undertake a riskier choice (migration), and the knowledge gained from the process lowered costs to migrate again (despite the absence of another cash incentive). The interventions also showed that larger-scale emigration increased wages and work hours in the village of origin, indirectly benefiting other residents who stayed behind. The results suggest that it is more cost effective to offer migration loans to the same number of poor households concentrated in fewer villages than thinly spread across many villages, as having a neighbor who is migrating encourages households to send a migrant, as well.[197]

Developing insurance markets can encourage diversification. Given the inherent risks involved in agriculture, the insurance market needs to develop to provide mechanisms for better risk management. Advances in this area can encourage higher-return but higher-risk activities.

Increasing competitiveness in logistics service markets can contribute to reducing transport costs. Trucking and inland water shipping operations are provided by thousands of operators, many of them in small fleets or single vehicles. Drivers' unions and associations set prices and manage access to cargo. These entities limit the interaction between service providers and shippers and limit full market competition. In this context, there are limited incentives to provide high-quality services or innovate, given that providers are not rewarded for the quality of their services. Because of the low quality of services, many manufacturing firms elect to address their logistics needs in house, which increases transaction costs.[198]

[196] World Bank (2020b).
[197] Bryan, Chowdhury and Mobarak (2014, 2016).
[198] Herrera Dappe et al. (2019).

The most widely used vehicle for transporting agricultural produce between major towns is a 7-ton truck which has an average cost of US$0.095/ton/km. To put these costs into perspective, comparable transport costs in India and Pakistan are US$0.025 and US$0.022/ton/km, respectively.[199]

Knowledge and capacity constraints

Low education limits income growth. In the medium term, it is essential to continue improving rural education and skills. Low literacy makes it harder for farmers to evaluate new opportunities and learn unfamiliar techniques. Rice is a crop that farmers understand well, which likely influences the continued preference for rice growing. Reducing knowledge gaps related to non-rice production is central to promote diversification. Moreover, improving productivity in non-farm activities requires tackling shortfalls in skilled labor. The demand for skilled labor in agro-processing has been accelerating with the sector's expansion. In many cases, food processing industries cannot attain their desired productivity due to an acute shortage of skilled workers.[200] In addition, low literacy and skills limit people's access to migration opportunities.

Despite substantial yield gaps in almost all non-paddy crops, agricultural R&D remains disproportionately focused on rice. The current R&D portfolio misses opportunities to improve agricultural productivity and diversification through knowledge creation. Bangladesh's agricultural research expenditure is about 0.35 percent of GDP, higher than India, Pakistan, Cambodia, and Vietnam.[201] However, the current R&D portfolio can be more balanced to support crops other than rice. For instance, the share of agricultural researchers engaged in horticulture research, for instance, is one of the lowest in the region. In addition, greater efforts could also be made to support private-sector research. Lack of effective seed quality control measures along with existing regulatory barriers, particularly approval and certification processes for new seeds, hinder the acceleration of private-sector participation in R&D for non-rice and non-crop agriculture.[202] If such barriers were removed, expanded private-sector participation could help develop varieties and agricultural technologies tailored to conditions in Bangladesh.[203]

[199] Herrera Dappe et al. (2019).
[200] Rahian et al. (2017).
[201] FAO (2020).
[202] World Bank (2019b).
[203] World Bank (2020a).

Inadequate extension systems weaken agricultural productivity and diversification. Improved extension could provide more timely and relevant information to farmers. Particularly in a context of low literacy, large numbers of farmers spread across small plots pose a clear challenge for extension work. The Department of Agricultural Extension's resources and current extension techniques and materials need improvement to meet these challenges. Extension efforts need to reach around 15 million farms but make very limited use of aggregation models. Outreach difficulties are compounded by the current lack of articulation between extension efforts provided by the public and private sectors.

Neither formal aggregation mechanisms in agriculture (e.g., cooperatives) nor informal mechanisms are widely used in Bangladesh, in contrast to many other countries. Limited aggregation mechanisms create challenges for the delivery of extension services, access to finance, developing joint infrastructure, and aggregating products for marketing. These gaps lead to additional logistics costs and make it harder for local efforts to gain momentum. Monitoring of food safety and quality in Bangladesh is also difficult in part due to the lack of formal aggregation models such as producer groups, cooperatives, contract farming, and others.

Accompanying recent improvements in education and basic services in secondary cities, strengthening local government capacity is a priority for sustained economic development. Local governments in Bangladesh are a central piece of the overall governance structure and have statutory responsibility for service delivery at the village level. However, local authorities operate in a constrained policy and institutional environment. The Government of Bangladesh has made significant efforts to improve local governance systems by devolving powers to lower levels through greater autonomy and increased resources. However, challenges in governance, resource management, and institutional capacity remain a major constraint.[204]

Gender norms

Female labor force participation is constrained by both demand and supply factors. The main constraints include: differential access to productive inputs and assets compared to men; women's role in home-based and caretaking activities; market failures and institutions; and social norms constraining women's mobility.[205]

[204] World Bank (2017).
[205] Rahman and Islam (2013).

Women's role in home-based and caretaking activities reduces their participation in education and paid work. The prevalence of early marriage is still high in Bangladesh compared to other South Asian countries, which increases the likelihood that women will leave school or exit the labor force due to increasing household responsibilities. About 1 in 3 women (30 percent) not attending secondary school cite family chores and marriage as the reasons for not attending.[206] These factors also reduce women's rate of engagement in paid employment.

Restrictions on women's ability to inherit property and limited access to credit constrain women's participation in the labor market.[207] The sharia law applying to the Muslim majority prescribes that sons inherit twice as much as daughters, while for Hindu and Buddhist minorities daughters have no inheritance rights. This might affect women's capacity to access credit because of the resulting lack of collateral.[208] Evidence suggests that increasing women's access to microcredit has contributed to raising their income-generating capacity and empowerment.[209] The development of microfinance has helped increase female labor participation by expanding opportunities for women in rural areas to create businesses in livestock, poultry, and small textiles. The presence of NGOs employing women as health workers, community leaders, and teachers has also contributed to greater female labor participation.[210] However, challenges remain in women's control of finances.

Mobility constraints limit women's ability to engage in non-farm activities and the commercialization of farm products. About 7 in 10 rural women work in their residence or in areas near their homes, partly reflecting mobility constraints.[211] Women are also less likely than men to sell produce in markets.[212]

[206] Genoni et al. (2019).
[207] Cameron, Dowling, and Worswick (2001); Gonzales et al. (2015); Kabeer (1990); Amin (1997); World Bank (2012); Klugman et al. (2014); Srivastava and Srivastava (2010); Neff, Sen, and Kling (2012); Solotaroff et al. (2019).
[208] Raihan and Bidisha (2018).
[209] Rahman and Islam (2013).
[210] Khandker, Samad, and Khan (1998); Raihan and Bidisha (2018).
[211] World Bank (2012); Amin (1997); Kabeer (2001); Asadullah and Wahhaj (2016).
[212] Anderson and Eswaran (2009).

SECTION 3.

Setting priorities for action:

Which constraints should be tackled first?

Since there are many constraints on rural income growth, it is important to set priorities for which should be addressed first. The previous section outlined a series of constraints that, if addressed, could help Bangladesh take advantage of opportunities to boost rural incomes. This section of the RID prioritizes these constraints based on two main criteria: (i) strong evidence that current performance in the area is falling short; and (ii) strong evidence that tackling the constraint can substantially improve rural income growth. The evidence used in the assessment comes from two sources: the descriptive analysis undertaken for this study and an extensive literature review.

The prioritization of constraints considers the strong linkages between agriculture and non-agricultural domains. As the previous sections showed, a potential way to increase non-farm incomes, given strong agglomeration economies and the spatial distribution of firms, is to expand activities along agricultural value chains, such as agro-processing. Increasing productivity and diversification in agriculture can enhance value addition. Therefore, the prioritization presented in this section primarily emphasizes agricultural constraints related to those issues. One underlying element behind the identification of constraints is their ability to build resilience in a context of high risks and climate change. Additionally, the analysis focuses on tackling elements that allow for a levelled playing field across agricultural products and economic sectors.

Additional factors considered in prioritization include the time likely to be required to address a constraint and evidence that the constraint constitutes a bottleneck: that is, that other obstacles to rural income growth can be more easily removed if this barrier is tackled first. In some cases, constraints affect a comparatively narrow range of rural income opportunities but are prioritized because of the large share of households that could benefit from their removal.

Table 3. 1 summarizes priority constraints. Other constraints that have not been assigned priority for action are summarized in Table 3.2. The constraints in Table 3.2 are very important but have not been prioritized due to the time they may take to resolve or the lack of evidence that tackling them rapidly would increase rural incomes in the time horizon considered by this diagnostic. As discussed, key elements related to human capital development, macro and business environment, and governance are outside the scope of this prioritization exercise.

Policy focus and regulations

Among the constraints identified in the previous section, policies around rice production are especially pivotal. A strong policy focus on supporting rice production has been important to raise production of this staple food and fulfill Bangladesh's goal of reducing food insecurity risks. However, as income growth and urbanization continue, demand is expected to diversify to other, more nutrient-rich and higher-value foods. To meet this growing demand, policies need to be fully aligned to sustain growth in productivity as well as a more diversified agriculture. Evidence indicates that, given changing demand patterns and higher incomes, this can be done without compromising the food-security goal.

Fertilizer subsidies are a specific area where budget resources could be repurposed for higher productivity. Currently, these subsidies are being overused without generating additional returns. Important benefits can also be obtained by rebalancing R&D toward non-rice crops. A stronger seed market can support additional gains in productivity. A rebalanced policy environment could incentivize farmers to diversify their production to maximize expected returns, without necessarily disincentivizing rice production. Given the substantial bias of current agricultural policies, this shift has significant potential to raise productivity and spur diversification.

Investments in transport policy merit priority. Tackling coordination issues for better infrastructure maintenance, improved logistic services, and effective enforcement of existing regulations can enable higher returns on ongoing transport investments by reducing congestion costs. These costs are an important component of the transaction costs in key value chains important for diversification (e.g., horticulture, livestock, fishing) and constrain the growth of urban areas outside Dhaka and Chittagong. Thus, a reduction of these transaction costs can support the development of high-potential value chains and boost non-farm income growth across the country.

Investment gaps

Water management, transport, and electricity remain central for rural income growth. Given flood threats and the need for reliable water supply in off-monsoon seasons, better irrigation and drainage remain central for productivity and diversification in agriculture. Investments in transportation and electricity are also key, although the Government of Bangladesh has taken action to narrow these gaps. Transport and electricity investments should focus on closing remaining coverage gaps while supporting infrastructure maintenance and the quality of electricity.

Market-related constraints

Within market constraints, evidence indicates that improving the functioning of land markets is central. This is a fundamental constraint, given the country's average land size and limited room for expansion. Land markets need to become more efficient to help create economies of scale for investment and more formal commercialization of production and value addition. Even though credit markets are underdeveloped, in particular for small businesses and farmers aiming to scale up productive activities, they appear more developed than in comparator countries, and there is no clear evidence that tackling this constraint alone can boost income growth. Therefore, the issue of credit markets is not prioritized. Given substantial climate-related risks in Bangladesh, insurance markets need to develop to provide mechanisms for better risk management that can encourage higher-return, higher-risk activities. However, given the extent of climate-related risks, we prioritize areas that can help to build resilience.

Knowledge and capacity constraints

The adult population in Bangladesh's rural areas still has a low human-capital base. This constrains people's opportunities to adopt more productive agricultural activities and access sources of non-farm income. Fully resolving human-capital constraints, including closing skill gaps, will take time. Areas that can be tackled in the short term include strengthening extension services to achieve better use of inputs and promote diversification.

Gender norms

Despite improvements, women's potential for income growth remains largely untapped. Norms around asset ownership, mobility, and early responsibilities in care-giving activities constrain women's ability to engage in more productive,

paid farm and non-farm activities. Some of these elements will move slowly with time. However, without tackling the specific constraints women face, addressing the other constraints previously discussed may not result in income growth for Bangladeshi women. Therefore, we prioritize these constraints, as a large share of the population is expected to benefit from them.

Table 3.1. Constraints recommended for priority action

Constraint	Income growth drivers affected	Strength of evidence: Size and impact of constraint
Policy focus and regulations		
1. Policy focus on supporting rice Input subsidies, output price support, and price stabilization. Research and development have been centered around paddy rice.	Productivity Diversification	• Strong evidence of substantial bias. • Less evidence concerning impact on growth. Given the size of the bias, impact is expected to be large. • Very important for areas still heavily invested in rice but that have potential for diversification: particularly the Northwest and areas southeast of Chittagong.
2. Seed market regulations Constrain supply of quality seeds.	Productivity Diversification	• Evidence that regulations constrain access to and use of quality seeds. • Evidence that past efforts on this front were beneficial for productivity.
3. Transport policy Current policies lack coordination and are largely focused on infrastructure development, neglecting quality. Enforcement of road safety is weak. Current policies constrain connectivity by increasing congestion and transaction costs. Opportunity to rebalance focus from development of infrastructure to maintenance and quality.	Productivity Diversification Non-farm income	• Strong evidence that these issues are present and constrain connectivity. • Less evidence that lifting the coordination constraints alone will change income growth. Given the size of the problem, impact is expected to be large.

Constraint	Income growth drivers affected	Strength of evidence: Size and impact of constraint
Investment gaps		
4. Electricity and transport	Productivity Diversification Non-farm income	• Strong evidence that these gaps are present and constrain income growth. • Evidence that past expansions have been linked to higher incomes and lower poverty.
5. Irrigation and drainage Irrigation gaps in Rangpur. Shortage of reliable water. Lack of good drainage and flood protection.	Productivity Diversification	• Strong evidence that these gaps are present and constrain productivity and diversification. • Evidence that past efforts on this front have enhanced productivity and diversification.
Market-related constraints		
6. Inefficient land markets Severe land fragmentation. Short rental terms. Gender gaps.	Productivity Diversification Female income Non-farm income	• Strong evidence that farm fragmentation dampens productivity and investment. • Given evidence that larger farms are more efficient, impacts are expected to be important. • Important across all areas, particularly in the Western divisions and for women.
Knowledge and capacity constraints		
7. Weak extension services Inadequate extension systems in a context of small farms and low literacy.	Productivity Diversification	• Evidence that this is a gap. • Evidence that addressing it would improve productivity.
Gender		
8. Gender norms Strong norms around asset ownership, mobility, and caregiving responsibilities. Women are largely involved in livestock but not in its commercialization.	Productivity Diversification Female income	• Strong evidence of a substantial gap. • Strong evidence of lower participation and lower productivity due to gender-biased selection into activities. • Given the size of the gap, income effects are expected to be large.

Table 3.2. Constraints not prioritized but important to tackle

Constraint	Income growth drivers affected	Strength of evidence: Size and impact of constraint
1. Low literacy and skill levels Low levels of education limit rural people's ability to adopt technologies, pursue nonfarm activities, or migrate.	Productivity Diversification Non-farm income Migration Female income	• Strong evidence that a large gap persists. • Evidence that higher education expands farm and non-farm income, migration, and paid female employment – all linked to higher incomes and less poverty. • This is very important but a slow-moving constraint. Demand-side elements also need to be addressed to be able to absorb a higher-skilled population.
2. Weak food safety standards Monitoring of food safety and quality pose challenges. Compliance monitoring and law enforcement remain weak and irregular.	Diversification Non-farm income	• Strong evidence that there is a gap. • Scant evidence to justify prioritization, as traditional markets seem to work well, and current demand is largely driven by the domestic market. • In more diversified areas, this also involves livestock and fish producers.
3. Uncompetitive logistic services Lack of competition results in low-quality services.	Productivity Diversification Non-farm income	• Strong evidence that there is a large gap. • Strong evidence that this increases transaction costs. • Limited evidence on the impact on rural incomes if tackled in isolation.
4. Concentration of migration networks The spatial pattern of migration creates network effects. Networks need to be fostered in current low-migration areas to lower migration costs.	Migration	• Strong evidence that migration is concentrated spatially. • Evidence that migration supports higher incomes and less poverty. • This is a slow-moving constraint.

Constraint	Income growth drivers affected	Strength of evidence: Size and impact of constraint
5. Import and export policies related to mechanization Constrain balanced mechanization.	Productivity Diversification	• Evidence that existing policies may create contradictory incentives around mechanization. • Less evidence of impact regarding income growth. • Unclear from the evidence what types of machinery are most relevant and what threshold scale would make investment in expensive livestock machinery viable.
6. Credit and insurance markets Collateral requirements, high interest rates, and poor diversity in financial products and services. Access to finance challenges SMEs. Underdeveloped insurance markets. Liquidity constraints for migrants.	Productivity Diversification Migration Female income Non-farm income	• Strong evidence that credit markets are underdeveloped for micro enterprises and farmers. • Strong evidence that insurance markets are underdeveloped. • Strong evidence that lifting liquidity and insurance constraints has positive impacts on investment. • Impacts across all areas and for women. • However, no clear evidence that tackling these elements in isolation will boost rural incomes.
7. Weak local governance Weak local governance around service delivery constrains locally driven growth.	Non-farm income	• Strong evidence of a substantial bias. • Less evidence of growth impacts. Recent trends in urban poverty performance, growth in agro-businesses, and firm reallocation suggest a large effect. • This is a slow-moving constraint.

SECTION 4.

Identifying policy solutions

This section outlines a series of policy lines that can help in lifting the priority constraints on rural income growth identified in the report. Two main criteria were used to select policy areas: (i) The measures are supported by a strong evidence base; (ii) The policies can achieve strong results within five years. In the current state of evidence, some policy directions are clearer and more specific than others.[213] On some fronts, such as tackling gender norms or strengthening insurance markets, continued experimentation can be important to tailor approaches to the country context and for scalability.

The focus of this analysis is on boosting rural household incomes in the short to medium term. Longer-term efforts related to building human capital, improving the business environment, or addressing national governance constraints are clearly important but lie outside the scope of this study. Evidence of existing successful approaches in Bangladesh was collected from evaluation documents, recent high-quality assessments, and through stakeholder consultations. Results were cross-referenced with extensive literature reviews on the effectiveness of existing policies and potential alternatives. The analysis highlights areas where evidence suggests that the policies now being used to improve rural incomes in Bangladesh can be enhanced to achieve greater impact.

Lift constraints related to policy focus and regulations

Review and reform input subsidies, especially on fertilizers. Leverage extension services to make fertilizer use more efficient. These actions could help remove two important constraints on higher farm yields, especially for boro paddy: (i) overuse and imbalanced use of fertilizer, resulting in declining soil fertility; and (ii) inadequate farm knowledge and practices.

[213] The COVID-19 crisis has limited the country-level consultations that could be undertaken to inform these policy recommendations. To address that challenge, this report has relied on remote consultations and information from Government of Bangladesh reports (including discussions for the preparation of the 2020 Bangladesh Development Forum to inform the country's next five-year development plan), together with recent World Bank assessments that were based on more extensive consultations.

Rebalance the agricultural R&D budget toward non-rice products. The dominant focus of the current R&D budget is on paddy rice, despite substantial yield gaps affecting many non-rice outputs.

Support greater coordination between government and the private sector on research priorities. Through research institutes and universities, the government has a large role in shaping research priorities in agriculture. Greater coordination between private- and public-sector agencies would help inform the choice of these priorities. This is already being done to some extent via organizations such as the Krishi Gobeshona Foundation, which provides a platform for coordination and information sharing on climate change.[214]

Revisit regulations and actions to expand private participation in the seed sector. Seed sector liberalization during the late 1990s contributed to important achievements in diversification toward higher-value crops. However, there are still constraints on private-sector investment in this area. Removing them will require revisiting regulations that prevent private-sector actors from breeding and producing seeds for notified crops;[215] increasing public-private coordination on quality seed supply for notified crops; and increasing market transparency regarding the quality and effectiveness of seeds in the market.

Use policy and regulation to reduce high transport and logistics costs.[216] Some policy areas that can be tackled in the next five years include:

- **Assess roles to improve coordination across ministries and agencies with a voice in transport.** At the national level, there are multiple ministries and agencies responsible for the transport sector with overlapping functions. Different agencies have their own modal infrastructure development masterplans, with limited coordination between them.
- **Review outdated policies and regulations to move beyond infrastructure development, strengthening focus on the quality of services.** Current sectoral policies do not focus on upgrading services. Modern national-level policies in other countries seek to improve infrastructure, integrate modes of transport, and improve the quality of services.

[214] World Bank (2020a).
[215] Notified crops are rice, wheat, potato, jute, and sugarcane, which are considered important in terms of food and national security. Seed segments for these crops are highly regulated.
[216] These recommendations build on the extensive analysis conducted by Herrera Dappe et al. (2019).

- **Fully implement the Competition Act,** which offers legal instruments to prevent collusion in the logistic services market and price fixing by industry players.
- **Step up enforcement of regulations to prevent road accidents and overloading of trucks.** Regulations regarding the licensing of drivers and vehicles are meant to reduce accidents, but weak enforcement defeats the purpose of the regulations. Weak enforcement of regulations has resulted in a large majority of drivers being unskilled, substandard trucks on the road, and overloading of cargo.

Lift constraints related to investment gaps

Invest in high-efficiency irrigation coverage and flood protection, particularly in hilly and highland divisions.

Invest in good drainage, particularly in low-lying areas where production of non-paddy crops is difficult even with good drainage.

Continue efforts to promote the shift away from boro paddy, as this crop is rapidly depleting groundwater storage.

Invest in closing electricity gaps and improve the reliability of the supply. This includes leveraging private investment in generation to further increase power supply from cheap, clean energy sources and strengthen transmission and distribution capacity.[217]

Invest in transport infrastructure, with an important focus on maintenance.

Lift constraints related to markets

Revisit land markets and tenures. Review the agricultural land rental market to identify specific market failures that impede longer-term rentals of agricultural land.

Lift constraints related to knowledge and capacities

Revise budget and capacities to deliver extension services. The current DAE system lacks adequate resources to deliver services to the high number of Bangladeshi farmers who could benefit. There is also a need to train DAE extension staff on new

[217] World Bank (2020b)

agricultural knowledge and techniques for delivery training. More support is needed for private sector-led training programs (e.g., PRAN). Closer integration between DAE and the private sector could get greater impact from limited resources.[218]

Lift constraints related to gender norms[219]

Despite improvements, women's potential for income growth remains largely untapped. Norms around asset ownership, mobility, and early caregiving responsibilities constrain women's ability to engage in more productive paid farm and non-farm activities. While there is evidence of progress, particularly for younger cohorts, lifting these constraints will require a comprehensive approach that tackles many barriers at once. In the short run, policy levers include:

Invest in programs to make women's participation in livestock more productive. The livestock subsector is important, given the large share of women involved. Expanding the use of mechanized operations could bring substantial benefits.

Engage men and communities to promote gender equality. There is evidence from evaluations in Bangladesh and other countries that interventions engaging young men and communities to promote gender equality can: support women's empowerment in financial decision making,[220] increase women's registration of land,[221] change views about women's asset ownership,[222] and promote better regulations on women's land rights.[223] These efforts can also be tailored to empower women around value chains, particularly in livestock, where gender norms constrain their more productive participation.

Institute legal reform for women's inheritance of land, and address social norms that discourage women's land ownership and registration. Recent strategies with evidence of success include:

- **Reduce land registration fees for women and streamline the registration process.** This strategy has been used successfully in Nepal and India and could provide lessons for Bangladesh.

[218] World Bank (2020a).
[219] These recommendations build on the extensive analysis and consultations by Solotaroff (2019).
[220] Doyle et al. (2018).
[221] Lastarria-Cornhiel et al. (2014).
[222] Jahan et al. (2016).
[223] Mueller et al. (2017).

- **Promote joint titling of land and property.** Some evidence suggests that land formalization programs requiring joint registration between both spouses can support female land ownership (e.g., Philippines, Vietnam, India).[224] A quasi-experimental study of Rwanda's pilot program, in which married females were registered as co-owners of land by default, showed significant impacts on women's land rights among married-couple households.[225]

Target interventions to increase women's control of financial resources. Evidence from multiple countries suggests that actions need to tackle not just market failures related to banking institutions or products, but also constraints related to gender norms.[226] Programs also need to consider the potential risks of altering intra-household dynamics. Thus, experimentation and learning are a necessary first step to scale up interventions. Experimentation can be rapidly pursued in two areas, based on evidence of prior success:

- **Programs to provide savings and other financial products solely in women's names.** There is substantial evidence that such programs can support women's empowerment, promote acceptance of women's control over financial resources, loosen restrictions on women's mobility, and encourage their engagement in other economic activities.[227]
- **Models to incentivize women's use of mobile technologies.** Despite the expansion of mobile banking in Bangladesh, women's use of these tools is very limited. Recent studies suggest that improving women's use of mobile phones for banking can increase their financial inclusion.[228] The ability to manage finances through mobile financial services rather than physically traveling to a bank branch can help overcome constraints related to mobility and time.[229] However, evidence on effective interventions to promote uptake is limited.

[224] Solotaroff (2019).
[225] Ali et al. (2015).
[226] Banerjee et al. (2015); Karlan et al. (2016).
[227] Ambler and De Brauw (2017); Cheema et al. (2016); Field et al. (2016).
[228] Gammage et al. (2017).
[229] Solotaroff (2019).

Closing remarks

This Rural Income Diagnostic (RID) set out to answer the question: "What are the main opportunities and constraints to faster, sustained income growth for poor and vulnerable households in rural areas of Bangladesh?" The objective was not to examine how to increase rural GDP, but to show how people living in rural areas can enjoy higher incomes in the near future. The diagnostic incorporated results from a series of recent technical assessments, complementing these studies with descriptive analysis and benchmarking.

The analysis shows that Bangladesh has been on the right path for poverty reduction, but that the country now faces new challenges that will require renewed efforts. Bangladesh's gains against poverty have been impressive but also potentially fragile, as many families continue to move in and out of poverty and have limited means to cope with income shocks, which are common in a country highly exposed to extreme weather events and climate change.

Rural incomes have been rapidly transforming, and many households now depend on the good performance of both agriculture and non-agricultural sectors. However, the transformation is not complete: rice still largely dominates agricultural production, and growth in the sector has recently been slow and less poverty reducing. Off-farm income opportunities and the benefits of urbanization have been more limited in some areas, particularly the Western divisions and areas outside the Dhaka-Chittagong corridor. In addition, the earning potential of half of Bangladesh's working-age adults, women, remains largely untapped.

Progress on closing spatial disparities and achieving an inclusive economic transformation requires a balanced rural development strategy that accelerates growth in agriculture but also increases opportunities for non-farm and migration income. This strategy needs to pay special attention to location in a context of growing spatial income disparities, and it needs to bolster rural women's capacity to earn higher incomes.

Among the central results emerging from the RID is that agriculture needs to grow faster and become more poverty reducing. Despite Bangladesh's remarkable economic transformation, a large share of households in rural areas still depend on agriculture for the bulk of their income. The recent slowdown in agricultural growth is an important reason why poverty has stagnated or increased in Western areas of the country, so the performance of agriculture is also central for reducing spatial welfare disparities. Boosting growth in agriculture has additional significance, because the sector generates a multiplier effect for growth in rural non-farm incomes. This is particularly important to reduce spatial inequalities, given the current distribution of non-farm activities across the country. Considering Bangladesh's limited scope for arable land expansion and the current high intensity of land use, agricultural growth will need to arise from a combination of higher agricultural productivity, greater diversification toward high-value crops, and modernizing the agri-food supply chain in the medium term.

Effort to increase productivity in agriculture have to be accompanied by a more balanced urbanization process driven by local comparative advantages that can expand off-farm income opportunities. The benefits of manufacturing-driven growth have been largely concentrated around the Dhaka-Chittagong corridor. In addition to broad efforts to increase high-quality job growth across urban and rural areas, supporting the development of food processing and higher-value agriculture can support higher income opportunities in the rural non-farm sector that are less connected to the main cities.

The RID has identified a series of key constraints affecting rural income growth whose removal can accelerate Bangladesh's development. Needs already highlighted in the literature include rebalancing agricultural policies to incentivize faster agricultural diversification. Also crucial are the government's ongoing efforts to close infrastructure gaps in irrigation, transport, and electricity.

However, the analysis presented here shows that these actions alone, while vital, may not suffice. Policy also has to tackle constraints that have been less widely recognized to date. First, while investments in education continue to gradually improve Bangladesh's human-capital base, innovative short-term solutions are needed to close knowledge gaps in a context of high illiteracy. Land markets also need to work better to overcome land fragmentation. Finally, gender norms remain a fundamental constraint holding women back from increasing their earnings and contributing all they could to Bangladesh's progress.

As the country's new five-year development plan shows, many government initiatives are moving assertively in the right direction. The RID maps directions for action that can inform and support government efforts in the short term, based on the best available evidence. At the same time, the diagnostic makes clear that Bangladesh's leaders will need to go beyond known solutions. In an uncertain global context, the nation's policy makers will be called on to set forth their practice of bold experimentation. Bangladesh's next generation of policy solutions in rural development will reflect a more spatially tailored approach able to reduce poverty, protect the vulnerable, and create conditions for inclusive income and welfare gains throughout the country.

APPENDIX 1

Summary statistics by quintile

	1	2	3	4	5	All
BIHS 2018						
Average monthly per capita income	2,900	3,675	4,599	5,683	7,777	4,879
Median monthly per capita income	2,433	3,164	3,806	4,456	6,089	3,701
Average monthly per capita consumption	2,283	3,202	4,062	5,211	8,622	4,630
Median monthly per capita consumption	2,159	2,949	3,755	4,873	7,375	3,716
HIES 2016						
Average monthly per capita consumption	1,730	2,432	3,084	4,014	7,585	3,756
Median monthly per capita consumption	1,794	2,434	3,071	3,970	6,149	3,079

Source: BIHS 2018 and HIES 2016. Bangladeshi Takas.

APPENDIX 2

Summary statistics by division

	Barisal	Chittagong	Dhaka	Khulna	Rajshahi	Rangpur	Sylhet	All
BIHS								
Average monthly per capita income	3,949	4,604	4,732	5,381	6,093	4,649	3,776	4,880
Median monthly per capita income	3,200	3,333	3,666	4,250	4,435	3,666	3,000	3,701
Average monthly per capita consumption	4,651	5,727	4,748	4,329	4,189	3,699	4,646	4,630
Median monthly per capita consumption	3,570	5,414	3,877	3,386	3,404	2,962	3,233	3,716
HIES 2016								
Average monthly per capita consumption	3,734	4,043	3,875	3,730	3,553	2,982	4,352	3,756
Median monthly per capita consumption	3,148	3,475	3,140	3,042	2,913	2,428	3,580	3,079

Source: BIHS 2018 and HIES 2016. Bangladeshi Takas.

APPENDIX 3

Opportunities and constraints in the livestock and fisheries sectors

Given recent attention to Bangladesh's livestock and fisheries subsectors, including substantial public investment to address key challenges, the RID has not conducted any additional analysis in this area. This appendix summarizes recent evidence on opportunities and constraints for these subsectors.

Livestock subsector

The livestock sector has experienced relatively low growth over the last decade. According to government data from the Department of Livestock Services (DLS), Bangladesh's livestock population grew at an annual rate of about 2.24 percent from 2010-11 to 2019-2020, with the major growth coming from the poultry sector. In the same period, the annual growth rates for cattle, goats, and other ruminant populations were 0.54 percent, 0.91 percent, and 0.79 percent, respectively. In fact, the poultry subsector has shown real dynamism in recent years, with an expansion of commercial poultry production. Between 2001 and 2011, broiler meat production and egg production grew 8.8 percent and 7.7 percent annually.[230] The poultry industry is moving towards self-sufficiency in meeting local demand for meat and eggs. In contrast, annual growth in milk productivity was negative, at 1.5 percent, between 2000 and 2016.[231] As the livestock subsector grew slowly in recent decades, imports of dairy products have been increasing. In FY15-16 alone, the country spent around US$249 million to import dairy products.

Livestock supply chains in Bangladesh are largely informal and depend on smallholders, typically with very low productivity levels. Seventy percent of dairy farmers are small holders, who together produce 70-80 percent of the country's total milk supply. The red meat value chain is the least developed, with only two formal meat processing enterprises operating in the country, whereas the poultry chain is the most commercially developed. The milk supply chain is also dominated by informal traditional markets, and the presence of formal commercial processors in the value chain is limited.

[230] Hamid et al. (2017).
[231] Masylkanova (2020).

The few commercially developed value chains for red meat, poultry, eggs, and milk are centered around the big cities (Dhaka and Chittagong).

Despite its low contribution to GDP, the livestock sector employs a large share of Bangladesh's labor force and offers significant opportunities for job creation. As incomes rise and diets shift to animal protein, demand for livestock products is growing rapidly. The sector can play a critical role in improving rural incomes and nutritional status in the country. Unlocking the growth potential of the livestock sector will require addressing the following challenges: i) poor animal husbandry practices and low penetration of high-yielding breeds; ii) the safety and efficiency of value chains are limited by poor post-harvest and market infrastructure; iii) a high incidence of diseases results in high rates of animal losses; iv) inadequate food safety and quality control result in substantial public-health risks; v) weak livestock extension and advisory services, along with lack of coordination among public and private actors; and v) the intensity of greenhouse gas emission in livestock production is at unsustainable levels, contributing to an outsized environmental footprint for the sector.

Fisheries subsector

The fisheries subsector showcases a private sector-led diversification success story, with Bangladesh having become the world's third-largest producer of inland capture and fifth in inland culture fisheries.[232] The country has massive marine, coastal, and inland water resources for fish production. Within the subsector, inland capture fishery is the largest component, accounting for 56 percent of total production and 3.91 million ha of water spread areas (WSA). Inland aquaculture is the second largest component, at 28 percent of total production and WSA of 0.79 million ha. Marine fishery accounts for 15 percent of national production. Commercial shrimp production has been scaled up considerably and generates the country's third-highest export earnings, after the textile sector and the leather sector. Species of shrimp and prawn with higher commercial values were adopted. The extent of marine fishery is likely to increase, as the country has negotiated a new maritime boundary with India, which provides an additional 11.9 million ha of maritime water with great potential for the expansion of marine fishery.

[232] FAO (2018).

Inland aquaculture has undergone a substantial transformation in the last three decades. The farmed-fish market experienced a 25-fold increase during this period, driven by domestic demand.[233] Between 2004 and 2014, fishpond area and the number of fish farmers increased by 30.4 percent and 63 percent, respectively, while fish production rose by 117.4 percent.[234] This impressive success in aquaculture was mainly driven by the private sector. Numbers of wholesale markets, feed dealers, and fish traders have more than doubled, and capital intensity in the sector has increased substantially over the period. Expansion of the rural road network, rising affordability, and access to new technology have been the crucial factors enabling sustained high growth of inland aquaculture. The domestic market has been the main trigger behind aquaculture transformation in Bangladesh, as over 90 percent of farmed fish (excluding shrimp) are sold on the domestic market.

Despite remarkable performance, sustainability of inland capture and culture fisheries is at risk due to environmental and ecosystem degradation that has resulted from destructive fishing practices, overfishing of species with high commercial values, and poor resource management.[235] Climate change poses additional risk to the sector's sustainability, especially for coastal aquaculture. The Bangladesh Delta Plan 2100 (BDP2100) emphasized the development of sustainable, socially acceptable, economically viable, and environmentally friendly technology to support the continued development of aquaculture. The BDP2100 highlights two constraints for aquaculture in the country. Coastal aquaculture (shrimp, finfish, crab, and others) is not flourishing in line with its potential, due to poor investment. In addition, extension services provided to aquaculture farmers remain inadequate.

[233] Rashid and Zhang (2019).
[234] Rashid and Zhang (2019).
[235] UNCTAD (2017).

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