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About the cover:
The cover page illustrates the agro-environment in the polders of the coastal zone of Bangladesh. The agricultural productivity in a delta environment such as the polder zone depends on the proper timing of irrigation and drainage. By managing and utilizing tidal river water, rainfall, and residual soil moisture, farmers can harvest higher yields of rice and dry-season crops, such as sunflower and maize. The polder zone is one of the most densely populated and most vulnerable to the impacts of climate change. Managing these resources well and making sure that people are food-secure and climate-resilient is critical in securing peace and prosperity in the region and in the world.

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Coastal areas have long remained a matter of development discourse at the national as well as at the international level. It has recently gained further momentum with the increasing incidence of natural disasters, causing huge losses of shelters, lives, and livelihoods of about 30 million coastal population. Farmers in the coastal region often lose their field crops, fish, and livestock due to climate change-induced vulnerabilities including sea-level rise, cyclones, as well as tidal and storm surges. These occurrences resulted in damage to coastal embankments and infrastructures, devastating floods, salinity intrusion, and waterlogging. Damage to food crops and horticulture, livestock, and aquaculture together with disruptions in the supply chain are identified as the most prominent impacts of climate change in coastal agriculture these days.

Although there have been notable development initiatives from the government, research and academia, development partners, nongovernmental organizations (NGOs), private sectors, and local communities, there remain formidable technical, social, and institutional challenges toward accelerating the pace of sustainable growth in the region. This article reflects on potential opportunities and constraints of agricultural growth in the foreseeable future to draw attention of the policy makers and development practitioners.

First, let me begin with the agroecological settings of the coastal region, which can leverage significant transformation of agriculture as a business. The abundance of fresh surface water, fertile soils, even topography, and rich gas reserves can offer huge opportunities for enhancing agricultural productivity in the region. With well-designed water management and irrigation technologies, cropping intensity and yields can be substantially increased. New agroentrepreneurs have already begun investing in high-value fruit enterprises. The expansion of watermelon, mango, and guava in the coastal districts is a promising example. The traditional cultivation of single aman rice is being replaced with diversified cropping of rice, pulses, fruits, and vegetables. Although prolonged waterlogging and submergence limit the planting of rabi crops in many parts of the region; but these can be overcome by increasing investments in mechanization, irrigation, and drainage systems. Indeed, these steps will need more investment in marketing and supply chain development for agriculture to be profitable. In addition, the exploitation of natural gas is key to future development in the region. The establishment of power stations in Bhola and other island locations will certainly stimulate economic growth. Moreover, dairy production from buffalo farming in the southern islands shows a brighter prospect for meat and milk production. Also, the more modernized riverine transport system is another potential cornerstone to be addressed for linking the development initiatives in offshore islands.

Second, technology remains at the heart of coastal agricultural development. The huge public investment in the agricultural R&D system in the southern districts is a strength. Its full capacity can be harnessed with institutional interventions by incentivizing researchers to be posted in the region. The development of salt- and flood-tolerant rice varieties has already made a breakthrough in this region. This needs to be carried forward with more aggressive efforts to link farmers with research results through extension services. The other innovative technologies including versatile tillage mechanization for dibbling methods of planting maize in saline soils, cultivation of sunflower, raised bed orchard, rice-cum-fish farming, as well as vegetables, fruits, and poultry around fish pond bunds—all show a promising future for southern agriculture. The huge Dashmina seed multiplication farm in Pataukhali has been established for supplying quality seeds for the region. Its full capacity can further be harnessed if public-private partnership is leveraged. The growing urbanization in the coastal region also leads to increased investment in dairy and shrimp farming development. The coastal fishery remains a promising sector that needs increased social and financial services for the artisan fishers’ community involved in hilsha fishery, which can be linked with a growing potential export market. The blue economy thrusts ingrained in the Bangladesh Delta Plan show more encouraging prospects in exploiting marine resources including coastal aquaculture, seaweed cultivation, deep sea fishing, etc.

Third, the future of coastal region development lies in the full utilization of the mega projects already completed and under completion. The Padma bridge, Payra port, Mongla port, Karnaphuli tunnel, and Matarbari deep-sea port are all going to be the backbones of future development in the coastal region. These infrastructures linked with an intense road network throughout the country open up endless opportunities for private investment in the region. The rapid growth of rural tourism and holiday resorts in the coastal sites will not only stimulate the overall growth; but it will also connect agricultural growth hinterlands, such as Subornochar, Kuakata, Swarupkathi, and Satkhira, with the rest of the country. No doubt, the energy supplies required for growth will be expedited by the exploration of natural gas. This is also expected to attract foreign direct investment in the region.

Fourth, penetration of the financial and capital goods market accompanies private investments in agricultural mechanization, small and microenterprises, rural transport, and new trades and businesses in the southern districts. All these promise entries of new big business establishments and support services in the future, which is already signaled through the rapid rise in prices of land along the extensive road network. One of the unharvested major opportunities lies in agro-processing industries and the relocation of garment industries once the Mongla and Payra seaports are in full operation.

Finally, institutional reorganization of the government agencies involved in protecting and maintaining coastal infrastructures is of topmost strategic priority. Political imperatives for engaging local government institutions and the public-private partnership need to be exploited to protect the coastal infrastructure, agriculture, agriculture, businesses, and large investments. More proactive attitudes of government agencies, instead of “business-as-usual,” must be pursued to harness the full benefits of coastal embankments and water control structures with participation from the beneficiaries. In my view, this can lead, in the future, to a “reverse migration” into the region by those who once migrated out from the area for employment and livelihoods elsewhere. There is also a pretty good chance that the central focus of inclusive growth initiatives in Bangladesh will be shifted from the relatively maturing northern region to the thriving new south of the country as the potential growth pocket in the future.

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In retrospect: Lessons from a seven-year adaptive research

Sudhir Yadav¹, Manoranjan K. Mondal², and S.V. Krishna Jagadish³

Adaptive research is an ever-evolving concept. It involves understanding the dynamic interplay among various components of an agricultural system and how they influence and interact with each other. For too long, agronomists have been trained to develop technologies and innovations that are predominantly “plant-centric.” This traditional thinking slows down the understanding of the holistic nature of agricultural systems, resulting in skewed results that are not able to achieve scale.

Recognizing this limitation, the journey of this Sustainable Intensification Innovation Lab (SIIL)-Polder project began with a shift in research scale, moving from plot-level studies to the micro watershed scale. It became evident that agronomy at scale is vastly different from agronomy at a plot or plant level. The initial results were deeply concerning, revealing substantial yield gaps. Multiple crop experiments consistently showed these yield gaps, leading to a pivotal question: why were they occurring? Was it due to biophysical factors or different management practices? This was the juncture where the project ventured into the realm of “people.” The project embarked on a fascinating journey of adopting qualitative research, seeking to understand the perspectives and perceptions of farmers. It became evident that these subjective factors influenced farmers’ decisions regarding agricultural management and had significant spillover effects on the wider community. This realization underscored the importance of incorporating qualitative research into the project’s framework.

With this newly realized understanding, the project adopted approaches considering genotype x environment x management x social (GEMS) for testing and assessing the cropping system.

Another fascinating lesson we learned was gaining insight into the feedback from farmers. Our focus on sustainable intensification and diversification led us to encourage farmers to grow different crops during the dry season when large areas were left fallow. Over the years, we conducted several adaptive trials with various crops but faced a common challenge of drought stress. Despite suggesting 1–2 supplementary irrigations, farmers responded that it wasn’t feasible due to limited access to pumps and saline river water. However, as paddy prices rose in the past three to four years, we noticed a substantial increase in rice cultivation during the dry season. Surprisingly, farmers were willing to apply 10–15 irrigations to rice but were reluctant when it comes to other crops, such as corn, okra, sunflower, mungbean, and upland crops. A similar trend occurred with watermelon, where a rise in market price resulted in 70 percent of an area being planted with watermelon in one polder. These experiences taught us about the interconnectedness of factors, such as market prices, and perceived risks in collective decision-making regarding agricultural practices.

While gender empowerment has become a buzzword in research and development (R&D) initiatives, it has been an enlightening experience to collaborate with colleagues with expertise in gender research. This collaboration has helped us to deeply understand the opportunities for inclusive research and realize existing biases that prevail not only in society but also within the research community itself. Simultaneously, it has been truly fascinating to witness how farm women can be motivated to adopt technology when the right tools are co-developed and evaluated, and when they are economically feasible. Embracing technology has enabled these women to enhance their household income, strike a better work-social life balance, and provide support to other farming communities. An excellent example of effective introduction and scaling of technology is the implementation of the “reaper” for rice harvesting. Farm women have learned to use this technology, taking charge of their rice harvest while providing services to the community.

Another valuable lesson the project learned was about “knowledge flow.” Initially, like previous and ongoing efforts, we also considered knowledge could simply be transferred, but then we quickly realized it was more complex than that. We discovered that the pathway of knowledge flow was influenced by various factors, such as the status and acceptance of the resource person in society, existing beliefs within the community, the location and timing of training sessions, and the other participants involved. Alongside these extrinsic factors, intrinsic factors also affected knowledge flow. This insight prompted the project to focus on working closely with rural communities, local leaders, and extension workers to enhance knowledge sharing. The approach also helped us identify and leverage potential platforms and methods of knowledge sharing, which were well accepted by the community.

One of the most rewarding experiences for the project was working with graduate students. Instead of conducting research on-station, the project decided to involve these students in adaptive research in the actual environment. It was a unique challenge as many talented students often chose to study abroad. However, the project found a group of enthusiastic students eager to improve their skills. The time spent with these young boys and girls proved to be incredibly fruitful, as they added value to the project while paving a path for a promising career for some of them.

In the realm of R&D projects, investors often strongly believe that the project should be successful within a short period. However, this project proved that incremental gains in agricultural practice are critical for lasting change. The project has been able to achieve this by designing a research framework that allows research projects to stay true to their original “theory of change” instead of constantly modifying it every few years, as is often the case in many R&D initiatives. This stability and continuity have proven invaluable for expanding the research horizon and untangling the decision dynamics of different stakeholders.

In summary, the SIIL-Polder project’s journey over the past seven years has been a testament to the power of adaptive research and the importance of people’s connections within agricultural systems. It is gratifying to witness how the learnings from this initiative have been incorporated into the design of new R&D initiatives that are now being implemented in the region. However, beyond the research outcomes, what truly lingers in our hearts are the beautiful memories of the unique polder environment and the rich Bengali culture and affection shared with us by our local team and partners who walked alongside us on this remarkable journey. Their support and collaboration have been invaluable, and we are grateful for the deep connections we have formed throughout this initiative.

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Polder Tidings July 2023
Words from our stakeholders

Government perspective

I learned about crop intensification and productivity improvement through drainage from the coastal polder.

I learned how to cultivate two crops in a year through sluice gate management. Introduction of HYV rice in aman is a prerequisite to facilitate cropping intensification in the polder zone.

Despite many limitations and vulnerability, land and water resources of coastal zone has the potential to contribute to food security of the growing population of Bangladesh. Increase productivity.

Farming system

It is possible to increase cropping intensity and productivity in the coastal zone by improved water management involving farmers’ association.

I learned about maize and sunflower cultivation technique by dibbling method.

Even with the increasing of salinity levels, the expansion of contemporary agricultural technology will certainly increase land productivity at least in low and mid-level saline coastal zones.

Farming system

Improved year-round cropping and CFFS method of technology transfer integrating water management associations and farming community of the polder zone.

More advanced coastal agricultural community with renovated polders, efficient water management system, diversified crops, double/triple cropping system, shrimp culture, and flourishing agritourism.

Synchronized cropping

Maize and sunflower cultivation by dibbling and ploughing in between crop rows in a mini tiller as climate-resilient cropping in the dry season.

I learned about climate-resilient cropping and how to cultivate crops in fallow lands.

All the fallow land will be turned into cultivable land.

Land productivity and road systems will be improved.

Water management

Drainage is the key and water management should be planned and designed with community participation.

I learned about water management involving farmers’ association.

A safe and prosperous region adopting climate-resilient farming practices and drainage technologies. The drainage regulators will be operated in a smart/automatic ways with remote access and responsive to rainfall and storm surge forecasts. Each polder will have a mechanized agricultural production.

Whole polder-based cropping, rice-fish culture

I learned about HYV rice, sunflower, and maize cultivation techniques, fullRI nutritional requirements, and cultivating nutritious rice

Productivity and income of the farmers will be increased. The children will be more educated and better road system developed in the coastal zone.

Water management

Crop diversification

I learned about addressing multiple bio-physical and socio-economic challenges to enhance agricultural productivity.

I learned about new ways of improving productivity and community’s plight by addressing polder-level constraints and building knowledge sharing mechanisms.

I learned about crop marketing, as well as marketing and road communication systems developed. There will be no unemployed youth in the society.

Community

I learned about multiple bio-physical and socio-economic challenges to enhance agricultural productivity.

I learned about maize and sunflower cultivation by dibbling method.

I learned about addressing polder-level constraints and building knowledge sharing mechanisms.

Crop diversification

I learned how to cultivate two crops in a year through sluice gate management. Introduction of HYV rice in aman is a prerequisite to facilitate cropping intensification in the polder zone.

Farming system

Community leader & Farmers’ perspective

Water conservation

Cluster farmer field school

Land productivity and road systems will be improved.

Synchronized cropping

I learned about climate-resilient cropping and how to cultivate crops in fallow lands.

I learned about maize and sunflower cultivation technique by dibbling method.

The coastal zone will be green with improved year-round cropping system and better road communication.

I learned about HYV rice, sunflower, and maize cultivation techniques, fullRI nutritional requirements, and cultivating nutritious rice

Productivity and income of the farmers will be increased. The children will be more educated and better road system developed in the coastal zone.

Water management

Crop intensification

I learned about new ways of improving productivity and community’s plight by addressing polder-level constraints and building knowledge sharing mechanisms.

I learned about maize and sunflower cultivation by dibbling method.

I learned about how to cultivate two crops in a year through sluice gate management. Introduction of HYV rice in aman is a prerequisite to facilitate cropping intensification in the polder zone.

Farming system

Community

I learned about crop intensification and productivity improvement through drainage from the coastal polder.

Increase productivity.

Government perspective

Words from our stakeholders
Youth, agriculture, and education: Unlocking the potential for rural development

Mary Ann A. Batas¹, Manoranjan K. Mondal¹, and Sudhir Yadav²

Did you know that the world is experiencing a significant increase in the youth population, particularly in rural areas? In 2017, approximately 42 percent of the global population was under the age of 25. However, a concerning trend is emerging in Southeast and South Asia, where farmers and agricultural researchers are aging. While the youth demographic offers promise for rural development, young people face formidable challenges, such as unemployment, poverty, and a lack of skills and competencies. Thus, it is crucial to address how agriculture can benefit the youth and vice versa, making it a high-priority social development concern.

One of the most effective ways to generate young people’s interest in agriculture and educate them about it is through schools. State-funded schools can benefit the youth and their future study plans. The results revealed that only 11 percent of the students considered agriculture a potential subject for their future studies. Speaking of perceptions, young people generally hold a negative view of agriculture. They perceive it as an outdated and unglamorous career with low social status and financial rewards, and limited job opportunities. To better understand youth perceptions of agriculture, a survey was conducted in March 2023 among 208 high school students from 18 secondary schools in the Khulna district of southwest Bangladesh, with 58 percent of the participants being female.

The students’ perception of agriculture as a livelihood and their future study plans. The results revealed that only 11 percent of the students considered agriculture a potential subject for their future studies (Fig. I). Interestingly, girls showed a slightly higher inclination (14%) toward agriculture compared with boys (7%). However, when asked about their opinion on agriculture as a viable career option regardless of their own plans, 72 percent responded positively. The reasons cited for the positive perception included agriculture being the main livelihood option in their community, the primary source for fulfilling basic needs and ensuring food and nutrition security, its role in poverty elimination and national development, and the love and respect for their parents’ profession. Moreover, the students believed that studying agriculture would enable them to serve their community better and fulfill their personal and parental aspirations. Among the 28 percent of students who held a negative perception of agriculture as a viable career option, they viewed it as an unfavorable and dirty work environment involving laborious tasks that could potentially lead to health issues from working under the sun and rain.

So, how can schools play a crucial role in promoting youth participation in agriculture? Firstly, by integrating agriculture into the curriculum, students can learn about the significance of farming and its relevance to their lives. From primary to higher education, agriculture can be taught using science-based, vocational, and entrepreneurial approaches, making it engaging and exciting for students.

Secondly, organizing extracurricular activities related to agriculture can provide practical experiences and ignite students’ interests. Activities, such as agriculture clubs, field trips to farms, agricultural competitions, and community service projects, contribute to hands-on learning and foster civic responsibility. Thirdly, vocational training in agriculture is crucial for bridging the skills gap and improving employability. Such training equips students with the necessary skills for a career in farming, ensuring inclusive growth and benefiting rural communities.

Additionally, encouraging entrepreneurship in agriculture can open new possibilities for young people. By exploring agricultural entrepreneurship, they can view farming as a business opportunity and contribute to economic prosperity. Lastly, building partnerships with agricultural organizations can provide more resources and expose students to innovative farming practices. Collaborations could involve school gardens, guest lectures, and farm visits, all enhancing students’ understanding and interest in agriculture.

In this digital age where information is readily available, schools remain a stronghold for educating and engaging youth in agriculture. Through agricultural education, hands-on experiences, and partnerships, schools can empower the next generation of farmers and agricultural leaders. Therefore, it is imperative that we invest in agricultural education to ensure a brighter future for both our youth and the farming industry.

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Local perspective: Finding solutions to spark youth’s interest into agriculture

Mohammad Ali

Most of the food in Asia is produced by elderly farmers who are less likely to adopt technologies for a sustainable increase of the productivity required to keep the world food secure. Moreover, around the world, few young people see a future for themselves in agriculture.

Similarly in Bangladesh, the young generation is generally less likely to prefer farming as their main profession. This situation is more critical in the coastal zones, which are regarded as the most deprived and backward regions of the country.

A general perception is that the literacy rate and level of education of the younger generation are higher than in the past and that they are less likely to prefer farming as their ultimate profession. It is concerning that, without involving young people in agriculture, farming as their ultimate profession. It is concerning that, without involving young people in agriculture, we may surely suffer in the future.

In 2018 we have conducted a study involving 270 youths (64% male and 36% female) from farm families of Polder 30 in Khulna District. Results showed that only 43 percent of the family members were directly engaged in farming although most of them belonged to agricultural families. Most of them believed that a white-collar job has more pride and prestige in society.

This is the phenomenon of typical Bangladeshi youths. It is alarming that, worldwide, the share of people working in agriculture dropped from 44 percent in 1991 to 26 percent in 2021, according to the International Labor Organization.

The youth age group (15—24) represents 19 percent of the total population in Bangladesh, accounting for about 31.53 million people, of which 73 percent live in rural areas, according to BBS 2022 data. The rural youth are more closely involved in agriculture. Most often, the coastal youth, who are involved in family farming, school dropouts, unskilled, and unemployed, are mainly involved in agriculture.

Perception of youth toward agriculture

In Bangladesh, 46 percent of the total unemployed youth are university graduates. Their higher educational status can aid them in finding technical solutions to agricultural production and distribution-related problems.

Most youth (about 97%) preferred public and private sector jobs over agriculture, although they believed that it is difficult to find decent jobs in other sectors. They considered agriculture as a low-status and less promising occupation.

Nine out of every ten of the youths’ parents believe that obtaining a prestigious job and living in the city is part of the glory. Both the youth and their parents treated agriculture as a last resort for those who fail to find employment in the nonfarm sector due to the tight job market.

Farming is a labor-intensive occupation. But the youth nowadays dislike working hard in the sun and mud. More than 66 percent of the youth believed that farmers obtain a little reward for their hard work in the field. In addition, polder farming in coastal areas is unique and requires more technical skills and hard work than farming in other parts of Bangladesh.

This is why the youth do not want to find their livelihood in agriculture.

One out of every three youths thinks that farming is a low-status profession and mostly for the poor who have nothing to do. Also, they think that farming is not appreciated within society.

Youths belonging to farming families did not receive equal treatment; rather, they acquired less affection and respect than someone from another professional background. Many of them have seen the struggles and difficulties of their parents’ life as farmers.

Many school-age children dream of being a doctor, an engineer, a lawyer, or any official job (58.9%). They seldom want to be in the agricultural sector (15.6%).

Another interesting but contradictory finding revealed that, apart from low status and lower returns from farming, some youths did not consider agriculture a profession for unemployed and uneducated people.

A majority of farmers do not earn enough income from agriculture for other things beyond food. The farmers’ underprivileged living standard influences young people to work in nonfarm sectors.

Not all participants who were presently farming had the desire to work as a farmer. For some, it was the circumstances, such as a lack of other work opportunities, which dictated their entry into farming. Approximately 91 percent of the youth strongly agreed that limited opportunity exists for youth to find a career in agriculture, particularly in polder areas.

However, 42 percent of the respondents indicated that they didn’t want to leave their village and were considering agriculture as a last resort for livelihood.

The youth who are engaged in farming face many challenges, such as lack of access to and control over resources (land, capital) and the market, inadequate skills and knowledge on production processing and business, uncertainty of the weather, and variability in market prices.

Access to land is limited to youths so it discouraged them to farm at a business scale. They believed that they had less freedom to decide on what to cultivate and how to plan their activities accordingly. Because of the limited access, they also had limited scope to apply modern agricultural practices on land for increasing farm production.
The future of food security depends on rural youth.

The youth can be more easily attracted to agriculture when these obstacles are minimized, and resources are made available to them. Having rights and access to land may also help in attracting them to agriculture.

With farm mechanization and technological advancement taking place rapidly in the agricultural sector and with the pace of modernization, all these require more involvement of the youth who have the potential to rapidly learn and take advantage of these changes.

Agriculture is no longer a subsistence activity; it is a commercial enterprise and has great prospects. However, societal negligence of agriculture as a profession and profit maximization aspirations from other white-collar jobs are equally responsible for diverting youth from agriculture.

Therefore, the attitude of youth toward agriculture needs to be changed through attractive agricultural education, extension services, training, workshops, and the introduction of technologies. This way, the youth can obtain hands-on information on agricultural practices that best suit a particular region and geographical condition.

Additionally, factors such as gender discrimination should be eliminated to enhance the acceptability of agriculture as a profession among both male and female young people. They should also be provided with adequate credit with flexible terms and conditions so that they can be willing to start agricultural entrepreneurship in rural areas. This may further help them change their intention of migrating to the city, improve their self-esteem, and feel that they can make a living in a rural setup.

Moreover, a significant social recognition of agriculture as a prestigious profession may bring youth back to the farm.

The rural youth, a crucial factor in food security, should be the target group that can uphold the adoption of new technologies to maintain sustainable production and agricultural practices in the polders of Bangladesh.

Hopefully, the findings of this study will help development practitioners, policymakers, youth leaders and associations, and producers’ organizations find a workable solution that can motivate the youth to regard agriculture as a respectful, remunerative, and potential occupation in Bangladesh.

The time is to act now if we want to have an adequate number of farmers to feed the future generations of the country.

Reference:


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SIIL scholars through the years: Investing in the future

**Deb Kumar Pathi**, PhD WATER MANAGEMENT
Water governance assessment to improve the production potential in the polders of coastal Bangladesh
Project Coordinator, Water Management Unit (WMU), BIWA, Bangladesh

**Musa Abrar**, PhD AGRICULTURAL ECONOMICS
Gender and socio-cultural dimensions affecting adoption of improved agricultural technologies and practices in southern Bangladesh
Adaptive Livelihood Expert, UNDP, Dhaka, Bangladesh

**Rida Saima**, PhD FOOD SECURITY OPTIONS
Options for high productive triple rice systems in the low saline coastal zone of Bangladesh
Manager, Secot District Agriprom, BMAC, Khulna, Bangladesh

**Assem Sarwar**, PhD ENVIRONMENTAL DYNAMICS
Sustainable intensification of agriculture: Opportunities and challenges for food security and agrarian adaptation to environmental change in Bangladesh
Senior Scientist-Econ, ASSR, USA

**Mehjabeen Ibnah**, MS DEVELOPMENT POLICY AND STUDIES
Food availability and consumption pattern of polder community in Khulna
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**Shahriar Hossain**, MS AGRICULTURAL ECONOMICS
Dynamics of gendered time use pattern of farm households in the polder of the coastal zone of Bangladesh
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Perception and participation of youth in agriculture: A case in polder 30 in southwest coastal zone of Bangladesh
Research Assistant, The Business Standard, Dhaka, Bangladesh

**Muhammed Al**, MS AGRICULTURAL ECONOMICS
Trade-off among different cropping patterns in the coastal Bangladesh: A case study on polder 30 in Batiaghata Upazila of Khulna District
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Exploring gender participation in water governance: A case study of south/southwest coastal Bangladesh
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*Travel Grants
Given their vital roles in household and agricultural water usage, it is evident that the water crisis and the challenges faced by women are deeply interconnected. In Bangladesh, where male dominance prevails in water management, a new approach called participatory water governance is gaining momentum. This strategy aims to achieve sustainable and equitable management of water resources, which are focused on addressing women’s needs. Encouragingly, the government has taken a significant step by implementing a 30 percent quota for women in executive committees within water management groups.

Community-led Water Management Groups (WMGs) have played a vital role in facilitating easy access to resources and capacity building for underprivileged women. Despite the time constraints imposed by their unpaid work burdens, women have actively participated in meetings and group activities organized by WMGs. Astonishingly, around 85 percent of women reported that timely availability and access to irrigation water have significantly improved their crop yields. WMGs have provided a platform for women to acquire knowledge on sustainable farming practices, gain access to agricultural inputs, and learn improved water and soil conservation techniques, resulting in enhanced agricultural productivity.

Participation in WMGs has granted women increased access to information, knowledge, and social networks through training programs. These groups have facilitated women’s access to agricultural technologies and machinery, such as power tillers, water pumps, harvesters, sprayer machines, and threshers. One enthusiastic woman from a WMG expressed her gratitude, saying, “I got a sprayer from WMG and used it on our plot. My husband also used a power tiller in the field, for which we only paid the diesel cost, saving our money.” Participatory water governance has also contributed to improved water conservation, reduced soil erosion, and enhanced biodiversity conservation. These achievements are particularly crucial in vulnerable polder zones susceptible to flooding, drought, and other climatic hazards. By adopting sustainable environmental practices within WMGs, its members have improved their farm production and incomes.

Women’s participation in WMGs empowers them in various ways. In a patriarchal society, WMGs provide women with a certain degree of autonomy to participate in joint decision making on crop production and household activities. They also gain control over income generated from poultry. Additionally, women enjoy increased mobility for attending WMG meetings. Membership in WMGs contributes to their sense of identity, confidence, and respect within their communities.

“Being a widow at 26, I became helpless with my son. I started cultivating crops on my husband’s land without any second thought,” a woman shared. “Initially, people used to gossip about me at an oblique angle, she continued. “I worked tirelessly and participated in various training sessions. Now I am a successful (female) farmer,” she said as she proudly related her experience. Their formal participation strengthens WMGs by improving compliance and maintenance as well as by enhancing their rights and bargaining power as water users.

Women’s increased involvement in water governance benefits individuals, society, and resource conservation. However, the extent of women’s leadership roles within these groups is still limited. Restrictive social norms and time constraints hinder women from assuming leadership positions in WMGs. The deeply ingrained masculinity within the institutional dynamics of water governance, such as male-dominated decision-making regarding sluice gate operations, water distribution, and investment in water infrastructure, often fails to address the complex challenges faced by women in both domestic and agricultural water use.

Ensuring active and meaningful participation of women in water governance requires addressing restrictive gender norms and tackling underlying structural barriers that hinder their engagement. Thus, empowering women in water governance is not only about gender equality; it is also a crucial step toward sustainable and equitable water management. By creating an enabling environment, implementing supportive policies, raising awareness, and fostering collaboration, we can harness the untapped potential of women and ensure that their voices are heard, valued, and reflected in decisions. By implementing these measures, Bangladesh can achieve sustainable and equitable water management.

Women at the forefront: Achieving sustainable water management

Mou Rani Sarker1 and Niyati Singaraju1

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Women of the polders during a focus group discussion.
Service providers report: The positive outcomes of mechanical paddy harvester as a livelihood

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TIME SAVINGS

• Project purchased one reaper
• Created awareness on its use through demonstrations and trainings
• Women harvest paddy manually for 12–22 days and earn USD 45–75 per year
• Paddy harvesting was reduced to 4–5 days with the use of reaper, with similar income as manual harvesting
• Women gained more time for household work and leisure.
• Service provision: from 1–8 hours/day, it gradually became 17–27 days/cropping year
• Project purchased one more reaper due to growing interest within the community.
• Project implemented husband and wife model to address the challenge of transporting the reaper.

INCOME & EXPENDITURES

• Jhumpa Begum purchased her own reaper with the help of government subsidy.
• Ten service providers harvested paddy from 138.5 ha land.
• With reaper, the community in polders harvest their paddy with less cost and in a short time de-risking them from production loss.
• Documented income from the reaper is USD 1,085—2,327 during 2016-2022 cropping years.

Project implemented husband and wife model to address the challenge of transporting the reaper.

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Coastal region remains a high-priority investment in agriculture

Jayanta Bhattacharya¹ and Mary Ann A. Batas¹

Bangladesh is one of the most climate-vulnerable countries in the world; its coastal zone is one of the climate hotspots as defined in the Bangladesh Delta Plan 2100. Recognizing the significance of agriculture for food security and economic growth, various stakeholders have directed their attention into investing in agriculture and infrastructure development in the coastal zone.

The government has made substantial investments and its coastal zone remains a high-priority region for development in the country. In addition, the World Bank, Asian Development Bank (ADB), United States Agency for International Development (USAID), International Fund for Agricultural Development (IFAD), Green Climate Fund (GCF), European Commission, Australian Centre for International Agricultural Research (ACIAR), and other development partners continue to invest and support the development of the coastal zone (see table and figure).

These investments focus on a range of areas of agricultural development. In the next five years (2023–28), the World Bank and IFAD have several mega programs with an investment size of $5 billion for agricultural and rural transformation, nutrition, entrepreneurship, supporting the livestock and dairy sector as well as for climate resilience in Bangladesh. Due to climate vulnerabilities, Bangladesh has been the epicenter of interest for many national and international academic, research, and development organizations. In partnership with national agencies, several Consultative Group on International Agricultural Research (CGIAR) centers are working on different aspects of climate-resilient agriculture. Knowledge flowing across these initiatives is paramount for supporting the overall development of agriculture and creating livelihood options in the region. By harnessing these research and development interests, and collaboration, Bangladesh aims to enhance food security, uplift rural livelihoods, and create sustainable economic opportunities in the coastal zone, hence contributing to the overall growth and development of the country.

![Projects/Initiatives table]

<table>
<thead>
<tr>
<th>Projects/Initiatives</th>
<th>Start</th>
<th>End</th>
<th>Donors/Fund raise</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Securing the Food Systems of Asian Mega-Deltas for Climate and Livelihood Resilience (AMID)</td>
<td>2022</td>
<td>2024</td>
<td>Consultative Group on International Agricultural Research (CGIAR)</td>
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<td>2. Sustainable Intensification of Mixed Farming Systems (SI-NFS)</td>
<td>2022</td>
<td>2024</td>
<td>CGIAR</td>
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<td>3. Enhancing Adaptive Capacities of Coastal Communities, especially Women, to cope with Climate Change induced Salinity</td>
<td>2018</td>
<td>2024</td>
<td>Green Climate Fund (GCF), Government of Bangladesh (GoB), others</td>
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<td>4. Climate-Resilient Infrastructure Mainstreaming in Bangladesh</td>
<td>2018</td>
<td>2024</td>
<td>GCF, GoB, others</td>
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<td>5. Sustainable management of fisheries, marine living resources, and their habitats in the Bay of Bengal region for the benefit of coastal states and communities (BOLBML-II)</td>
<td>2020</td>
<td>2025</td>
<td>EAF-Nansen Programme, FAO</td>
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<td>6. Sustainable coastal and marine fisheries project</td>
<td>2018</td>
<td>2023</td>
<td>GoB</td>
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<td>7. Cropping System Intensification in the salt-affected Coastal Coastal Zones of Bangladesh and West Bengal</td>
<td>2015</td>
<td>2024</td>
<td>Australian Centre for International Agricultural Research (ACIAR)</td>
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<tr>
<td>8. Incorporating salt-tolerant wheat and pulses into smallholder farming systems in southern Bangladesh</td>
<td>2017</td>
<td>2023</td>
<td>ACIAR</td>
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<td>9. Nutrient management for diversified cropping in Bangladesh</td>
<td>2017</td>
<td>2023</td>
<td>ACIAR</td>
</tr>
<tr>
<td>10. National Agricultural Technology Programme - Phase II Project</td>
<td>2015</td>
<td>2023</td>
<td>International Fund for Agricultural Development (IFAD), World Bank, United States Agency for International Development (USAID)</td>
</tr>
</tbody>
</table>

¹International Rice Research Institute
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