Battling the Twin Crises of the 21st Century & Stories of Community Resistance in Asia-Pacific: The Case of Bangladesh

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Acknowledgements

Mapping the Battling Stories of Community Resistance against the Twin Crises (Food crisis & climate Crisis) of the 21st Century in Bangladesh is a critical development research to identify Climate Change impact on Food self-sufficiency in Bangladesh. We would first like to thank all the farmers, community members and individuals who contributed this research with their valuable time to provide rigorous information as well as for their support to the research team during case study process.

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We believe this study will contribute for bringing back the traditional biodiversity-based smallholder agriculture of Bangladesh to address the climate crisis and also to achieve food self-sufficiency.

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On behalf of the Research Team
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Executive Summary

Mapping the Battling Stories of Community Resistance against the Twin Crises (Food crisis & climate Crisis) of the 21st Century in Bangladesh

World is still facing a major problem of volatile food prices. Over the years, farmers and communities have been bombarded with the corporate propaganda that agriculture can only be developed and food security be ensured by following the corporate model of agricultural development, relying on markets, synthetic agrochemicals and biotechnology. The corporate agriculture feeds only 30% of the world's population but virtually controls the total global trade and investment in food and agriculture.

The global food crisis is real, and so is the climate crisis. Experts have already warned that the costs of carbon reduction would be four times greater than today due to any delaying action on climate crisis and it would boost global temperatures by at least 3.5^{0}C by 2100. Nevertheless, like the responsibility for the food crisis, the imperialist states, TNCs and financial institutions are dodging the responsibility for the climate crisis. Food crops have become so-called soft commodities due to trade liberalization policies. Commitments to agricultural aid by both donor governments and multilateral agencies bottomed out at 3.4 per cent of total aid. There is the need therefore to counter the corporate agenda with researches on the ground that expose the real causes of food and climate crises and the neoliberal approaches to the crises.

The present research aims to debunk the claims of TNCs, multilateral organizations and international financial institutions that national food self-sufficiency does not make economic sense and that the vulnerable countries will have to rely on the markets and globalization to meet their development needs.

Multidisciplinary Team-based Participatory Action Research with the chosen communities' has guided the research process. The research approach was mainly focused on developing unique country case that truly represents the Bangladesh context. The analysis framework has followed the triangulation of data from different sources to identify Climate Change impact on Food self-sufficiency in Bangladesh. It has to be noted that All IPCC impact assessments carried out so far have identified Bangladesh as one of the most vulnerable to the negative impacts of climate change.

In total, the study managed to involve 346 participants, including 108 participants in Quantitative Survey and 238 participants in qualitative aspects of the study. The study has covered three communities who are living in coastal (Barisal District), riverside (Shirajganj District) & hilly areas (Khagrachari District) of Bangladesh for collecting data on food production systems and techniques as well as climate change impact & vulnerability to document case studies that truly represents majority of the Bangladesh. The data analysis further divided coastal (Barisal District) and riverside (Shirajganj District) areas into Plainland (geographic entity) & Bengali (Ethnic identity of the respondents) and hilly areas (Khagrachari District) into Highland (geographic entity) & Indigenous (Ethnic identity of the respondents).

Majority of the community members involved with this research are middle-aged (average age is 45 years) poor farmers and have been living in their current area for more than three decades. Half of the farmers (49.1%) are functionally illiterate. Nuclear family (Husband, wife, child) dominates the family type. More than one-third (36.1%) of them are living in straw/leaf/bamboo/mud built houses which are highly vulnerable for any disaster with their 5-members family. Nearly half of their neighbors are poor (46.2%).

The average family size of the respondents households is five, including two children and three adult family members. In terms of religious identity, except a few Hindus (5.6%), rest of the respondents in the Plainland areas are Muslims (94.4%). However, in highland areas all the indigenous people reported Sanatan as their religious identity.

Nearly one-third Bengali households in the Plainland reported that at least one of their family members is having disability (differently able person). The study envisaged that in every five poor households at least one household has family member with disability or differently able person. Although the study was not focused on person with disability or differently able person, the findings seems alarming and requires more research.

The poor households in Bangladesh are living with severe food crisis for half of the year. Nevertheless, indigenous poor households in the hilly regions are living repeatedly in famine situation from February to July. Particularly in the months of May, June & July, Indigenous

Highland households live in famine situation. The poor households living with chronic food insecurity are almost two (1.7) times higher in Bengali households of the Plainland (27.8%) than Indigenous & Highland households (16.7%). Well-structured food distribution mechanism is very poor in Plainland and virtually absent in Highland areas.

Food Security of the Household	*Bengali & Plainland (%)*		*Indigenous & Highland (%)*		*Bangladesh (%)*	
Householdhad less food than the real need during the last month	37	51.4	20	55.6	57	52.8
householdhad less food today than the yesterday	30	41.7	14	38.9	44	40.7
Households always living with food insecurity	20	27.8	6	16.7	26	24.1
Households occasionally living with food insecurity	46	63.9	25	69.4	71	65.7
Householdborrowed rice from others	61	84.7	29	80.6	90	83.3
Household provided rice as a loan to others	56	77.8	10	27.8	66	61.1
Have no arrangement to stock food in household	36	50.0	16	44.4	52	48.1
Total	72	100.0	36	100.0	108	100.0

In Bangladesh poor households face highest food crisis in the months of June (61.1%), July (59.3%) and March (55.6%). Nearly one-fourth (24.1%) of the poor households in Bangladesh are always living with food insecurity and two-thirds (65.7%) households are occasionally living with food insecurity. Most of the landless small and marginal farmers have no food security.

Majority of the poor households were forced to reduce food intake to survive amidst the sever food crisis. More than one-third of the poor households have reported that they had reduced their food intake from February to July in the last 12 months.

The study recognized that any natural disaster has a profound influence on the food consumption pattern of the poor households in Bangladesh. Nearly two-third households (63.9%) in Bangladesh shift from their normal food and consume dry food (Cira, Mury& Bread) during flood, cyclone & others natural disaster. One striking feature is observed among the indigenous households in the highland areas where none of the female-headed households consume normal food during any natural disaster.

The study identified dramatic changes in food intake pattern in the poor households in Bangladesh between harvesting period and crisis period due to food availability. Among the households who used to take food three times in a day during the harvesting period (89.8%) take food two times in a day during the crisis period (27.8%). More than half of the households (62%) used to reduce their food intake to adjust with any crisis.

Majority of the farmers have used pesticide (75.0%) and fertilizer (80.6%) for growing crops in the current year. More than half of the farmers do not know how much pesticide is required for specific crops (56.5%) and yet uninformed about the various methods of handling pests/insects without using chemical pesticides (62.0%). More than one-third (41.5%) of the farmers who knows how to handle insects/pests without using pesticides, do not even practice it.

More than half of the farmers (53.7%) had preserved seeds last year for selling in the market & growing their own food. The seed preservation practice is more common among the indigenous

farmers of the Highland (75.0%) than Bengali farmers of the Plainland (43.1%). Majority of the farmers consider organic fertilizer is cost-effective (77.8%) and good for growing foods (58.3%). More than two-fifth (46.3%) of the poor farmers in Bangladesh has irrigated their land for growing crops in this year. The agriculture production without irrigation is more common in the indigenous highland areas than the Plainland areas. In fact, irrigation of lands for growing food is almost six (6) times more prevalent in the Plainland (63.9%) areas than the Highland areas (11.1%).

Food productions have decreased in all the study areas within the last 3 years and the same land area currently produces less food than 10 years ago. More than half of the respondents have admitted that food productions are decreased in their locality within the last 3 years (58.3%) as well as the same land area currently produces less food than 10 years ago (51.9%). One-tenth of the respondents (10.2%) pointed out that lands, which were used for agriculture 10-15 years ago, are currently not used for agricultural anymore.

In Bangladesh, the ownership, access and control over land very often determine the economic and social position and power relation of individuals and family. More than one-tenth (13.9%) households in the plainland areas are absolutely landless. On aveage, among the households who own land have 158 decimal or 1.58 acre land. Agricultural land is decreasing gradually to accommodate the increasing population. Many productive agricultural lands have already converted into factories, brickfields, roads and other infrastructures. Land grabbing is key factor for food insecurity of the

indigenous highland population. Many lands grabbed by the influential Bengali people in the hilly regions remain fellow which earlier were used by the indigenous people for food production.

In every stage of rice production, from land preparation to rice grain production farmers have to spend more money than the previous year. Every year farmers are cultivating less land to adapt with higher price of agricultural inputs. Farmers do not get fair price of their products as big merchants controls the market and sets the price of the products. Due to inadequate communication system in farmers are bound to sell their products in the local markets where usually market is very small. Male member of the household is primarily responsible for marketing the farm produces in Bangladesh.

Nearly half of the farmers (49.1%) have no way to get information for marketing their products in the right time and at fair prices. Farmers are paying 40% more for diesel and 66% more for fertilizer than previous year. Every year farmers are cultivating less land to adapt with higher price of agricultural inputs. The farmers were not happy even after producing bumper boro paddy in 2011 because of the exploitation of the multiple syndicates within the agricultural value chain of Bangladesh.

The climate change impact is identified as the key reason for not fulfilling the overall food demand. Seasonal variations of different climate variables (temperature, rainfall, humidity, day-length etc) control the agriculture of Bangladesh. Food insecurity due to climate induced crop loss or failure is a common incident for the villagers.

	Impacts of climate change on water, forest resources, bio-diversity, accommodation, health, education and nutrition	Riverine Plainland	Highland	Deltaic Plainland
Water				
1	Reduction of water sources due to increased temperature		√	
2	Excessive rainfall causing unexpected flash flood	√		√
3	Loss of lives due to water borne diseases			√
4	Droughts are damaging agriculture			√
Forest resource				
1	Food crises due to excessive deforestation		√	√
2	Increased temperature are reducing forest resources	√	√	
3	Destruction of forest resources due to frequent cyclones			√
Biodiversity				
1	deforestation are destroying biodiversity	√	√	
2	Changes in biodiversity equilibrium due to due to flood, drought			√
Living arrangements, Health& Nutrition				
1	Loss of dwelling place due to flood, drought, river erosion etc.	√	√	√
2	Increased temperature, irregular seasonal changes are creating different types of diseases	√	√	
3	Food scarcity due to the abnormal behavior of climate on agriculture	√		
Education				
1	Destruction of educational institutions due to natural disaster like flood, cyclone, flash flood etc.	√	√	√
2	Damages of educational material due to flood		√	

More than half of the households (61.9%) in Bangladesh opined climate change impact as the reason for the reduction of food production. One-third (34.9%) opined that modern techno-based cultivation is also responsible for the reduction of food production. Nearly two-thirds farmers in Bangladesh have experienced climate change related problems (cyclone, rainfall, drought, flood, overflow, and tornado) during growing foods (64.8%) and also faced climate change impact on households' food security (63.9%) during the last

year. Untimely excessive rainfall, frequent flood, cyclone, tornado & drought are continuously damaging their agriculture produce. Majority of the farmers (87.0%) opined that excessive rainfall has been generating problems for growing foods.

Nearly two-third (65.7%) of the poor farmers in Bangladesh considers that current food production system is unable to fulfill the overall food demand of the country. More than one-third of the poor farmers (35.2%) reported that climate change (heavy rainfall, drought) is destroying their crops. More than three-quarter of the poor farmers (80.6%) have reported that they need training for addressing Climate Change risks & vulnerabilities for growing foods. More than two-fifth (41.4%) farmers who have experienced climate change impacts now a days, had not experienced such climate change problems in 10 years ago.

More than three-quarters (78.7%) of the poor households in Bangladesh does not have the purchasing power to buy food at the current market price even in the normal situation. It is very striking that virtually all the indigenous households (97.2%) in the highland areas does not have the ability to purchase necessary food at current market price.

Taking very high interest loan from local money lenders (53.7%) and selling household assets like livestock, land, trees, and crops (48.1%) are the most common strategies of the poor households in Bangladesh to collect/ensure food during the crisis period. More than one-third households (35.2%) have also borrowed crops from

relatives to overcome food crisis during the last 12 months. None of the poor Bengali households in the Plainland areas has reported to sell advance labor/crops to ensure food during the crisis period. On the other hand more than one-tenth of the poor indigenous households in hilly regions of the Bangladesh had sold labor/crops in advance to overcome food crisis during the last 12 months. The poor farmers (mostly cultivate others' land) had to take informal loans from moneylenders at a very high interest rate that are at times 10 times higher than commercial Banks' interest rates.

The average stocking capacity of the Plainland Bengali households (average-stocking capacity is 105 days) is 25 days more than the indigenous highland households (average stocking capacity is 80 days). However, female-headed households have less stocking capacity than male-headed households in Bangladesh including both highland & Plainland areas. Shortage of safe drinking water, especially in the coastal belt and in drought-prone areas in the north-west of the country increasing hardship on women and children, who are responsible for collecting drinking water for their families.

Bangladesh had responded to the 2007/08 food crisis by abandoning the neo-liberal prescription of minimal state involvement in food markets. Bangladesh consider domestic food grain production as an important factor for food price stabilization and food security, and food self-sufficiency policies aims to avoid macroeconomic and political instability from food price shocks. Since expansion of land under cultivation is not a feasible option, Bangladesh government has started discussions with countries in Africa and with Myanmar & Cambodia with a view to leasing foreign land to grow food for import.

Government policies are more focused on achieving transient food security through price stabilization for the consumption of the vulnerable groups and also achieving ‘self-sufficiency’ in rice production. However, the government goal of self-sufficiency in food grains production is focused on building up national food reserves to meet about 3 weeks’ consumption. Government is serving Agri-business through liberalization on the import of seed and seed processing machineries.

Bangladesh is the classic example of Biodiversity-based smallholder agricultural practice. There are several major rice-growing ecosystems in Bangladesh. These include upland (direct-seeded pre-monsoon 'Aus' season); irrigated land (mainly dry 'Boro' season); rainfed lowland (mainly monsoon 'Aman' season); medium deep-water rice-growing areas (50-100 cm) and deepwater (>100 cm); tidal saline and tidal non-saline areas.

The Bangladeshi farmers with their unique and innovative coping mechanisms have proven many times their resistance to recurrent natural hazards like floods and droughts, cyclones and tidal surges. The advantage of saving crops in floating method of agriculture during flood situation at community level has been observed. The farmers of the country are also capable of switching to local varieties in places of high yield varieties in case of drought or flood as local varieties are low water consuming and taller. Within the last 10-15 years, farmers have witnessed drastic deviations in their traditional crop calendar.

The success and vulnerabilities of the women in climate adaptation has to be highlighted in the national & international forums through real life evidence. Women can play the leadership role in conservation of plant genetic resources, seed exchange & seed management according to the cropping calendar and promote movement of seeds between villages. The women-led innovative homestead-gardening practice in waterlogged people's struggle for survival in a very difficult condition might provide new thoughts to the global community and might offer ways to the global community about how to survive if sea level rises. Nevertheless, the farmers need orientation training for generating mass awareness on climate change. Farmers also need training for adaption of agriculture, Livestock Rearing in the changing climate, Climate compatible calendar/guidelines for crops production and Vegetable cultivation.

Poor and marginalized sections of society have been facing not just one but multiple crises simultaneously in terms of livelihood crisis, food crisis, health crisis, water crisis, deforestation, hunger and desertification for years, decades. Making agriculture a viable and profitable livelihood option for the poor & landless farmers is the cornerstone for food self-sufficiency. A democratic food system is urgently needed so that farmers can grow the crops they want and sell them wherever they want. The problem of chronic food insecurity of the poor needs more attention. Farmers have opined that organic farming could be one of the key adaptation measures for achieving food self-sufficiency for the poor households.

The study recommended the following immediate measures to address the twic crises of the 21st Century:

- ✓ Ensure agriculture as a viable and profitable livelihood option for the poor & landless farmers
- ✓ Safety net programmes are necessary to protect the poor people from price shocks and help them to be food secure.
- ✓ Promote biodiversity-based smallholder organic agriculture which has great mitigation and adaptation potential, particularly with regard to topsoil organic matter fixation, soil fertility and water-holding capacity
- ✓ Pro poor Land reform is much needed
- ✓ Train Farmers for enhancing their adaptive capacity to address Climate Change risks & vulnerabilities for growing foods
- ✓ Women-led domestic food self-sufficiency should be a priority development approach

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