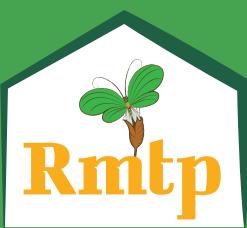


Policy brief

Transformation of Agro-Ecological Farming (beyond Organic) for Ensuring Nutritious & Safe Food without Compromising Yield and Reducing Input Subsidies on Chemical Fertilizer and Pesticide in Bangladesh.



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Introduction

Food system in Bangladesh is addicted to chemical fertilizers and pesticides likewise other developing countries. For the last 50 years, these agrochemicals have been heavily promoted by global institutions, governments and agribusiness as the means for increasing crop yields, while other options for increasing soil fertility and safe food production have been ignored or undervalued. Continuous and overuse of chemical fertilizers and pesticides are creating several problems like air and water pollutions, land degradation, and depletion of soil fertility and agro-ecosystem. This unsustainable food production system may be substituted by deeply science based agroecological way. Agroecology is a holistic and integrated approach that simultaneously applies ecological and social concepts and principles to the design and management of sustainable agriculture and food systems. In 2019, 197 nations adopted the ten agroecological concepts that would govern the FAO's agroecology vision. In the same year, the High-Level Panel of Experts on Food Security and Nutrition (HLPE) released the 13 agroecological principles (HLPE 2019).

This policy brief is prepared to highlight key findings and recommendations of the strategy paper developed by external consultant of PKSF. The strategy paper, completed during October-December 2024, is intended to scope out the strategic options for promoting agroecological farming in Bangladesh. This policy paper aims to undertake interventions of systemic changes and promote agroecological farming practices among about 135,000 small scale producers of Rural Microfinance Transformation Project (RMTP) and policy advocacy for stakeholders including govt. agencies for revisit support system in farming.

Therefore, the objective for the strategy paper was to conduct an analysis of the national policy landscape in Bangladesh, identify policy and implementation gaps and challenges that constrain the upscaling of agroecology practices, and provide recommendations. The intention is to inform the policy advocacy opportunities in scaling up agroecology in Bangladesh, while working all stakeholders in a concerted way.

State of chemical inputs in farming system:

Fertilizer

Bangladesh has an increasing trend of chemical fertilizer application in crop production. Among the fertilizers used in Bangladesh, Di-ammonium Phosphate (DAP), Muriate of Potash (MOP), Triple Super Phosphate (TSP), and Urea are the most widely used which deliver essential plant nutrients to the soil. Although Bangladesh produces fertilizer, imports meet 80% of the country's demand. In FY 2023, a total of 5.89 crore MT of fertilizer had been used, and 2.75 crore MT of fertilizer had been urea. The consumption over the decade increased by 12% for Urea, 5% for TSP, 277% for DAP and 46% for MOP (BBS, 2023).

Despite substantial negative externalities, the government of Bangladesh granted a subsidy of 24 thousand crore BDT in FY 2023-24, with more than 75% spent on chemical fertilizer alone. Fig.1 shows the high amount of chemical fertilizer consumption in Bangladesh comparing with some other Asian countries, and Fig.2 shows the increasing trend of chemical fertilizers used in last decade.

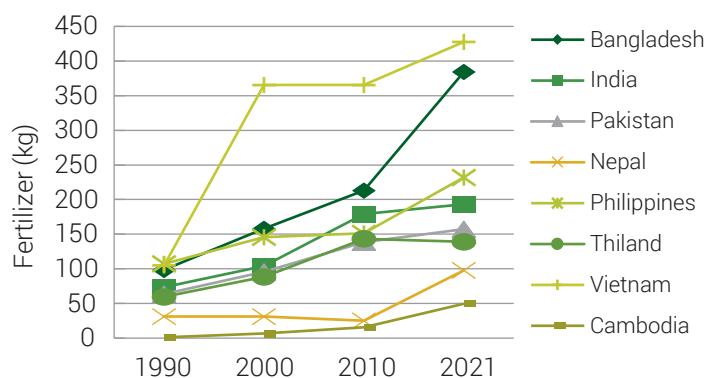


Fig-1: Fertilizer Consumption in Asian Countries (kg/hectare of arable land)

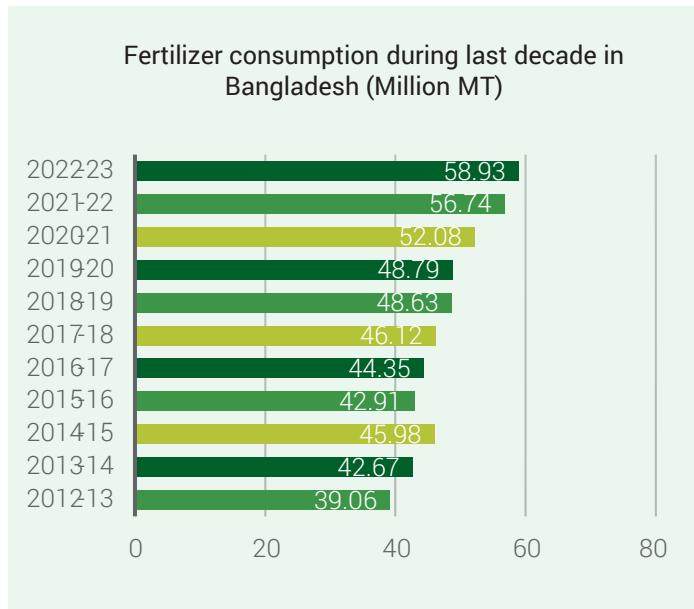


Fig-2: Fertilizer consumption during FY2012-13 to FY2022-23.

Pesticides

Pesticides were utilized in excess of 45 thousand metric tons/(kiloliters) in 2009. However, pesticide use in 2020 was roughly 37 thousand metric tons or kiloliters, which was around 15% less than in 2009, indicating that the government's many policies and programs contributed to reduce the use of chemical pesticides (BBS,2020).

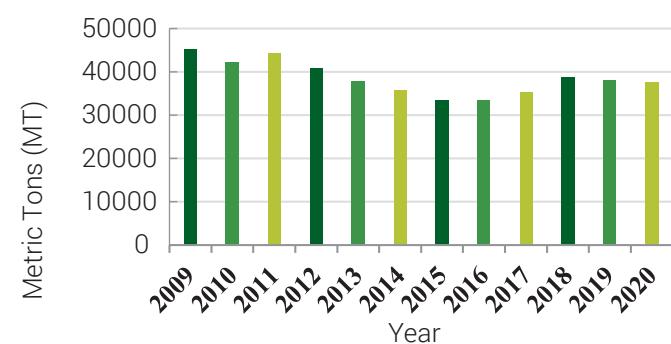


Fig-3: Pesticide consumption during 2009-2019 in Bangladesh

Subsidy in farming

The Government of Bangladesh provided a subsidy of 24 thousand crore BDT in fiscal year 2023-24 for chemical fertilizer (MOA, 2024). The cost of chemical fertilizer including environment, ecosystem damage and human health does not cover the economic return of productivity of agricultural commodities.

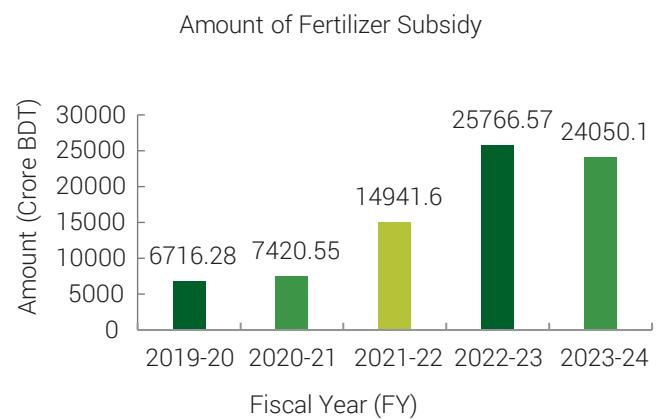


Fig-4: Subsidy in fertilizer during FY 2019-20 FY 2023-24 in Bangladesh

Cost paradox in farming

Current market prices do not reflect the social and environmental damage caused by the food production. The sector externalizes this damage to land use for food production or to society through emissions that threaten the global population and future generations.

True Cost Accounting (TCA) is one such a tool that aims to internalize external costs into the market price of products. It has recently gained interest as an approach for policy measures improving the sustainability of the agricultural sector. Using true cost accounting, the State of Food and Agriculture (SOFA) report calculates that the total hidden cost (environmental, social health) for Bangladesh is million US\$ 110210 in 2020 which is 13% of GDP of Bangladesh (FAO, 2023). By introducing agroecological farming practices, it is possible to reduce the hidden cost significantly which ultimately contribute to sustainable farming and food system in Bangladesh.

Total Hidden Cost of Food System in Bangladesh (million US\$)

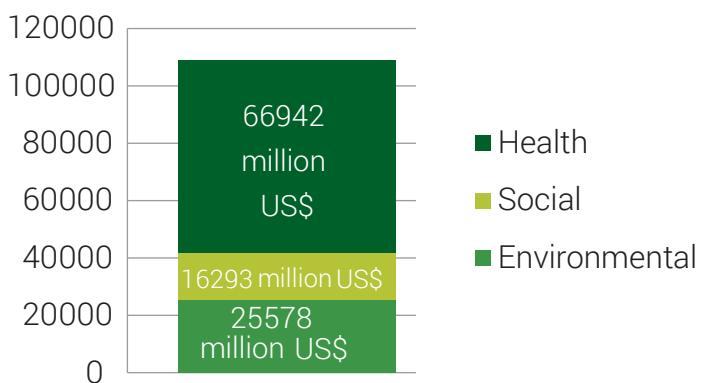


Fig-5: Total hidden cost in food system of Bangladesh

Agroecology as a sustainable farming system

Agroecology is a holistic and integrated approach that represents a trans-disciplinary field that includes the ecological, socio-cultural, technological, economic and political dimensions of food systems, from production to consumption (FAO, 2018).

In 57 nations, agroecological projects covering 37 million hectares (equivalent to 3% of the total cultivated area in these countries) were shown to increase average crop yield by 79%, as well as land productivity on 12.6 million farms (Pretty et. al., 2006). In Africa, farmers had even higher gains with average crop yields rising by 116% (OXFAM, 2014).

Farmers in Andhra Pradesh, India, saw an average net increase in their income by 49% through agroecological approaches (also known as natural farming). This was mainly the result of a 44 % reduction (on average) in input costs, especially for fertilizers and pesticides (GIST, 2023). Furthermore, agroecology generates new on-farm and off-farm jobs, promotes fair wages, and can help to raise incomes through local value creation.

Farmers in the RMTTP Project who practice agroecological farming reported increased farm yields of up to 35% and reduced production costs by 15-25%. However, they claimed that incremental yields take 1-3 years.

Challenges and opportunity in promotion of agroecological farming

I. Addressing Market Failures

Since, the products of agroecological method are recognized as credence goods, there may have information asymmetry that influences the market distortion. Public policy interventions such as certification system rewards farmers who adopt practices that either reduce negative, or enhance positive externalities.

Advances in Information and Communication Technology (ICT) and the emergence of big data, on the one hand, hold a promise of increasing the agency of consumers to participate in more democratically controlled food systems; by better connecting consumers with producers in ways that would be likely to favor agroecologically produced food.

II. Transition Strategy

A strategy of gradual conversion of the conventional system to agroecological and organic systems is recommended to allow time such 1-3 years for systematic approaches such as acquiring management skills, adopting a mindset for developing a farm management approach, transitioning to reducing chemical inputs, developing the supply chain, and developing the market.

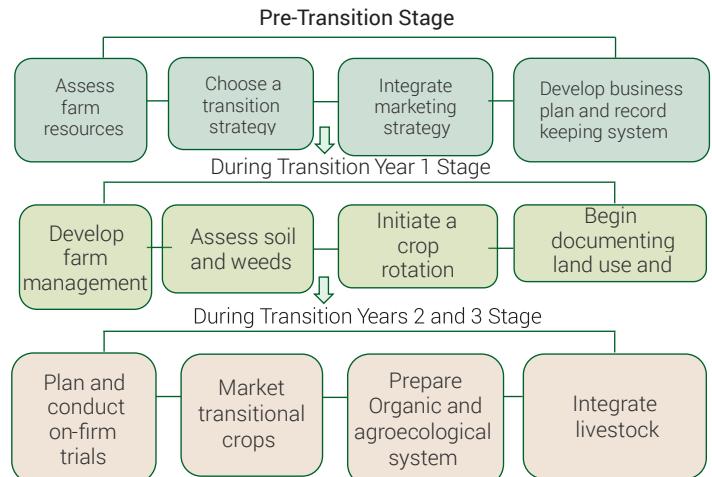


Figure-6: Pathways to Focus During the Transition Period, author's Modification from Wortman et.al, 2017

Recommendations

Agro-ecology reduces dependence on energy-intensive inputs, while improving soil fertility, productivity, and biodiversity. Hence, investments and a supportive policy environment are needed as follows in Bangladesh context.

- The government should develop a strategy plan and policy to provide incentives to farmers for using organic fertilizers. For instance, the government may consider providing a subsidy for organic fertilizers from partial cuts-off of chemical fertilizer subsidies.
- Simplify the approval procedures for the organic fertilizer registration process for welcoming the crowding in effect
- Promote soil testing to ensure that farmers understand the condition of their soils and apply fertilizers according to their specific nutrient requirements.
- Public institutes should conduct long-term research on TCA /ecosystem service.

- Introduce a Certification system Such as Participatory Guarantee Systems (PGS), a locally certification system for agroecological products to ensure product traceability integration with ICT & IoT. and consumers' trustworthiness.
- Develop national organic and agroecological standards to fulfill the recommendation of the national organic policy.
- Encourage Municipal Waste Management Systems as an alternative organic source material, which can be a mandatory holistic program a waste to manure production system. Public-private partnerships (PPP) may be encouraged in this case.
- Integration of AI/IOT digitalization with agroecological farming (Mobile apps, irrigation, LCC, AWD, etc.) to ensure farm productivity and profitability.
- Develop holistic and clear pluralistic extension and advisory services for unified and meaningful support by the service providers.

References

1. HLPE (2019): Agroecological and other innovative approaches for sustainable agriculture and food systems that enhance food security and nutrition. A report by the High-Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security, Rome.
2. BBS. (2023). Year Book of Agricultural Statistics. Bangladesh Bureau of Statistics, Ministry of Planning.
3. BBS. (2020). Year Book of Agricultural Statistics. Bangladesh Bureau of Statistics, Ministry of Planning.
4. MOA. (2024). Ministry of Agriculture, Bangladesh.
5. FAO. (2023). The state of food and agriculture; Food and Agriculture Organization of the United Nations; Rome 2023.
6. FAO. (2018). The 10 elements of agroecology: guiding the transition to sustainable food and agricultural systems.
7. OXFAM (2014). Scaling-Up Agroecological Approaches: What, Why and How?, https://www.fao.org/fileadmin/templates/agphome/scpi/Agroecology/Agroecology_Scaling-up_agroecology_what_why_and_how_-OxfamSol-FINAL.pdf.
8. GIST Impact Report. (2023). "Natural Farming Through a Wide-Angle Lens: True Cost Accounting Study of Community Managed Natural Farming in Andhra Pradesh, India." GIST Impact, Switzerland and India. https://futureoffood.org/wp-content/uploads/2023/07/apcnf-tca-study_2023.pdf (accessed on 16 October 2024)
9. Wortmann, C.S., Little, R.S., Shapiro, C.A., & Francis, C.A. (2017). Planning the Transition to Organic Crop Production. Nebraska Extension. <https://extensionpubs.unl.edu/publication/g2282/2017/html/view> (Accessed on 20 Nov 2024)



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