

**MAIN REPORT**

**TRANSFORMATION OF AGRICULTURE FOR  
SUSTAINABLE DEVELOPMENT AND  
POVERTY ALLEVIATION  
IN BANGLADESH:**

**Actionable Policies and Programmes**

**MINISTRY OF AGRICULTURE,  
GOVERNMENT OF BANGLADESH**

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## ***I. Introduction***

In the face of rapidly changing national, regional and global economic environment, Bangladesh agriculture is facing the challenge to reinvent itself to withstand competition and at the same time continue to provide food and employment opportunities for the vast majority of the population. To this end, the Government is in the process of articulating a ***new vision*** for the sector, realizing that the past and current visions with relatively heavy emphasis on production of food are no longer adequate. In this process, the Government is seeking ways and means to make agriculture more ***competitive*** through incentive compatible policies and measures with the view to ***transforming*** the sector for ***sustainable agricultural development, food security and poverty alleviation*** within the overall framework of the country's ***Poverty Reduction Strategy Paper (PRSP)***.

In view of the above, FAO, at the request of the Government and with financial support from UNDP and some contribution from the World Bank and DANIDA, has conducted an ***agricultural sector review***. The main objective of the review was to analyze the ***longer-term*** prospects of ***agricultural development*** and ***structural transformation*** within the context of ***macroeconomic*** setting, and taking into account the emerging trends towards market and trade ***liberalization, regional collaboration and globalization***.

The main results of the review, with primary focus on the crop sub-sector within the context of the PRSP and the evolving national strategy to meet the ***Millennium Development Goals (MDG)***, are presented in the ***Actionable Policy Brief (APB): Volume-1***. The document lays down the broad ***policy and strategic framework*** for sustainable development, increased farm income, enhanced competitiveness and increased commercialization of the agricultural sector with the view to maximizing its contribution to overall economic growth, food security and poverty alleviation.

Following the preparation of the APB, FAO was requested to prepare a plan to implement the APB, along with resource and budgetary implications and a programme with well defined project briefs. The preparation of the ***Action Plan to implement the APB: (Volume-2)*** was completed in December 2005 and was finalised in February 2006, taking into account the comments of the Government. This document presents the main actions required to implement the APB including detailed activities, the legal and financial implications involved and the need for external support and collaboration.

The preparation of the ***Action Plan*** was complimented by: (i) a review and analysis of ***existing policy papers*** covering most of the sub-sectors of agriculture (currently there are 18 policy documents); and (ii) an ***agricultural governance survey***, conducted in 36 villages of 6 thanas, with focus on the efficiency of the government in the delivery of inputs to the crop and smallholder dairy, poultry and pond fishery sub-sectors.

The report of the ***policy review and analysis*** is presented in ***Volume 3***, and the ***results of the survey*** along with ***recommendations*** to address the weaknesses in implementation of the policies and programmes are given in ***Volume-4***.

The present ***Main Report*** provides a synthesis of the above four reports and presents the programme areas requiring priority government attention for sustainable agriculture and rural development within the context of the PRSP and the national strategy to meet the Millennium Development Goals (MDGs).

## **II. The Agricultural Sector Review:**

### **II.1. Main Findings**

In spite of the existence of many problems and constraints to sustainable agricultural development in Bangladesh, a quiet **agricultural revolution process** has been taking place in the country. This process has evolved in response to emerging macro-economic policy and sector policy reforms. These policies included market and trade liberalization and substantial reduction in public sector intervention in agriculture. Driven by the farmers themselves and the private sector, agriculture is beginning to transform itself from a largely peasant based subsistence activity to a commercial entrepreneurial activity. The initiation of the transformation process was made feasible with the help of new technology, irrigation expansion and new opportunities to commercialization due to growth of the rural non-agriculture sector and improved rural infrastructure.

Notwithstanding the country's drive towards commercialization, it is essential to emphasize the following realities:

- Bangladesh is still dominated by the fact that while economic activity is being diversified in rural areas, a large **mass** of the **rural population** still live **below** the **poverty line**, heavily undernourished with inadequate access to safe and nutritious food for a healthy life; and
- Despite the rising urbanization, it is argued that for many years to come the **rural** economy, rather than the urban sector, will lead the way to national poverty reduction. Creating the **enabling conditions** for **rural development** is, therefore, an essential pre-requisite for the formulation and implementation of an effective strategy for increasing food security, reducing poverty and promoting overall economic growth.

Thus, while it is important to support the march towards transforming the sector from subsistence to a more commercial base, it is essential to simultaneously address the issues essential to pull the vast majority of the **rural poor** out of poverty in a sustained way and ensuring their food security including improved food safety standards. In recognition of these realities, the **PRSP** highlighted **accelerated growth in rural areas and development of agriculture and non-farm economic activities** as one of the priority areas for accelerating growth and bringing a pro-poor orientation in the economic growth process (PRSP, P 23).

The critical link between **agricultural growth and rural non-farm economic activities**, on the one hand, and rural household **welfare** and **poverty reduction** on the other, depends on the response of the non-farm rural sector to the stimulus provided by this growth. The response is influenced by the initial conditions prevailing in both the rural and overall economy and on, among others, rapid growth in agricultural production and hence in farmer incomes. Therefore, the most significant contribution that the agriculture sector could make is to **improve the income of the farmers**, to take them out of poverty. In order to achieve this, it would be necessary to sustain the recently achieved growth rate, increase value added in agriculture and reduce cost of production, marketing and distribution. The problem is that compared with many neighbouring countries (where input subsidies frequently exist), the farmers in Bangladesh are at a disadvantage in terms of lower productivity and higher cost of

production due to higher unit costs of such inputs as seed, fertilizer, water and labour. High input prices combined with lower output prices have resulted in a non-profit pursuit.

To sustain the agricultural *growth rates* of the recent past, continued *expansion of irrigated areas* must take place. In addition, yields on existing irrigated areas must be raised faster than before, both through more intensive and improved efficiency of inputs use. Such achievements call for concentrated efforts in improving agricultural research and extension. Given the backdrop of Bangladesh agriculture and its competitive strength, research efforts of the future should initially focus on improving land and labour productivity and water use efficiency.

As regards the drive towards *commercialization*, the agricultural sector is benefiting from a limited internal dynamism, led by the *private sector*, for achieving sustained growth and enhanced productivity gains for transforming the sector from subsistence to a more commercial base. What is needed now is good *governance* including an efficient public sector capable of *accelerating and nurturing the dynamism* for higher level of growth, speeding up the process of transformation, and enhancing the national capacity to absorb shocks and face global competition.

Furthermore, the *role of government* needs to keep pace with changing time and the economic transformation which is taking place in the country, while maintaining the overall public sector support to agriculture within the overall *national strategy* to address *poverty*. Thus, higher priority should be attached to focusing on activities that go beyond the traditional role of the Ministry of Agriculture such as infrastructure, power (electricity), small and medium scale manufacturing. These measures will in turn support increasing mechanization, agro-processing and agricultural education to maintain research and technology generation capacity. In recognition of this perception, the Government has already adopted certain policies and initiated institutional reforms. However, the process of transforming key public institutions and changing the role of Government is slow. The role of the public sector as complementary to the private sector needs to be further articulated. This process should be carried out within the context of an agricultural development vision towards a competitive, commercial and diversified agricultural sector inclusive of livestock, forestry and fisheries.

## **II.2. Recommendations:**

The *APB (volume-1)* provides policy and programme options to address the above issues and concerns. It places greater emphasis on policy support targeting factor productivity, investments and risks through: (a) rationalizing *public expenditure allocation*, increasing public investment in infrastructure and public good services and promoting private investment in agriculture; (b) inducing *shift in relative prices* of input and output to correct market distortion, rationalize the incentive structure for investment and mitigate negative impact on the environment; (c) putting in place appropriate *legal and regulatory framework*; and (d) introducing *institutional reform* and good *governance* making both public and private sector more transparent and accountable to people. APB contains a series of policy recommendations on seed, fertilizer, minor irrigation, mechanization, marketing and agribusiness, agricultural research and extension, designed to address the problems identified in the sector review for enhancing growth in agriculture.

The *Plan of Action* to implement the APB illustrates the main actions and resources needed to implement the APB. It clearly demonstrates that by and large the problems facing the crop sub-sector can be adequately addressed by the Ministry of Agriculture. However, it would need some support in strengthening its policy formulation and implementation capacity.

Capacity building of the Ministry should focus in on enhancing ability to provide good governance based on accurate information and knowledge and clear understanding of the impact of policies on the beneficiaries. This should also include enhancing capacity to handle data, conducting policy analysis and engaging in informed policy debates. In addition, there is also a need to prepare implementation plan to guide, oversee and monitor implementation of the policy recommendations to be carried out by different agencies. Furthermore, priority should be also placed on enhancing the capacity to master the administrative and legislative process to push through the changes, generate, store and analyse information to deal with emerging policy issues.

As regards agriculture development with maximum impact on reducing poverty and improving food security, the document highlighted a broad based *operational programme* with focus on the following areas, within the framework of the PRSP:

- Strengthened agricultural governance for efficient *policy implementation* and provision of public goods and services;
- Enhanced conservation and *sustainability* of the natural resource base, including water resource management, and preparedness for disaster management;
- Improved *bio-security*, including improved food safety standards and nutrition; and
- *Diversified production* opportunities and better technology for higher value added, processing and reduction of post-harvest losses for higher farm income.

To this end, a number of selected *specific projects* and *operational programmes* in the above areas have been formulated and are presented in the next section. Some of these projects will invariably go beyond the mandate of the Ministry of Agriculture, such as food, fisheries, forestry and livestock. These includes, in particular, power (energy), rural and marketing infrastructure, communication, as well as industrial development to support increasing mechanisation. Hence, the programme for agriculture development with maximum impact on poverty and food security needs to be supported by increased *inter-ministerial collaboration and coordination*.

### **III. Priority Areas for Programme Development**

Key priority areas, where specific projects and programmes requiring donor's technological and financial collaboration, include the following:

1. *Agriculture research and technology generation;*
2. *Rural non-farm and agribusiness development, including:*
  - *small-scale processing and reduction of post-harvest loss;*
  - *development of floriculture for higher rural income;*
3. *Agriculture governance and policy implementation and monitoring;*
4. *Minor irrigation and farm-level water management;*
5. *Small Farm mechanization;*

6. *Nutrition, food control and food safety management;*
7. *Soil testing and fertilizer management to improve soil fertility;*
8. *Improving farm productivity and livelihood through conservation agriculture; and*
9. *Livestock and fisheries development.*

## 1. *Agriculture Research and Technology Generation*

The *World Bank*, the institution with capacity to mobilize the necessary resources to adequately provide the needed support in this area, is engaged in formulating programmes and projects to support agricultural research and technology generation in Bangladesh. Hence, this report does not include a specific proposal in this regard.

However, what is urgently needed in reforming the research system is that Bangladesh draws lessons of experience from other countries in Asia, including China. For instance, since the 1980s, China has gradually implemented a series of “*science and technology*” policies. Reform has attempted to increase research productivity by shifting funding from institutional support to competitive grants, supporting mainly scientific research focusing on problems relevant to economic development, and encouraging applied research institutes to earn their funding by commercializing the technology they produce (Rozelle et. al. 1996).

Therefore, it is recommended that the Government organises a broad based national discussions on “*Research and Technology Policy for the future*” with active participation of national research institutions and experts. Successful research efforts required motivated researchers with dedication and commitment. Motivation and commitment comes when the institutions and the people involved feel they have a stake and are part and parcel of the process. It would important also to invite institutes and experts from neighbouring countries, and selected regional and international research organization.

## 2. *Rural Non-farm and Agribusiness Development*

Substantial increase in the local *demand for non-farm-produced goods and services*, stimulated by *growth in rural income*, constitutes a major factor for the rise of rural industries. This increase is explained by the observation (borne out by household consumption studies) that as income increases, the demand for these goods rises faster than that for food. It is also expected that the more equally distributed the benefits of growth in agricultural income is, the greater is the stimulus on local demand for rural non-farm goods and services.

But *local* demand alone may constrain sustained expansion of rural industries or prevent them from moving to a higher growth path. *Exporting to urban areas* (or to the outside world) offers additional avenue for rural growth. However, in order to facilitate such export, there is a need to improve rural infrastructure, human capital, institutions and a rural credit system that will finance operating capital for small business and particularly for those ready for rapid growth to serve larger markets.

In a market economy, when the above conditions are met, the *private sector* will lead rural industrialization as is happening in Bangladesh. Examination of past rural development around the major *urban and peri-urban areas* shows that it can be usefully characterised as a process of occupation of ‘techno-economic niches’.

Although policy-guided interventions can play an important role in inducing the changes that create the niches, the principal force spurring their occupation is the perceptions of advantage by the *private sector*. They remain the ultimate decision-takers. Therefore, for non-farm activities and rural industrialization it is recommended that the Government maintains its focus on providing the conditions necessary, and in particular promote rural credit system, that will finance operating capital for small business and particularly for those ready for rapid growth to serve larger markets.

The *Asian Development Bank* (ADB) is currently engaged in providing the Government with support in this field. It is recommended that this collaboration be strengthened and expanded by incorporating support from other international financial institutions, and by adapting the local financial institutions in collaboration with the relevant stakeholders from the private sector.

In addition, the Government, in collaboration with donors, may wish to promote *diversification* towards *high-value products* such as floriculture as well as facilitate small-scale processing and reduction of post-harvest losses, which is currently very high in Bangladesh. Draft *programme proposal* in these areas is presented in Annex 1.

### 3. *Agricultural Governance, Policy Implementation and Monitoring*

As emphasized in the PRSP, improved *governance* is an essential pre-requisite for a more effective growth and poverty reduction strategy in Bangladesh. The PRSP identifies the following as key *priorities* in the governance agenda (Section: 5F.3, page 149):

- Improving *implementation capacity*; and
- Promoting *local governance*.

To analyse this critical factor, *agricultural governance survey* was conducted in 36 villages of 6 thanas, one each randomly selected from the six administrative divisions of the country (Volume 4). The survey focused on delivery of inputs to the crop and smallholder diary, poultry and pond fishery sub-sectors. For the crop sub-sector, 50 farm households were randomly selected in each village according to proportions of different farm sizes, viz, marginal, small, medium and large from the list of farmers maintained by the local agriculture office. For the other categories, 20 for each category were selected from each survey thana.

The survey was designed to provide data for an in depth analysis of the *implementation* of the above Government policies to:

- i. Find out the processes and mechanisms of *procurement* and *delivery* of inputs for the farming community through various public policies and programs, and make an assessment as to how much of that is actually received by the intended beneficiaries at the set price and quality standard;
- ii. Identify the *bottlenecks* related to agriculture governance at the local level that relate to institutional deficiencies and to processes/procedures for implementation; and
- iii. Propose practical remedial *measures* to address the problems.

The results of the survey show that as regards the policies for crop production, the coverage and effectiveness of agricultural *extension* service have improved. However, it still operates

below the expected level. The highest level of contact was 38.4% during the *boro* season of 2005. This level does not compare favourably with the performance of counterparts in other south-east Asian countries. There is, however, significant improvement in the coverage of small farmers.

On the availability of *quality seed*, the BADC is able to supply only 5% of the requirement. The private sector is not developing fast enough. Meanwhile, seeds kept or produced by farmers on their farms do not meet their requirements. It seems that the NSP is not implementable in its present form; whereas with necessary support, farmers have shown dynamism and certain progress in producing quality seed. Policies and project proposals to strengthen the process of developing and distributing quality seed are presented in the APB (Volume 1), and the Action Plan (Volume 2), respectively.

There is stability in the *fertilizer* market and the supply situation during the just concluded season has been satisfactory. However, the price has been quite variable, and farmers in general pay for fertilizers higher prices than those approved by the Government. This is mainly due to compromising the criteria of selection of dealers under political pressure. Many appointed dealers do not have the 'godowns' at the designated thana headquarters and they operate from the district town. At the farmers' level, fertilizer is sold by another set of retailers who further keep a margin, thereby pushing the price levels above the government approved rates.

The *subsidy* policy has generally failed to reach the intended beneficiaries. A comparison of prices of the imported fertilizers targeted for subsidy, reveal that there has been no impact of the subsidy on prices. Similarly, in most of the cases, the benefits of subsidy on electricity charges for running irrigation equipment have not reached the beneficiaries farmers. In both cases, the wholesalers have collected the full benefit denying it to the intended beneficiaries.

*Smallholder dairy, poultry and pond fisheries* all suffer from similar maladies. There is hardly any extension coverage. Lack of good quality chicks and fingerlings, lack of veterinary services and medicines and lack of institutional credit, are widely observed.

Overall, the survey findings revealed considerable *gaps* between policy formulation and programme implementation. Large part of the challenge is associated with the following problems:

- Policy formulation without adequate focus on their implementability;
- Policy overlapping among different Ministerial domains without clearly defined implementation responsibility;
- Lack of monitoring of implementation and mechanism to redress implementation failures; and
- Institutional weakness and technical capability, particularly at local level of Governments.

*Institutional weaknesses* with respect to support service to the farmers are being dealt with by the World Bank in conjunction with their support for National Agricultural Technology Development Project. The project consists of three major components: (i) supporting agricultural research; (ii) supporting agricultural extension and (iii) development of value chains. The project is based on extensive stakeholder consultations at different levels, particularly at the bureaucratic and political levels. It also aims at improving several existing practices and procedures, e.g., changing some of the laws.

Notwithstanding the above, there is an urgent need for strengthening the national capacity for *policy formulation* with particular focus on *monitoring and implementation* at all spatial and hierarchical levels of Government. A clear example of this is governance in the seed sector. Survey results showed that the major governance issues do not lie at the field level. The issues are pending at the policy level and await suitable Government actions and largely relates to implementability of the National Seed Policy (NSP).

In order to address this situation a draft programme for Strengthening *Governance and Policy Implementation and Monitoring* is proposed and presented in Annex-1.

#### **4. Minor Irrigation and Farm-level Management of Water Resources**

In Bangladesh, the *irrigation* command area increased from nearly 1.6 million hectares in 1979 to about 4.4 million hectares in 2001; an annual rate of increase of over 4%. This is about 3 times the average for the Asia and Pacific region. This development has accelerated the transformation of Bangladesh agriculture from rain fed and monsoon-dependent to an irrigated and diversified sector. It further helped the country to achieve near self-sufficiency in cereals. More importantly, it helped shift the cultivation of paddy into the *Boro* season where risks from natural calamities such as floods are significantly reduced and enabled the farmer to diversify towards high value crops. The “*Boro revolution*” helped stabilize the supply of grains and, along with diversification, contributed to higher farm income. This in turn resulted in significant reduction in poverty, hunger and food insecurity.

The current level of irrigation development is in the order of 50 percent. Minor irrigation accounts for over 90% of the total irrigation command area. Accelerated and sustained increase in the irrigation command area is still feasible in the short and medium-terms. This is needed to increase *productivity* and farm *incomes*. The yields of paddy and other crops are about two-third of their potential levels. Increase in water use efficiency can significantly contribute to realization of the full yield potential of HYVs and other crops.

There are, however, a number of emerging *constraints* to the expansion of the irrigation base and full realization of the potential benefits from irrigation development. These *constraints* include:

- ***Low water use efficiency and productivity:*** the irrigation water use efficiency in STW and DTW command areas is below 60%. The water productivity is equally low at about 0.3 kg grain per cubic meter of water;
- ***High irrigation cost:*** the cost of pump irrigation has been estimated at about US\$ 51 per hectare per season at present. It is projected to further increase with increasing cost of operation and maintenance including the cost of diesel, since a vast majority of pumps (90%) is operated by diesel. Diesel supply and high price problems do occur during peak irrigation season. Adequate supply of diesel at reasonable prices is essential to support irrigated agriculture; and
- ***Lowering of the ground water table during the months of March, April and May (dry season).*** This is also the “critical period” for both rice and wheat when they are in flowering/seed formation stage. A moderate to severe water stress can significantly reduce crop yields causing immense economic hardship to farmers.

The above constraints are closely *interrelated*. Increase in water use efficiency and productivity, will definitely contribute to lowering irrigation cost per hectare as well as reducing the pressure on lowering groundwater table. Technology to lift water from increasingly lower water table will add to cost, will continue lowering the water table even further, unless total availability of water is increased. In this context, availability and use of *surface water*, in which the country is very rich, is highly recommended. One estimate indicates that the amount of water that falls and flows through the country will turn the entire country into a 10m deep lake every year, if all the water is impounded. Annual renewable per capita water is 8000 m<sup>3</sup>/year which is one of the highest in the world. But *water distribution over time* is so uneven. About 80% of this water is received during the months of July, August, September and October; and the country does not have favourable topography for storing the water during the rainy season for subsequent use in the dry season.

Increased use of surface water both for irrigation and drinking purposes has been further necessitated by the evidence of arsenic in *ground water* in amounts well beyond permissible limits for drinking purposes. It has, therefore, become imperative that surface water be increasingly used either exclusively or in conjunction with ground water wherever possible. Surface water is generally utilized by large irrigation projects of BWDB. These are mostly lift-cum-gravity system (G-K project) or double lift projects (Barishal irrigation project, Chandpur irrigation project etc). BADC also supplied thousands of low lift pumps (LLPs) to use surface water for irrigation. In addition, 50 floating pumps of 25 and 50 cusec capacity are also being operated by BADC to deliver water to canals that dry up in winter.

However, under the current irrigation systems, contribution and *management of surface water* is inadequate. There is an urgent need to introduce measures to increase the use of surface water for irrigation and other uses. There is also a need to develop and invest in methods for holding wet season water in view of the long history of inefficiency of surface water management, and considering the strategic role of surface water in Bangladesh agriculture.

Expanded use and availability of surface water will reduce the pressure on STW and will also reduce the cost of water. Furthermore, subsequent measures should move in tandem with the development of surface water use in a comprehensive and consistent manner. Hence what is proposed is *Minor irrigation and farm-level water management programme*. The programme will consist of three components:

*Component 1: Water use efficiency and productivity;*

*Component 2: Surface water management;*

*Component 3: If the above two measures are not adequate to prevent lowering of the ground level then introduction/replacement of the current centrifugal pumps in STWs with force mode pumps in consideration of the lowering of ground water table.*

A detailed programme is presented in Annex-1.

## **5. Improving Farm Productivity and Livelihoods of Resource-poor Farmers through Mechanization and “Conservation Agriculture”**

It is widely recognized that *low productivity* is the primary underlying constraint not only to agricultural development and allied activities, but also to the rural non-farm sector in Bangladesh. As the number of landless and sub-marginal farm households has proliferated, the area available for cultivation has shrunk. The challenge is to facilitate the shift to more productive farm and non-farm activities that will require less land, and will focus on the output for which domestic, and possibly export, demand is known to be expanding.

During the past decade, agricultural *mechanization*, particularly the use of single axle tractors and power tillers, has been advancing at an impressive pace in Bangladesh. This development under conventional farming systems had the risk of soil degradation that could be further aggravated in view of the climate change in the country. This danger, however, could be offset by introducing specialized equipment and mechanization solutions along with the introduction of *Conservation Agriculture* approaches.

Conservation agriculture is a vital option to face a double challenge of increasing productivity and preserving the natural resource base, simultaneously. While conventional agriculture, that often involves intensive tillage, has been claimed to cause soil degradation, particularly when practiced in areas of marginal productivity, conservation agriculture includes a set of integrated soil management practices that aim to minimize the negative effects of intensive farming. Practices such as *direct sowing*, *zero-tillage* or *minimum tillage*, and the establishment of *cover crops* help to protect organic matter, soil moisture and soil fertility.

The concepts of conservation agriculture have been introduced in Bangladesh by the “Rice Wheat Consortium” through CIMMYT and by FAO through the project TCP/BGD/2902, particularly for rice-wheat growing systems. With the country supplying farmers, as far as feasible, with the required equipment and technology for conservation agriculture, this farming system approach proved to work and to achieve its envisaged results on these farms.

To *expand* the *application* of *conservation agriculture* in the country, a programme aims to enhance the capacity of the rural population to ensure *food security* and *reduce poverty* through the introduction of this technology is proposed. It is expected that the programme will achieve the following objectives: (1) Most potential areas, blocks and collaborating farmers group willing to adopt conservation agricultural practices identified; (2) Capacity of farmer’s groups built and enhanced to face the challenges of open market economy in the context of conservation agriculture; (3) Appropriate location specific conservation technologies/innovations for agricultural and natural resources management generated, improved and promoted; (4) Appropriate stakeholder information, communication and learning systems developed and enhanced; and (5) Appropriate policy and institutional options for conservation agriculture developed and adopted.

A draft programme document is presented in Annex-1.

## **6. Effective System for Nutrition, Food control and Food Safety Management**

As Bangladesh has achieved self-sufficiency in basic foodstuffs, the Government has begun to place increased emphasis on the *safety* and *quality of food* as well as improving the *nutritional* status of the people. As regards food safety and quality, food contamination and food adulteration are commonly reported in Bangladesh. These problems are due to poor hygiene practices by food producers, handlers and processors. Thus, there is a need to address the inadequacy of the present system of official food control to clearly establish comprehensive and appropriate food safety requirements and ensure that food businesses comply with these requirements.

This situation has an important *social and economic cost*. National statistics on food borne illness are lacking but according to Institute of Public Health, Vibrio cholera infections are quite common as are infections by Salmonella and various strains of enterotoxin producing E. coli. In 1990, typhoid fever accounted for 19.8% of the recorded deaths in Bangladesh and (other) diarrhoeal diseases for 6.4%. These illnesses were strongly linked to the consumption of contaminated food and water.

The economic costs are linked to the direct and indirect costs of the high-rate of foodborne disease and to lost trading opportunities on both domestic and international markets. The *legal framework* for performing *food control* in Bangladesh is outdated and is not a satisfactory basis for food safety control and management in Bangladesh. Food safety activities are fragmented and do not cover the whole food production and distribution chain. There is inadequate management and coordination of these activities. And, there are both overlaps and gaps among various ministries and their subordinate bodies in their responsibilities for controlling safety and quality criteria in the food chain.

The proposed programme aims to reduce the risks involved in food safety and quality for consumers in Bangladesh by improving the system of *food control* and *food safety management* and by creating increased *consumer awareness* of food safety and quality. More specifically, the programme will: (1) Develop a comprehensive system for *food control management* covering the whole food production chain “from farm to fork”; (2) Update the *legislative framework* for the control and management of food safety and quality based on internationally accepted principles and recommendations and adjusted to meet the particular situation and special needs in Bangladesh; (3) Strengthen *food inspection* services through risk-based inspection planning, improvement of inspection procedures and training of food inspectors; (4) Improve *hygienic practices* among food handlers in small and medium sized food businesses in a sustainable way through strengthened technical support mechanisms to industry; (5) Heighten *consumer awareness* of food safety and quality issues and to increase consumer participation in the national system of food safety management and control; (6) Develop a system for providing independent *scientific advice* and risk assessment to food legislator and food control authorities; (7) Strengthen the national capacity for *food analysis* and improve the efficiency of the food laboratory system, including capacity building among personnel; and (8) Establish and operationalise a national system of *food import control* and *certification*.

A draft programme document is presented in Annex-1.

As regards *nutrition*, it is still well below the desirable level; and increased effort to improve the situation is urgently needed. The Government has taken several initiatives; however, the overall awareness regarding food intake and the relationship with nutritional status is inadequate. To address this issue, a programme to improve nutritional status of the population

including improved farming practices, eating habits and natural resource utilization is proposed.

A draft programme document is presented in Annex-1.

#### **7. Assistance for Improving Soil Fertility through Soil Testing and Fertilizer Management to Enhance Food Security of Resource-poor Farmers**

In Bangladesh, increased use of *fertilizers* has led to increased production by about 50 percent. However, the recently cumulative effects of many soil-related constraints depletion of soil organic matter, imbalanced use of fertilizers, nutrient mining, degradation of soil physical and chemical properties, scanty use of bio and organic fertilizers and poor management practices have slowed the growth in yield of major crops. In particular, the proportion of different nutrients used in agriculture without *soil testing* in recent years is highly deleterious to soil productivity.

Therefore, the emerging challenges to *plant nutrition management* are twofold: maintaining/increasing *sustainable crop productivity* to meet the growing demands for food and raw materials; and enhancing the *quality of land* and *water* resources. Addressing these challenges requires various ways of improving soil fertility to increase production of crops, livestock, fish and other aquatic species, forest species and agriculturally important microbes. To this end, a proposed *programme* to provide *soil testing* services at farmers' level for making location specific fertilizer recommendations for major crops/cropping patterns to maximize production and improve soil fertility, has been developed. It aims to test the ways of bringing soil testing within the reach of farmers on a low-cost sustainable basis to enable them to make timely decisions on fertilizers management in their fields. It also aims to improve awareness of the farmers and participating organizations with respect to the need for balanced fertility management including various fertilization practices for different crops/cropping patterns.

The project's main objective are to improve farmers knowledge about fertilizer management; and to increase crop production by about 30-50% through judicious use of chemical fertilizers and organic manures based on soil test results. To this end, the project will include, *inter alia*, *participatory rapid rural appraisal* (PRRA) for selecting sites/villages, arranging *training* to project staff and farmers, conducting *field experiments* and on-farm *trials* by research organizations for yield maximization following IPNS, conducting *demonstrations*/ block farming using soil test results for increased production and finally preparation of *Village Soil Manual* as production guideline.

A draft programme document is presented in Annex-1.

#### **8. Livestock and Fisheries Development**

FAO in close collaboration with the Government is in the process of finalizing the livestock development policy. Upon finalization of the work, a programme for livestock sector development will be prepared.

As regards fisheries, FAO in collaboration with the Government is planning to revisit the fisheries sector policy vis-à-vis the recent and emerging changes affecting the sector. Once

the fisheries sector policy document is revised/updated, a programme for the development of the sector will be prepared.