

Focus

Financing education Setting the priorities

By Zahed Hossain and Hillary Thornton

It is clear that the government's previous policy of low cost and low quality will simply not suffice for the next generation. Bangladesh needs a dynamic and sustainable education financing strategy to meet the challenges of poverty reduction in an emerging outward oriented market economy. Through an increase in education's share of GDP to four per cent, and by judicious and focussed use of private finding, these challenges may be met.

BANGLADESH HAS COME a long way since independence nearly 30 years ago. Per capita income has grown from 100 to 350 US dollars and looks set to improve further over the next two decades. Bangladesh has also recorded strong government commitment to education demonstrated by significant increases in education spending at the beginning of the 1990s with the share of education in the total budget reaching a high of 16 per cent in 1996. By 1997 about 20 million children of primary school age were enrolled in school, with Bangladesh having one of the largest centralised systems of primary education in the world. The initial flurry of enthusiasm has waned somewhat and budget shares have fallen not dramatically but they have declined gradually and now appear to be levelling off with the share of education in this year's budget set at just under 15 per cent and education as a share of GDP standing at just over two per cent. This is significantly lower than other countries in South Asia where the average stands at three per cent. The government certainly demonstrated its commitment to education at the start of the 1990s but if it hopes to achieve quality education at all levels it needs to look once again at the budget and set new priorities for the next decade.

Government spending

The education system is currently funded both privately and from the Government. In all sectors the highest item of recurrent expenditure is teacher salaries and at primary level this stands at an astounding

If government funding were to be concentrated on basic education then ways of sharing the costs of secondary and higher education would need to be found. There is certainly scope for sharing costs of higher education with the beneficiaries and for rationalising the roles of public and private universities to relieve the public sector of paying for the education of thousands of students.

ing 97 per cent of the total budget allocation. Clearly this leaves little over for spending on books, resources, assessment and training, all of which are vital for quality improvement. In absolute terms the highest per student at primary level is only 13 US dollars, one of the lowest in the world. At secondary level most educational institutions are privately managed, with 50-70 per cent of the costs financed privately. However secondary schools too depend heavily on the government for finance, which foots salary bills as well as the costs of construction and maintenance and stipends for female students. In higher education, ironically, government provides about 95 per cent of total public university costs even though most students are from relatively more affluent backgrounds. Tuition fees and hostel charges have remained constant in nominal terms for over two decades resulting in students in higher education being heavily subsidised by the state. The government is pressing ahead with plans to set up and finance 12 new Science and Technology Universities, which will result in spreading resources even more thinly in higher education. With little money left over for research and development quality will be eroded still further.

Private funding

As in all countries there are hidden costs to even 'free' education. At primary level in Bangladesh, tuition and textbooks are free but costs of uniform, reference books and writing materials are met by the parents. An increasing number of parents, concerned about quality of primary education, are engaging private tutors for their children. Private expenditure escalates at secondary level where most of the schools are privately run and there has been a phenomenal growth in private tuition in recent years much of it provided by the schoolteachers themselves. There is little incentive for teachers to expend effort in high quality classroom teaching when they can supplement their income by private tutoring. Worried about how their children will perform in public exams, parents feel they have no option but to engage the ser-

vices of private tutors. Thus, a vicious circle has been created with the teachers set to gain and the parents set to lose. However, the real losers are those children whose parents cannot afford private tuition as their education is limited to the diet meted out in the classroom. It is unlikely in the current climate that this experience alone will be sufficient to let them pass SSC and HSC, as the teachers expect children to have private tutors and adjusts their teaching accordingly.

Distribution of funding

At present public funds are not used efficiently or distributed equitably. They tend to be allocated on historical precedent or influence, resulting in distortions in per student expenditure. This unduly favours students in urban areas and acts against underprivileged students. Female Stipend Programs and Food for Education have done much to open up opportunities for disadvantaged groups. The new Primary School Stipend Programme, if targeted well, will also further equity goals and is a welcome addition to public expenditure on education.

Which way for the future?

Education in the widest sense of the word has been instrumental in reducing the population growth rate and its success should result in five million fewer primary school-aged children by 2020. With sufficient schools, teachers and resources in place, the good news is that Bangladesh can probably achieve Universal Primary Education and needed quality improvements without increasing the proportion of GDP devoted to education. What it will not be able to achieve at this low level of investment is expansion and quality improvement in the middle and higher levels of the education system.

There is a strong case for continuing to use public funds to support primary education. Evidence exists that the earning capacity of those who have completed even basic levels of education improves; with the rate of return of a primary school completer being on average 14.3 per cent higher than those who have no schooling. The rate is even better for those who complete junior secondary, thus investing in junior secondary as well as primary education should have a very positive effect on earnings in Bangladesh. The government is considering extending basic education to incorporate lower secondary so that students have eight years of free schooling rather than five years. This would seem to be a sound investment but it would have financial implications. There would be no school fees at lower secondary level, government would have to foot the whole teacher salary bill and provide free textbooks. New classrooms would need to be built to accommodate the expected increase in numbers of students. Since quality improvement must go hand in hand with expansion, the pupil/teacher ratio would need to be reduced and measures set in hand to improve the educational entitlement of all students. Teachers would need to be given appropriate training and incentives to redirect their efforts from private tutoring to teaching in the classroom. This could be achieved by increasing the share of GDP spent on education to four per cent by 2008.

If government funding were to be concentrated on basic education then ways of sharing the costs of secondary and higher education would need to be found. There is certainly scope for sharing costs of higher education with the beneficiaries and for rationalising the roles of public and private universities to relieve the public sector of paying for the education of thousands of students. Financial assistance could still be given to poor students entering higher education but the majority of students could contribute towards costs through paying for both tuition and other costs incurred for University education. In addition, employers could be encouraged to contribute towards the costs of Technical and Vocational training and greater opportunities for private involvement in education could be encouraged. This would reduce the burden on the public sector and release funds to spend on priorities such as scholarships for disadvantaged students; research; and graduate and teacher training in critical fields such as science and mathematics.

It is clear that the government's previous policy of low cost and low quality will simply not suffice for the next generation. Bangladesh needs a dynamic and sustainable education financing strategy to meet the challenges of poverty reduction in an emerging outward oriented market economy. Through an increase in education's share of GDP to four per cent, and by judicious and focussed use of private finding, these challenges may be met.

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Prime needs for primary education

By Dr Syed Saad Andaleeb

SIGNIFICANT COMMITMENTS HAVE been made to the primary education sector in Bangladesh with the Nationalisation Act of Primary Education of 1973, the Compulsory Primary Education Act of 1990, and the creation of the Primary and Mass Education Division (PMED) in 1992. The delivery of primary education in Bangladesh, however, continues to face many challenges. Substantial and sustained effort is required in a number of areas including upgrading the curriculum, enhancing the quality of textbooks and teaching materials, establishing teacher quality benchmarks and ensuring a quality assurance programme, reducing teacher absenteeism and getting them to become more involved with the schooling of children, improving children's access to education, increasing their attendance and retention rates, and building additional school infrastructure among other priorities. Such an undertaking requires a strategic orientation, especially when an elaborate network of people, facilities, and resources has to be harnessed and integrated. To ensure overall success of the primary education sector, however, a management system must be in place that clarifies the mission of the programme, identifies the priorities, defines measurable goals, co-ordinates the resources, implements the plan, and monitors the activities to take corrective action when needed.

A complex system such as the primary education system in Bangladesh has many complementary and interrelated components, not all of which operate efficiently or in unison. In some instances, the components do not work well together, disabling the system and hindering efficacy. When a particular component fails to perform, the effectiveness of the overall system can be compromised.

One critical component of the primary education system in Bangladesh is its field personnel at the thana level, i.e. the Thana Education Officers (TEO) and the Assistant Thana Education Officers (ATEO). In their strategic position within the delivery chain, linking policy makers and the intended beneficiaries, the field personnel are responsible for two very important managerial roles: supervision of the primary schools and providing feedback on their performance. Both roles are vital to primary education policy formulation and its delivery in Bangladesh. Effective supervision should ensure whether the schools are meeting their performance objectives while systematic reporting should help decision-makers determine how, where, when, and how much of the available resources ought to be allocated within the primary education system to achieve desired goals. Unfortunately, the field personnel are often unable to perform either of these tasks because they are often not well supported. The ability of PMED to effectively manage the delivery of primary education can thus be frustrated and the substantial resources committed to this sector poorly utilised. This article highlights several aspects of the support system that might explain system-wide failures elsewhere such as poor retention of students and the failure of teachers to educate the nation's young.

Supervision load

The supervision load for both TEOs and ATEOs is extremely high. In our study we found that TEOs had, on average, 112 schools while ATEOs had 31 schools to supervise. The high values of the standard deviations indicate that many TEOs and ATEOs have a far greater number of schools to supervise than the average. Why policy makers have not addressed this issue practicably is intriguing. From the perspectives of the TEOs and ATEOs the supervision load is unrealistic, unreasonable, and, in fact, overwhelming. Ways must be found to balance the supervision load so that this critical managerial function is better able to serve the needs of PMED.

Transportation constraints

Transportation is also a major hindrance to supervision. The key problems of transportation include non-availability of appropriate transportation modes, high costs of transportation, inadequate transportation allowances allotted by PMED, and poor roads. When transportation facilities are provided inadequate compensation for petrol and repairs from PMED continue to hinder supervision. ATEOs suffer most because they are not provided any personal modes of transportation (e.g. motorbikes). Moreover, the public forms of transportation generally used are often in disrepair and not well maintained, posing serious risks. At times they can be life threatening. The need to walk substantial distances when the school locations are inaccessible by other forms of transportation is also a hindrance to supervision.

What is clear is that decisions pertaining to transportation of the field staff impose severe burdens on the limited time available to the field agents for supervision. Consequently, poor supervision makes the system lax and unresponsive to the goals of PMED. Transportation policy clearly requires a thorough re-examination to improve the efficacy of field supervision.

Office facilities and support

The field offices must perform efficiently to help PMED achieve its objectives. One major task at this level is that of field reporting. This task also needs a major overhauling if PMED is to make decisions based on authentic data. For example, on average, TEOs prepare seven regular reports for PMED alone. Irregular reports and reports prepared for outside agencies boost these numbers sharply. To facilitate field reporting, the offices of the TEOs and ATEOs must also be properly equipped. Otherwise, they can be easily frustrated. For example, at a minimum, it is important that calculators, duplicating machines, typewriters, and office supplies are provided so that the field offices can function smoothly. Unfortunately, provision of even these basic tools is often neglected, leading to major problems at the field offices. It also raises serious questions about the quality and reliability of the data, as well as the field reports that are sent back to PMED and the decisions that are based on them.

Among the five most-needed items for functioning effectively in the field offices, TEOs indicated the need for duplicating machines, typewriters, stationery, calculators, and office furniture. In more than 25 per cent of the offices, the available machines were out of order. This explains why the TEOs and ATEOs spend many hours in their reporting activity; a significant part of this time is wasted in hand-drawing the reporting forms. With functioning duplicating machines or standardised reporting forms, a great deal of time could be freed up for the field personnel to perform other important tasks.

Similar problems were identified with regard to typewriters; 30 per cent of the available machines were in disrepair. Assuming that the same field offices have both duplicating machines and typewriters in disrepair, about 30 per cent of the field offices should be performing less than optimally in their reporting and communication function. However, if the assumption is relaxed (i.e. some offices have one or the other equipment in an inoperable state), the percentage of field offices that are likely to be operating sub-optimally increases dramatically. Non-functioning equipment can quickly render the field offices inefficient and its impact should also be felt indirectly in the overall delivery of primary education (e.g. in hastily prepared and unreliable reports that lead to poor decisions and misallocation of resources).

Lack of office supplies also continues to hamper field operations while calculators used for computations in their reporting tasks were available to only 20 per cent of the TEOs and only 3.5 per cent of the ATEOs. Perhaps these two observations need to be restated and underscored because anyone who understands data processing knows how quickly errors can be magnified if large-scale computations are performed on one's finger tips. One wonders, therefore, whether policy decisions for primary education or, for that matter, any other government office that delivers services to the people of Bangladesh are based on sane data. Rather it seems that decisions are made perfunctorily at best with the knowledge that accountability is something the system will not demand. If that is the case, the role of the external agents who fund various primary education projects must be questioned because they seem to demand far too little accountability from the implementers.

The office furniture in the field offices is also quite rudimentary; consequently, the job environment is not motivating. These findings suggest that the office environment and working conditions of the TEOs and ATEOs have significant room for improvement and must be strengthened. Left ignored, it will hinder effective task performance that must surely be taking its toll on the delivery of primary education.

What is to be done?

To address the supervision challenges, it is important to consider several alternatives. Foremost among these is the need to increase the number of field supervisors (especially ATEOs), given the sheer number of schools that need to be supervised. Budget enhancements are clearly imperative in this regard and PMED should consider employing more ATEOs to ensure that greater numbers of schools are supervised and that supervision efforts are better directed at specific schools that fail to demonstrate improvements in key performance areas such as student enrolment, learning, and retention, teacher absenteeism, and basic overall performance. If budget constraints are severe, recruitment efforts may be conducted in phases. ATEOs may thus be recruited for those thanas where the concentration of primary schools is the highest or where the problems of absenteeism and student retention are the worst. An alternative is to strengthen community supervision of area schools. The role of PTAs could be examined for this purpose and financial and related incentives devised to engage them more fully in the supervision and reporting efforts. The matter of transportation allowances or the provision of transport facilities for the field personnel should also receive immediate attention.

The enabling function of the office environment leaves much to be desired. For example, by providing personal computers to the field offices and by networking these offices into a system of efficient data flows, the thana offices could be made much more responsive and effective. While this measure has cost implications, the long-term returns in terms of building social capital may far outweigh the costs. PMED is urged to investigate this possibility. It must at least attend to minimal office support by acquiring, installing, or upgrading the needed equipment and related items such as stationery, furniture, and calculators. Budgets for equipment repairs should also be reviewed to allow the field offices to function effectively. When these basic operational needs are ensured, the field staff can devote quality time to more important tasks. Otherwise, the field offices will continue to remain disabled and poorly administered. The delivery of primary education, as a consequence, will be costly and ineffective. An attempt to estimate the opportunity costs of not strengthening supervision and reporting functions that support the decision-making activities of policy makers is strongly recommended.

Many other serious problems plague the primary schools, and indeed, the entire primary education system in Bangladesh. It is imperative, therefore, that better management systems are devised so that the primary schools are better supervised and that good data about school performance is transmitted back to policy makers to strengthen their decision-making role. This study reveals systemic problems in both supervision and the office support function that ultimately affects data quality and field reporting. Consequently, the data that reaches decision-makers on school performance is not likely to be adequate, regular, or authentic. And without good data, any effort at upgrading the quality of education for the nation's aspiring young will surely be frustrated.

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Agriculture in the coastal area More planning for more production

By Dr Amzad Hossain

AGRICULTURE contributed 29.8 per cent to the nation's GDP, 38 per cent to export earnings and provided employment to 60 per cent of the population in 1996-97. Its annual GDP growth rate was 5.7 per cent. Coastal belt of Bangladesh is about 710 kilometres, extending from Teknaf to Satkhira in 43 upazilas under 13 districts. The belt area is predominantly a deltaic plain with sediments carried by major rivers from the Himalayas and the Khasia-Jaintia Hills. The erosion and accretion of new landmass at coastal areas are the constant processes generated by river flow, tidal surges etc.

Agricultural productivity in the coastal belt is usually low due to intrusion of saline waters and recurring natural calamities like cyclones and salinity problems as well as natural calamities like cyclones and storm surges from the Bay of Bengal. Small dykes or embankments have been constructed to cope with these problems. Polders were constructed during the 1960s and the early-1970s. The embankments have worn out with time and the 1991 cyclone left these in tatters, causing intrusion of saline water into arable lands yet again.

The government with assistance of IDA, the Dutch government and other development partners initiated a comprehensive strategy for coastal protection system, and long-term economic and social development. A policy note Integrated Coastal Zone Management (ICZM) was prepared.

The concept of ICZM has emerged as a response to the difficulty of managing coastal natural resource or advancing one economic sector in the absence of a comprehensive and integrated framework for policy planning and management. ICZM offers a means of balancing the competing demands of different users of the same resources and of managing the resources to optimise the benefits. This incorporates modern principles of planning and resources manage-

ment, intensive information bases and interdisciplinary processes. It is an effective general framework for dealing with conflicts arising from interactions of various uses of coastal areas. The strategic objectives of the ICZM Plan are to alleviate rural poverty and improve rural livelihoods by reducing vulnerability to natural hazards, supporting responsible and sustainable resource use, developing unrealised resource potential, adapting to climate change and mitigating against environmental/resource degradation.

All development interventions within coastal zone will be carried out under the ICZM umbrella. The ICZM comprises a number of sub-programmes of which at least three have been identified. These are coastal polders construction; safe havens; and disaster management. Development of ICZM Plan will involve extensive consultations with local stakeholders including local government, civil society, NGOs and the private sector in coastal zone as well as concerned central government agencies. "It aims at co-ordinated development and resource management with broad based, multi-sectoral and long-term development.

Present situation

Land use. Important factors affecting land use for crops, cropping pattern and crop production are flooding, physiography, soil salinity, drainage congestion and irrigation facilities. Agricultural land in the coastal area is limited to wet season cropping because of high dry season soil salinity leading to low cropping intensity. The land topography, as classified by MPO into five categories, has been distributed in the coastal area as: Fo (highland) 11 763 ha; F1 (medium highland) 298 575 ha; F2 (medium lowland) 37 255 ha; F3 (lowland) 906 ha; and F4 (very lowland) very small area. F1 dominates the coastal area, followed by Fo, F2 and F3. Other factors influencing crop production are agro-ecological regions, which are calcareous alluvium,

non-calcareous alluvium, calcareous grey floodplains, non-calcareous grey floodplain, calcareous dark grey floodplain, non-calcareous dark grey floodplain, acid sulphate soils and peat in the coastal area.

Cropping practices. The agricultural year is divided into two principal seasons, the *kharif* season corresponding to summer, pre-monsoon and monsoon (March-October) and the *rabi* season to dry winter (November-February). Rain-fed agriculture is dominant rather than irrigated cropping.

Crop damages. Most important factors responsible for crop damages are flood, storm surge, hail-storm, salinity, drought, pests and diseases. In the 1991 cyclone crop worth Tk 2,760.40 million was damaged.

Constraints. The agricultural development in the coastal area is constrained by various physical and social factors. Big land ownership and unfavourable tenurial system, and dominance of absentee farmers discourage adoption of modern technologies. Socio-economic constraints like lack of institutional credit, low price of agricultural produces, etc also work as major constraints. Difficult communication and remote marketing facilities also retard agricultural development in the region.

Development strategies

Some strategic measures can be adopted to enhance growth and ensure protection of major crops. Embankment with sluice gates need repair to arrest saline water intrusion in spring and may also improve the quality of ground water. In monsoon, cultivated area will be protected from inundation by tides. The regulators will be used for intake of water and preserve sweet water for irrigation. Compartmentalisation in the polder may be made for controlling floodwater.

With proper irrigation management: (i) increase of irrigated area; (ii) increase of cropping intensity; (iii) proper utilisation of HYV seeds, fertilisers, pesticides; and (iv) adoption of appropriate

cropping pattern are possible for increased production.

Rainfall is a major source of freshwater in the coastal area, and river water is a potential source in about one-half of the area. These rainfall and river water can be stored in interior canals for future use by lifting to crops. Except some polders in Chittagong and Cox's Bazar, sweet water is not available elsewhere for irrigation. Rivulets may be converted to irrigation sources by making dams. Ditches and small levees can be constructed in the fields to conserve and distribute. In most areas STW is not used as the nearest aquifer is saline and DTW is not possible as it would be too expensive to develop the sweet water aquifer. Farmers often use the water of lower salinity to irrigate their fields during the summer months building small dykes to block all except very large canals. Some canals may be re-excavated to carry water from the peripheral rivers and LLPs can be installed to irrigate the fields.

Systematic water management, by local water user groups/associations, can contribute to higher agricultural production by improving the flow and utilisation of water. Co-ordination with local government in development of water management and irrigation facilities is one feature of development programme. BWDB be responsible for construction, and in some cases operation, of flushing or irrigation sluices, distribution ditches, and water control devices on the embankment. Financing, construction, and operation of interior works for water distribution and drainage would be the responsibility of local government and farmer groups. Water association should mobilise the operation fund. A sound programme needs to develop irrigation water management.

Local flooding due to drainage congestion occurs in some areas and results in reduced crop yields. Removal of drainage in pre- and post-monsoon within

the frame-work of water management system with excavation of link canals, re-excavation of existing canals and construction of minor structures and new canals to existing drainage system should be made.

Land is a scarce natural resource in the coastal area. Land use for crops and cropping pattern is largely determined by hydrologic, physiographic and soil conditions. More important factors for land resource utilisation are flood depth and duration; agro-ecology including rainfall pattern and intensity, and temperature; soil moisture storage capacity; capillary rise of ground water; soil texture, permeability; salinity, toxicity and dry season drainage. In order to improve land productivity, flood management and expansion of irrigation the land study for appropriate planning and use are necessary.

Crop production in saline soils is constrained by salt accumulation in the crop root zone. Salinity of more than 3 ds/m concentration seriously affects the crop at germination, early vegetative stage and reproductive stage. Therefore introducing salt tolerant HYV crop varieties, application of fertilisers and insecticides with proper dose in time, irrigation during dry period, appropriate cropping pattern, crop management practices would be the ways to maximise benefit. Extra care should be taken in furrow irrigated fields to arrest salt accumulation on the ridges. During land preparation all care should be taken for uniform levelling. The crops suffer from water stress even though enough water is present in the root zone. This is because of higher osmotic potential created. This may be rectified by farmers to increase production and to reduce negative environmental effect of pesticides. After receiving training the DAE's Block Supervisors should train the farmers directly in their own fields with 1 ha area demonstrations on IPM technology. Programmes may include women's training to enable them participate more effectively in agriculture. Training courses be

longer fallow of the land during *rabi* season will arrest development of severe salinity. Seedlings are sensitive to salts and require little fertilisation. So early fertiliser applications should be lower than normal and the main application be made at a later date. Therefore, split fertilisation practices, soil analysis for EC extract and other elements prior to planting should be advised.

Soil salinity affects the cropping patterns. Frequent irrigation tends to maintain a downward flux of water keeping the root zone relatively salt free. During the *kharif* season, farmers should switch over to more productive cropping patterns and consequently increase their area of HYV T aman at the expense of Local T aman. The area of *rabi* crops (wheat, oilseeds, pulses and winter vegetables) is also expected to increase. It is implicit that extension services and supplies of inputs (fertilisers, pesticides and seeds of high yielding varieties) should be adequate and readily available. The demonstration of diversified crops, new technology adaptable to water management system, their importance and usage to the farmers with marketing services is to be planned in collaboration with the DAE. The area will be of substantial benefit in providing increased cropping intensity. Agricultural extension services should provide facilities to the farmers to try new crops and increase cropping intensity and production. Human resources development through training of farmers and officials will be made. The provision of integrated pest management (IPM) usually leads to an increase in its application by farmers to increase production and to reduce negative environmental effect of pesticides. After receiving training the DAE's Block Supervisors should train the farmers directly in their own fields with 1 ha area demonstrations on IPM technology. Programmes may include women's training to enable them participate more effectively in agriculture. Training courses be

related to crop diversification, IPM and homestead gardening as well as nutritional awareness. The NGOs play an important role to mobilise the small, marginal farmers, landless and destitute women in income generating activities (IGA). Extension services for the landless poor in the area can develop (i) integrated home gardening; and (ii) income generating activities on the embankment areas by planting trees, fruit trees, vegetables, spices, grass, fodder and rearing poultry for raising nutrition level, etc. Local NGOs may be encouraged to support demonstration activities, particularly the multiple use of embankments, with physical support (providing seedlings, fertilisers, fencing materials) with training. Some NGOs and village organisations (VOs) can perform major role in group formation, training, extension services, credit disbursement and supervision.

Recommendations

Based on the facts given above on the problems and development possibilities, appropriate land use planning should be made. For this, it is essential to collect detailed information. Experienced agronomists should assess people's needs and seek opinions. This will identify existing problems and facilitate their remedies. Land use in both agricultural and non-agricultural purposes should be detected.

Then a detail survey will be conducted for information from farmers inside and outside the coastal polders covering climate, soils and their fertility status, moisture permeability, land types based on flood depth in monsoon, agro-ecological relations, types of crops, seasonal, annual and perennial types, sowing periods, cropped areas, inputs (seeds, fertilisers, pesticide, etc), extension services, existing farming practices, crop diversification, crop damage, crop yield, cropping pattern, irrigated and rainfed cropping, labour requirements, fruit and wood trees, irrigation and drainage facilities, operational methods and criteria for

water management, salinity controlling measures, plants having local and outside demands, marketing system and unit price of commodities and constraints on agriculture. Annual plans for crop budgets with benefits should also be prepared. Data of crops will be gathered for all seasons. Information on plantation of agro-forestry, fisheries, fodder, grasses, etc including credit requirement for the landless, destitute women, marginal and small farmers will also be obtained from both primary and secondary sources. All concerned departments like DAE, BARC, SRDI, departments of livestock and fisheries, BRDB, etc should be involved in the survey and participate in the ICZM programme. Maps should be prepared reflecting all these.

Data obtained will be checked and confirmed with Upazila agricultural offices (DAE and BADC), BWDB, NGOs working in the area and the recent BBS literature and other reliable publications. Information on irrigation facilities by mode, season, crop and coverage with number and capacity of irrigation equipment will be checked from National Minor Irrigation Census, Bangladesh, 1999. The information thus obtained should be compiled in database profile and be analysed for undertaking the development activities phase-wise with finance and manpower inputs. Land use planning for agriculture production will also be based on farmers' choice, nutritional value, national demand and economic value. While making planning under controlling system of ICZM all precautionary measures should be taken so that croplands are not affected by other sectors. Individual sectors should share their participation. Political leaders, social workers, economists and planners as well as organisations concerned should take decision and perform the job in one umbrella.

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