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ZIA'S FIRST STEP OF REVOLUTION : DOUBLING OF FOOD PRODUCTION

I. INTRODUCTION

Since his coming to power in November 1975[1], almost all speeches and addresses of late President Ziaur Rahman to the nation and cross-sections of people contained prominently themes like self-sufficiency in food, doubling of food production, export of food, fallow land and idle manpower, irrigation for more crops, re-excavation of canals, gravity flow of water, supply of power pumps, import of fertilizer, shorter gestation period, cooperatives, food production committee etc. all pertaining to increasing food production through combining three potentials—fallow land, irrigation possibilities and idle manpower. It was exactly four years later in November 1979 that he announced the long-awaited and to some extent controversial[2] First Step of Revolution : Doubling of Food Production epitomising such ideas.[3] Excerpts of his speech :

1. Ziaur Rahman was Deputy Chief Martial Law Administrator following the change over in November 1975 till April 1977 when he took over as President.
2. See for example, "Bangladesh 'revolution' is still at the stage of promises", *The Guardian* 14 October 1979. However, Zia later clarified that Article 16 of the Constitution of the People's Republic of Bangladesh was the source of his peaceful revolution, (vide his address in the Parliament on 9 February 1980).
3. Department of Films and Publications, *Address to the Nation by President Ziaur Rahman*, (Dacca : B.G. Press) November 1979.

> The nation is now on the threshold of a revolution....We will be able to almost double the agricultural production in five years time—by bringing agrarian reforms through this revolution.
>
> *** *** ***
>
> ...To double food production we will require an effective irrigation system round the year. To maintain irrigation system round the year, steps should be taken to dig new canals and re-excavate silted rivers and canals on self-help basis... water is the life force of agricultural production.
>
> *** *** ***
>
> ...Nor can we wait for fund to come from abroad. Now is the time to organize these hands and press them into nation-building activities on self-help basis.[4]

Through this and subsequent addresses, the late President laid down the objectives, strategy and tactics of his peaceful revolution which he followed up personally till his death and which took him down to almost every village of Bangladesh. There he exhorted villagers to donate labour to dig canals, preserve monsoon water for producing one more crop during winter and help attain food self-sufficiency. Zia apparently set to resolve the striking paradox—a chronic and increasing food shortage side by side with potentials for increasing food production with known technologies. Zia, like various

4. Ibid.

international development agencies,[5] was convinced that exploitation of natural potentials like fertility of land and water could enable Bangladesh not only to meet food shortage but also to become a net exporter of food.

To be precise, exploitation of the potentials of irrigation and expansion of modern inputs, self-sufficiency in food etc. are not new policies in the country. Food self-sufficiency policy has been pursued since the mid-sixties but the country still remains a net importer of food. A natural question is: What is so different about President Zia's Canal Digging Programme that would help attain doubling of food production or, at least, attain self-sufficiency in food? One can readily argue that Zia located the strategic variable in water resources, and considered other inputs like fertilizer, pesticides as necessary but supplementary. But the fact remains that it was Zia's personal leadership and "sheer force of will to lift Bangladesh by its boot straps"[6] that has been the driving force behind the programme. And now that he is no more there to set an impossible goal and inspire and prod people to attain it, the question still retains its pertinence as to whether Bangladesh can attain the goal or come close to it.

5. For example, a World Bank report at the beginning of the seventies concluded that known technologies coupled with a gradual development of irrigation and drainage facilities could increase output four times by the end of the century. The absolute potential with known technologies, according to Government of Bangldesh, is about 3 times the present national average. See Ministry of Agriculture and Forests, *Agriculture in Bangladesh* (Dacca : B.G. Press), 1981.
6. See "President Zia has reputation as Bangladesh's No. 1 motivator", *The Washington Post*, 28 March 1981.

The purpose of the present paper is to appraise the goals, and possible effects of Zia's programme of doubling food production in which voluntary canal digging was to serve as the spear-head. With such objectives in mind, the paper reviews the perspectives of the Programme, past performance of food production and makes projection of production under alternative assumptions to see whether the Programme target can be attained by 1984-85, the time frame set by the late President.

II. PERSPECTIVES OF THE PROGRAMME

2.1. Significance of Food in National Economy

Food, in particular, cereal food, consisting of rice and wheat, constitutes the single most important basic needs item accounting for 99 percent of total food and 86 percent of calorie intake in our country.[7] In an undiversified agrarian economy like that of Bangladesh, 50 percent of GDP originates in agriculture and two-thirds of it is accounted for by food—mainly rice and wheat. Thus, food items constitute nearly 30 percent of GDP.[8] Again, the price of food, in particular, of rice, determines, to a great extent, the stability of general price level in Bangladesh, as has also been found empirically.[9]

7. Bangladesh Bureau of Statistics, *The Year Book of Agricultural Statistics of Bangladesh* 1976-77. Ministry of Planning, Dacca, 1978.
8. Bangladesh Bureau of Statistics, *Statistical Year Book of Bangladesh*, 1979, pp. 728-29.
9. See S.R. Bose, "The Price Situation in Bangladesh : A Preliminary Anlysis," *Bangladesh Economic Review*, Vol. I, No. 3, 1973, pp. 243-62.

2.2. Political Significance of Food

Whether one likes it or not, food has always been an issue of domestic politics. Local food shortage, or famine at national level, drought etc., brought political instability in the country by lowering popularity of the regime in power. Crisis situation developed and resources were diverted to import food for short-term crisis management from long term development outlays to bring stability of the Government. It is conjectured that the spectre of hunger and famine in 1979, when loss of crops due to drought and flood was about 1.5 m. tons, prompted Zia to go all out doubling for food production.[10] In this context, a senior World Bank official was recorded as saying, "there cannot be any real stability unless the country solves its population and food problem".[11] Also, food situation in developing countries determines the image and international standing of the country. For, food position has an appeal to the donors so far the economic standing and political stability of the country is concerned. One is reminded of Henry Kissinger's branding of Bangladesh as an "international basket case" in 1974 when she was facing acute food crises.

2.3. Food Imports

The staggering food imports bill is also conjectured as to have worked behind launching the Programme

10. See *Far Eastern Economic Review*, 2 November 1980, p. 47. For regional and international dimension of food politics vis-a-vis Bangladesh, see Donald McHenry and Kai Bird. "Food Bungle in Bangladesh", *Foreign Policy* No. 27, Summer 1977.
11. See *International Herald Tribune*, 31 March 1981.

for increasing food production. As production of foodgrain fell far short of growth of population, foodgrain imports marked sharp increase from less than 0.6 million tons in the early sixties to 1.8 m. tons in 1978-79. In 1979-80, the figure rose even higher close to 3.0 m. tons as can be seen in Appendix Table 1. Consequently substantial amount of foreign exchange earnings of the country had to be invested in importing foodgrains. In 1973-74, value of foodgrains import accounted for 108 percent of export value. Though the percentage came down to 52 in 1978-79, the absolute quantum is considerable, given the sluggish growth in our export earnings.

Thus from the point of view of political stability and sustained economic development, self-sufficiency in food set a parameter of the nation's development policy. This may explain Zia's persistence of the Programme in all forums and occasions. "We have got to do it. It's our survival." said Zia in an interview with a foreign correspondent[12].

III. THE PROGRAMME

3.1. Outline

3.1.1. Broad objectives : Doubling of food production from 1977-78 benchmark production of 13.2 million tons to about 26 million tons by 1984-85 thereby enabling Bangladesh to export food to

12. Ibid.

the tune of 8—10 million tons per annum in addition to being self-sufficient was the major objective.

3.1.2. Strategy : Irrigation coupled with drainage and flood protection will be the spearhead of the programme. Zia insisted that it would be possible to grow at least one more crop, if not two, by making a perennial system of irrigation through digging and re-excavating canals through -out the country.

Irrigation system would be effected by supplying power pumps free of cost to individual and cooperatives of farmers. Adequate steps would also be taken to supply supplementary inputs like fertilizer, pesticides and other extension services.

3.1.3. Logistics : Motivating people to contribute voluntary labour.

—Only 15 percent of cost to be defrayed through Food for Works Programme for the benefit of poor and landless farmers.

—Incidental costs of purchasing implements, making publicity etc. to be defrayed by cash grants.

3.1.4. Co-ordination and Monitoring : A Central Control and Coordination Cell was set up for coordination and intensive monitoring of the Programme in the President's Secretariat. Similar Special Cells were also created in the concerned ministries.

District level and lower level officials were posted for project coordination.

3.1.5. Framework : Details of the programme of doubling food production were to be incorporated in the Second Five year Plan (1980-85).

3.2 Variants of Targets

In appraising Zia's ambitious programme of food production one difficulty is that the total programme is not to be found in one single comprehensive policy statement of the late President. The Programme as outlined above have been collated from a number of his addresses and statements. Then there is the confusion whether he aimed at self-sufficiency in food or doubling of food production, as he mentioned both of these targets at one time or other. However, it was observed that the President referred to self-sufficiency mainly in his speeches and addresses prior to the formal announcement of the First Step of Revolution in November 1979 and henceforth he talked of doubling of food production for self-sufficiency plus export possibility. Thus one may reasonably assume that the late President's target was to double food production from benchmark level of 13.2 million tons. But that confuses the scenario even further. The target food production of the Second Five Year Plan (1980-85) which, according to President, contained the details of his programme, has been set at 20 million tons. The target falls short of President's target of 26 million tons even if the additional plan of producing additional 2 million tons of foodgrain over

the SFYP target is taken into consideration (Appendix Table 2).

The latest is the Mid-term Food Production Plan for the Second Five Year Plan period which has set the operational target at 20 million tons of foodgrains and a guaranteed production of 18 million tons under adverse weather condition. The Mid-term Food Production Plan is reported to have obtained World Bank's approval.

3.3. Self-Sufficiency Target

One would also naturally be interested in whether attainment of these targets makes Bangladesh self-sufficient in food within the time frame. This curiosity can be met by working out the requirement or demand for food production over the time period. But the exercise is not easy as one has to distinguish between economic demand and physiological demands and there is a dearth of relevant data. However we would depend on one such study made by Hamid.[13]

3.3.1. Economic demand : Economic demand for food depends on base year demand, population growth, growth of income and income elasticity of demand for food. On the basis of the assumptions that(i) base year demand for food in 1976-77 was 13.5 million tons for an estimated population of 82.6 million, (ii) income would grow at the rates of 1.5 percent upto 1980 and

13. See M.A. Hamid, "Food Demand-Supply Projections : Bangladesh 1978-2000", paper presented at special seminar on *Food Policy and Development Strategy in Bangladesh* organized by the Bangladesh Economic Association, April 1980, Dacca.

1.8 percent upto 1990, and (iii) income elasticity of demand would be 0.41, the projected economic demand for food for 1984-85 would be 16.96 million tons.[14]

3.3.2. Physiological demand : Estimation of physiological or biological demand requires data on anthopometry, occupational structure and climatic condition. In the absence of such data, we may use the FAO-UNDP Mission study on nutrition[15] which put the caloric requirement per capita per day at 2131 units. Then per capita per day food requirement can be worked out to be 17.49 ounce on the assumptions that 82.5 per cent of caloric requirement is satisfied by foodgrain and the conversion factor is 100.5 units of calorie per ounce of foodgrains. With these assumptions, the projected physiological demand for food by 1984-85 has been estimated at 19.19 million tons.

Now, to arrive at an approximation to the actual demand for food by 1984-85, we take the average of the two estimates which works out at 19.07 million tons.[16] After making adjustments for 10 percent

14. Ibid. The formula used for the calculation was

$$F_t = F_o(1 + r_1 + r_2 E_d)$$

Where F = Projected demand at period t
F_0 = Base period demand
r_1 = Rate of population growth
r_2 = Rate of per capita real income growth
E_d = Income elasticity of demand for food
n = Number years elapsed from the base year.

15. Ibid.

16. Ibid.

allowance for seed, feed and waste, the figure comes to 19.87 million tons. We may, then, conclude that attaining self-sufficiency by 1984-85 would require a gross production of 19.87 million tons.

We are then confronted with three sets of food production target by 1984-85 :

(i) Zia's Target—doubling of food production to 26 million tons.

(ii) Mid-term Food Production Programme—20 million tons.

(iii) Self-sufficiency Target—19.87 million tons

Since these are quantitative variants of increased food production, appraising the feasibility of one target would help find whether other targets are attainable under the same set of assumptions.

IV. PAST PERFORMANCE

Given the state of technology, production of foodgrain may be considered as a function of acreage under foodgrain production, cropping intensity, irrigation coverage, fertilizer use etc. Past performance of both these dependent and independent variables have been reviewed separately.

4.1. Trend of foodgrain production.

As has been hinted earlier growth rate of foodgrain production lagged behind that of population over the last two decades. Fitting semi-logerithmic trend lines into production data for the period 1964-65 to 1777-78

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Hossain[17] has estimated the trend rate of foodgrain production to be about 1.4 percent perannum. Population grew at an estimated rate of 2.6 percent per annum indicating that per capita availabitily of foodgrains fell by more than one percent per annum during the period. Using production data for the period 1960-61 to 1977-78 as shown in Appendix Table 3, Hamid similarly estimated the trend equation[18] as :

$$\text{Prod.} = 2.377e^{0.016t}$$

where t=time

which implies a compound rate of 1.60 per annum for the stated period. It may be mentioned here that the Green Revolution introduced in the mid-sixties did have little impact on the overall grain production as is evident from the said appendix table. Only visible impact seem to have been made on Boro and Wheat production both of which marked a three fold increase between 1964-65 and 1968-69. After liberation production of foodgrain fell sharply and it was not until 1975 when the pre-liberation 1969-70 benchmark of 11.82 million tons was exceeded for the first time.

4.2. Acreage under Foodgrain Production.

Out of a total of over 30 million acres of land, 28 million acres are cultivable and of this about 22 million acres are presently under rice cultivation. There has

17. See Mahbub Hossain, "Foodgrain Production in Bangladesh : Performance, Potential and Constraints," paper presented at special seminar on *Food Policy and Development Strategy in Bangladesh*, op. cit.
18. See M.A. Hamid, op. cit.

been very little increase in the total acreage under cultivation over the period 1964-65 to 1976-77 as can be seen from Appendix Table 4. However, what has taken place over the period is the intercrop reallocation of land dictated by economic forces. In fact, a significant proportion of the increase in cereal production, as seen earlier, came through a shift in acreage from cash crops and some non-cereal food crops like pulses and mustard. It has been estimated that a 2 percent decline occurred in the area under jute cultivation mainly owing to an unfavourable jute-rice price ratio and other cost-benefit considerations following cost-reducing technologies in rice production.[19] The net effect was that about 40 percent of the growth in cereal production came from acreage expansion, 25 percent being contributed by a reallocation of acreage from other crops to cereals.[20]

4.3. **Fertilizer.**

In terms of coverage of area, fertilizer use would not exceed 10 percent of the total cropped area. Use of fertilizer in 1960-61 was only 50 thousand tons and it grew at an annual compound rate of 14.95 percent as would be evident from Appendix Table 5. For the periods 1960-61 to 1969-70 and 1970-71 to 1979-78 the growth rates were, respectively, 20.94 percent and 11.80 percent.[21] Evidently the high growth rates may be ascribed to the low base year use and partly to the high

19. See Mahbub Hossain, op. cit.
20. Ibid.
21. See M.A. Hamid, op. cit.

rate of subsidy. But per acre use of fertilizer remained very low—only 50 percent of the recommended dose.[22]

1.4. Irrigation Coverage.

The Land Capability Study and Soil Survey Report showed that in Bangladesh a large proportion of land can be devoted to high yielding variety under rain-fed condition but only a small proportion of area has so far been exploited. Out of a total of 22 million acres under rice, only little over 3 million acres (about 15 percent) are being currently irrigated, and only 1.9 million acres (9 percent) by modern methods. As would be evident from Appendix Table 6, coverage of irrigation increased at the rate of 15 percent over the period 1969-70 to 1976-77. As was the case with these modern inputs, most of the growth in irrigation was accounted for by Boro, Aus and Wheat cultivation while Aman area under irrigation recorded a fall of about 46 percent from the base period acreage of 0.39 million. Thus it may be concluded that the potentials for irrigation in Bangladesh remains to be tapped. Even the traditional methods of irrigation are hesitant to expand. The Bangladesh Bureau of Statistics data suggest that only 0.2 million acres of land have been added to irrigation under traditional system. As to potentials of irrigation, reference may be made to the World Bank Study which indicated that potential for use of surface water in different regions

22. See R.I. Rochin "A Study of Bangladesh Farmers' Experience with IR-20 Rice Variety and Complementary Production Inputs", *The Bangladesh Economic Review* Vol. 2, 1973.

of the country was 2.12 lakh acres and that for use of ground water was 15.13 lakh acres while land suitable for irrigation was 18.28 lakh acres.[23]

4.5. Pests and Disease Control

Every year loss of crops due to pests attack and crop diseases stands, on average, to the tune of Tk. 500 crores. It has been estimated that about 10—15 percent of crops are damaged by pests and crop disease infestation[24] and the proportion was much higher in 1974. The Bangladesh Rice Research Institute, Dacca, in collaboration with a foreign organization estimated that crop loss due to pests attack varied between 30—35 percent per annum.[25] Against this backdrop the activities of the Plant Protection Department over time, as shown in Appendix Table 7, may be considered. The data indicate that there has been a sharp decrease in area covered by both ground protection system and aerial spray system of the department over the period 1967-68 to 1977-78.

Thus, a review of performance of agricultural production indicates that food production has fallen far short of expectation. This explains the consequent dependence on food aid and importation of food as discussed earlier.

V. PROJECTIONS

A number of projections of foodgrain production

23. See World Bank, *Bangladesh Land and Water Resources Sector Study* (Washington, 1974) Vol. *VII*, Technical Report No. 20.
24. See Planning Commission, *Second Five Year Plan 1980-85*, (Draft), p.XII-16
25. See *The Daily Ittefaq* (Bengali) 18 July 1981.

for 1984-85 or for extended period have been made under different sets of assumptions. A Bangladesh Bank projection[26] corroborates the Government projection of 20 million tons by 1984-85, indicating an annual growth rate of 6.5 percent. The World Bank projection of 18—20 million tons[27] also supports the view. But as reaction to the World Bank projections Zia told Mc Namara :

> You are not taking into consideration the thing that I am emphasising, that is the mobilisation of the people. You are planning to bring 1.2 million acres of land under irrigation from the present level of 3.9 million acres. But through my canal digging programme, another 0.8 million acres of land would be brought under irrigation.[28]

Hossain on the other hand projected that by 1984-85, foodgrain production would be 18.6 million tons on the basis of the assumptions that (i) the area under rainfed HYV will be expanded to 40 percent of the potential in the case of Aus and 50 percent of the potential in case of Aman, (ii) the area under modern irrigation will be increased at the rate of 10 percent per annum, (iii) the yield rate will increase at the rate of 3.9 percent per annum to the level of 18.6 maunds per acre, and (iv) the harvested acreage will gorow at the rate of one per-

26. Department of Research, *Replies to I.M.F. Questionnaire*, Bangladesh Bank, Dacca, March 1980.
27. See *Far Eastern Economic Review*, 2 May 1980, p. 48.
28. Ibid.

cent per annum.[29] Hossain's projection thus centres on increase in acreage and yield rate.

An alternative technique has been used by Hamid in which he showed that the projected food production by 1984-85 would be 15.88 million tons.[30] Hamid uses the formula :

$$P_t = P_o(1+A_1+A_2.C_e)^n$$

where P_t =Production at time t
P_o =base period production
A_1 =rate of growth of area under foodgrain =1 percent per annum
A_2 =rate of growth of fertilizer use =5.0 percent per annum
C_e =fertilizer elasticity=0.3.
n =the number of years elapsed from the base year.

Though Hamid's formula takes care of the individual input of fertilizer it deos not consider irrigation. One argument might be that the effect of irrigation is reflected in increase in acreage under foodgrains. But since irrigation would be the thrust of the strategy of the food production programme, we shall use irrigation as a variable for projection. For our purpose of projection we shall use the following formula :

$$P_t = P_o(1+A_1e_1+A_2e_2)^n$$

where P_t =production at time t
P_o =base period production=13.2m. tons
A_1 =rate of growth of fertilizer use.

29. See Mahbub Hossain, op. cit.
30. See M.A. Hamid, op. cit.

e_1 =fertilizer elasticity (output response to to increase in fertilizer use)

A_2 =rate of growth of irrigation coverage.

e_2 =irrigation elasticity (output response to increase in irrigation).

n =the number of years elapsed from the base year.

Rate of growth of fertilizer use: Hamid's assumption of 5 percent growth rate is too conservative despite the fact that subsidy on fertilizer is being gradually withdrawn. Seeing the trend rate one may take a 10 percent growth rate.

Fertilizer elasticity: Islam's empirical study gave an elasticity of 0.50 for Boro while Hamid's figure was 0.30 on average of Aus, Aman and Boro. We may take Hamid's figure for our purpose.

Rate of growth of irrigation: Trend rate suggests a growth rate of 10 percent per annum. But seeing the progress of the canal digging programme (see Appendix Table 8) and government declaration that the tempo of the programme would be maintained[31] we may assume that Zia's target of 0.8 million acres would be realised and the annual growth rate would be about 12 percent per annum.

31. See *Bangladesh Observer*, 22 July 1981.

Irrigation elasticity: Official survey[32] claims that 50 percent of increased output is contributed by irrigation. Islam found the figure to be 58 percent for Boro.[33] Then we may reasonably take the official figure.

With all these figures, we may use our formula to arrive at the projected production of foodgrain for Bangladesh. The projected figure comes to 20.3 million tons. Thus the projected output more or less corroborates the official projection the target of the Mid-term Food Production plan. On the other hand, it falls short of the programme of doubling food production by more than 5 m. tons.

VI. LIMITATIONS OF THE PROGRAMME

The projection made above indicates that, on the basis of the assumptions on which the projection has been made, the target of food self-sufficiency, as is otherwise incorporated in the Mid-term Food Production Programme, is achievable by 1984-85, the terminal year of the Second Five Year Plan. It may be pertinent here to reassess the assumptions and scope of the programme. In the first place mention may be made

32. See Ministry of Agriculture and Forests, op. cit. p. 13. Country experience suggests that the figures are 73 percent for Pakistan, 30 percent for Indonesia and Phillipines and 50 percent for India. See Iftikhar Mostafa, "Agricultural Development in Rural Bangladesh : Prospects and Problems" ; *The Bangladesh Observe*, June 1981.

33. See Rizwanul Islam, "Foodgrain Procurement, Input Subsidy and the Public Distribution System in Bangladesh: An Analysis of Policy Package", paper presented at special seminar on *Food Policy and Strategy in Bangladesh*, op. cit.

of the bad weather assumption. The Mid-term programme envisages productions of a guaranteed quantum of 18 million tons under adverse weather conditions. But evidences suggest that the 2 million tons allowance for bad weather or adverse situation may not be sufficient. For one, there has been persistent attack of pests and crop diseases which, by conservative estimate, would take every year 10 percent or 2 million tons of the new output. Then there are drought and flood. As would be evident from Appendix Table 9 the average loss per year of crops due to drought and flood would be more that 3 million tons. In the past 27 years, there has been as many as 23 floods and of them 3 were severe. Drought also accounts for a substantial proportion of the loss of potential output. Secondly, the assumption of self-help as the single most motive force seems to be quite ambitious. One may point out the encouraging number of canals that has been excavated or re-excavated on the basis of selfhelp. Here, two things may be mentioned. First, the presence or absence of the motivation factor. It should be noted that the canals were dug as sort of maiden projects under the profuse personal motivation of the late President Ziaur Rahman. Now that he is dead, the question is, did he leave any institutional mechanism for continuity and following up of the programme or, if he had left any, is it viable? Second, the self-help content of the Programme has be to reassessed. Given the fact that a total administrative machinery was geared to it and all logistic support excepting wage good was provided, the self-help content has eroded quite a bit.

Though there is no study as yet on the canal digging programme, available reports suggest that there has been a tendency on the part of the big landowners to contribute hired labour in lieu of their own physical labour which they were supposed to contribute.

One significant component of the programme was diffusion and distribution of modern input package consisting of improved seed, power pumps, pesticides and fertilizer. But at a time when the price of oil is rising, how viable would be oil-import-dependent modern input programme for such a self-help programme? Could not there be a complementary or 'sub-revolution' in the sphere of indigeneous technology like irrigation and other agricultural implements ?

As to the scope of the revolution, there is apprehension that the increase in the production of food will not necessarily lead to increased availability of food to the bulk of the poor who constitute nearly 80 percent of the population or the landless who constitute nearly 50 percent of the rural households. The distributional aspect, or more precisely, the land reform aspect has been totally ignored in the Programme. Such modern technology-based programme without adequate land reform, as was the case with the Green Revolution of the sixties, may exacerbate rural poverty and income distribution.

VII. CONCLUSION

The paper argued that while under the set of assumptions made, the Mid-term Food Production target

would be attainable, the doubling of food production, as envisaged by the late President, would not be. But attainment of such a modest target may be expected to contribute to the attainment of the same at a later period, say by 1990. Appraisal of such projection, however, requires continuous monitoring of the progress of food production, locating the loopholes and bottlenecks for subsequent necessary adjustments and logistic re-arrangements. The fact is that Zia's Programme has set things in motion. Continuity of Zia's canal digging programme, for example, would create the physical network for irrigation system. What is required is to build up the corresponding institutional base for their exploitation and maintenance.

It might also be added that the Programme has boosted the image of Bangladesh in the international plane which would have its premium in conerete terms as well. As also pointed earlier, food position defines the basic premise of viability in the eyes of the donor countries and it appears that Bangladesh is meeting the criterion. World media and international aid experts seem to have shrugged off their post-independence perception of a 'basket-case' image as may be evident from Appendix 10. This would also change the perception of the donor countries regarding aid-utilization in Bangladesh.

Appendix Table 1

Imports of Foodgrains

Year	Imports of Foodgrains (000 tons)			Imports of Food as % of Production	Imports of Food as % of Total Supply	Value of Foodgrain imports as% of total exports.
	Rice	Wheat	Total			
1	2	3	4	5	6	7
1964-65	95	250	355	3.1	—	—
1965-66	380	543	923	9.9	—	—
1966-67	432	668	1100	13.0	—	—
1967-68	307	712	1019	10.0	—	—
1968-69	236	883	1119	11.0	12.6	—
1969-70	502	1045	1547	14.0	12.6	—
1970-71	342	804	1146	12.0	10.0	—
1971-72	670	1018	1688	19.0	16.0	—
1972-73	390	2435	2825	31.0	25.7	—
1973-74	82	1584	1666	16.0	13.2	108
1974-75	266	2292	2558	25.0	19.5	137
1975-76	396	1049	1445	13.0	11.1	75
1976-77	192	603	795	7.4	12.4	20
1977-78	300	1309	1609	14.0	9.7	52
1978-79	—	—	1250	—	—	—
1979-80	—	—	2900	—	—	—
1980-81	—	—	2080	—	—	—

Source : Cols. 1-5 upto 1977-78 : Bangladesh Bureau of Statistics, *Economic Indicators of Bangladesh*, Vol. V, No. 8 (August '78), Table 7.3

Cols. 6 „ „ : *Bangladesh Statistical Pocket Book*, 1978.

Cols. 7 „ „ : Quoted from Dr. D Gisselquist and S.R. Chowdhury "Rice Prices inequality and underdevelopment", paper presented at *4th Annual Conference* of the Bangladesh Economic Association held at Dacca University, Dacca, 20-22 May, 1979.

Figures for 1978-81; *Far Eastern Economic Review*, 2 May, 1980, p. 48

Appendix, Table 2

Second Five Year Plan Targets (1980-85)

I. Production

Items	Bench mark		1981-85	
	Area (lakh acres)	prodn. (lakh tons)	Area (lakh acres)	production (lakh tons)
Rice				
Aus	77.95	31.03	80.00	48.30
Aman	142.60	74.22	140.00	95.50
Boro	27.03	22.39	30.00	34.00
Sub-total Rice	247.58	127.64	250.00	177.00
Wheat	9.00	7.16	25.00	22.50
Rice+Wheat	256.58	134.80	275.00	200.30

II. Phasing of Foodgrain Production over the Plan Period

Year	Target Production ('000 tons)
Bench mark	1330.00
1980-81	1540.00
1981-82	1620.00
1982-83	1730.00
1983-84	1840.00
1984-85	2030.00

III. Inputs

Item	Unit	Benchmark	1984-85
Fertilizer	lakh ton	10.00	19.00
Foodgrain Storage	,,	13.52	20.00
Irrigation Coverage	m. acres	3.1	7.02

IV. Supplement to Foodgrain Production Programme : Additional Programme to produce additional 20 m. tons of foodgrain in 1984-85 over the Second Five Year Plan targets of 20 m. ton (To be launched in 1982-83).

4.1. Production

(Area in lakh acres, Production in lakh tons)

Crops	1982-83 Area	1982-83 Production	1983-84 Area	1983-84 Production	1984-85 Area	1984-85 Production
Rice						
Aus	3.00	2.68	3.00	2.80	4.00	3.60
Aman	4.00	3.90	4.00	4.00	5.00	4.90
Boro	4.00	4.72	4.50	5.40	5.00	6.10
Sub total Rice	**11.00**	**11.30**	**11.50**	**12.20**	**14.00**	**14.60**
Wheat	3.00	3.00	4.00	4.50	5.50	5.50
Additional Total	14.00	14.30	15.50	16.20	19.30	20.10

4.2. Inputs

Items	Units	1982-83	1983-84	1984-85
Fertilizer	000 tons.	180.00	2000.00	250.00
Irrigation	m. acres	—	—	1.20

Appendix Table 3

Acreage, Production of Foodgrians and Growth of Populationtin Bangladesh, 1959-60 — 1978-79.

Year	Acreage ('000 acres)						Production ('000 long tons)						
	Aus	Aman	Boro	All Rice	Wheat	All Grains	Aus	Aman	Boro	All Rice	Wheat	All Grains	Population (million)
1959-60	—	—	—	—	—	21,289	—	—	—	—	—	8,511	—
1960-61	6,300	14,578	1,007	21,885	140	22,025	2,497	6,574	448	9,519	32	9,551	—
1961-62	5,874	14,082	1'007	20,963	145	21,108	2,328	6,652	485	9,465	39	9,504	—
1962-63	6,192	14,221	1,071	21,484	182	21,666	2,202	6,046	482	8,730	44	8,774	—
1963-64	6,586	14,604	1,069	22,259	142	22,401	2,657	7,290	509	10,457	34	10,491	—
1964-65	6,645	15,107	1,053	22,805	132	22,937	2,501	7,262	574	10,337	31	10,368	61.7
1965-66	7,321	14,672	1,137	23,130	136	23,266	2,918	6,799	618	10,335	35	10,370	63.5
1966-67	6,965	14,059	1,390	22,414	168	22,582	2,674	5,919	831	9,424	53	9,477	65.3
1967-68	8,221	14,672	1,534	24,427	192	24,619	3,069	6,812	1,114	10,995	58	11,053	67.2
1968-69	7,658	14,895	2,015	24,568	290	24,858	2,683	6,870	1,612	11,165	92	11,257	69.2
1969-70	8,462	14,841	2,183	25,486	296	25,782	2,963	6,850	1,903	11,018	103	11,821	70.8
1970-71	7,885	14,184	2,425	24,494	311	24,805	2,863	5,912	2,192	10,967	110	11,077	72.4
1971-72	7,418	13,372	2,185	22,975	314	23,289	2,341	5,695	1,738	9,774	113	9,887	74.0
1972-73	7,241	14,121	2,434	23,796	297	24,093	2,273	5,587	2,071	9,932	90	10,022	76-2
1973-74	7,681	14,133	2,596	24,410	305	24,715	2,802	6,699	2,220	11,721	109	11,830	77-0
1974-75	7,857	13,469	2,871	24,197	311	24,508	2,859	6,000	2,250	11,109	115	11,224	78.4
1975-76	8,452	14,236	2,837	25,525	371	25,896	3,230	7,045	2,286	12,561	215	12,776	80.0
1976-77	7,952	14,355	2,112	24,419	395	24,814	3,011	6,906	1,650	11,567	255	11,822	82.7
1977-78	7,814	14,261	2,703	24,778	467	25,245	3,104	7,422	2,239	12,765	343	13,107	84.6
1978-79	7,995	14,347	2,650	24,992	654	25,646	3,288	7,326	1,929	12,543	486	13,029	87.0

Source : Bangladesh Bureau of Statistics.

Land Utilization in Bangladesh 1964-65—1976-77

Appendix Table 4
(in m. acres)

Year	Cultivable Waste	Current Fallow	Single Cropped Area	Double Cropped Area	Tripple Cropped Area	Net Cropped Area	Total Cropped Area	Cropping Intensity
1964-65	1.77	0.94	—	—	—	2.11	28.54	—
1965-66	1.26	0.73	—	—	—	2.16	29.54	137
1966-67	1.12	1.32	—	—	—	2.11	29.04	—
1967-68	1.03	0.72	—	—	—	2.17	31.44	—
1968-69	0.83	0.79	—	—	—	2.16	31.14	—
1969-70	0.74	0.73	—	—	—	2.77	32.84	151
1970-71	0.74	1.12	—	—	—	2.14	30.37	—
1971-72	0.73	2.10	—	—	—	2.04	28.17	—
1972-73	0.68	1.68	—	—	—	2.08	29.04	—
1973-74	0.67	1.55	—	—	—	2.09	29.42	—
1974-75	0.67	2.00	12.48	6.11	1.28	2.06	29.92	—
1975-76	0.66	1.59	12.25	7.27	1.45	2.09	21.13	148
1976-77	0.66	2.10	11.91	7.07	1.46	2.04	30.44	151

Note : (a) Cultivable waste is the area suitable for cultivation but lying fallow for more than one year.
(b) Current fallow is the area already brought under cultivation, but not cultivated during the year.
(c) Total cropped area is the sum of net cropped area and area sown more than once.

Source: Bangladesh Bureau of Statistics, *Statistical Year Book of Bangladesh, 1979*, pp. 158-61.

Appendix Table 5

Fertilizer Use

Year	Fertilizer Use ('000 tons)
1969-70	277
1973-74	380
1974-75	280
1975-76	458
1976-77	512
1977-78	721
1978-79	733
1979-80	1000

Source : Figures for 1969-70, Bangladesh Bureau of Statistics. Figures for 1973-80, Planning Commission, *Second Five Year Plan* (1980-85).

Appendix Table 6

Area Irrigated, 1969-70—1976-77

(in million acres)

Year	Rice				Wheat	Total
	Aus	Amon	Boro	Total		
1969-70	0.08	0.39	1.75	1.23	0.02	2.62
1970-71	0.08	0.32	2.10	0.03	0.03	2.88
1971-72	0.08	0.24	2.04	2.38	0.02	2.71
1972-73	0.11	0.28	2.22	2.58	0.03	2.99
1973-74	0.17	0.29	2.36	2.83	0.03	3.21
1974-75	0.18	0.28	0.70	3.15	0.04	3.56
1975-76	0.18	0.21	2.92	3.01	0.13	3.48
1976-77	0.19	0.21	2.02	2.42	0.18	3.01

Source : Bangladesh Bureau of Satatistics, *Statistical Year Book of Banlgadesh*, 1979, p. 162.

Appendix Table 7

Pests Control : Acreage of Food Crops Covered by Plant Protection System.
(in '000d acres)

Year	Ground Protection	Aerial Protection (Paddy)
1967-68	—	950
1968-69	—	1840
1969-70	—	1436
1970-71	—	628
1971-72	—	299
1972-73	9836	992
1973-74	5144	695
1974-75	1739	386
1975-76	1580	58
1976-77	1539	—
1977-78	2067	—

Source : Department of Plant Protection, Ministry of Agriculture, cited in *Statistical Year Book of Bangladesh*, 1972, p. 225.

Appendix Table 8

Canal Digging Programme

1. Progress

Period/Phase	No. of Projects	Length of Canals (miles)	Area Benefitted (in lakh acres)	Yield Increasec. (in lakh tons)
1979-80	193	675	5.52	6
1980-81	865	2961	21.02	15

II. Logistics

Phase	Wheat Distributed	Cash granted for incidental expenses
1979-80	4,000 mands	Tk. 60 lakh
1980-81	3 lakh mands	Tk. 1.80 crores

Sources : (i) Control and Coordination Cell for Cannal Digging Programme, *Revolution : First Phase*, (Dacca : Department of Films and Publications,) 1981.
(ii) *The Bangladesh Times*, 27 June 1981
(iii) *The Bangladesh Observer*, 22 July 1981

Appendix Table 9

Loss of Rice Crop by Flood/Drought and Potential Output

(in million tons)

Year	Rice Production	Flood and Drought loss	Potential Output
1968-69	11.60	11.1	12.7
1969-70	11.82	0.22	12.04
1970-71	10.97	1.95	12.9
1071-72	9.79	0.31	10.1
1972-73	9.93	0.25	10.2
1973-74	11.72	0.60	12.4
1974-75	11.11	1.54	12.4
1975-76	12.56	0.16	12.72
1976-77	11.57	0.95	12.72

Source : *Statistical Year Book of Bangladesh*, 1979, p. 122

Appnendix Table 10

Sample of Media Reactions

Media	Headline	Content/Excerpts
1. FEER, Jan. 18, 1980 pp. 26-27	A Spadeful of Revolution	Voluntary canal digging makes an encouraging start amid technocrats' warnings of ecology hazards. Two considerations guided Zia to go ahead—prohibitivec costs and time needed for traditional planning of irrigation.
2. FEER May 2, 1980 pp. 47-48	Second thoughts on Aid.	World Bank President Robert McNamara has sprung a pleasant surprise by announcing that the bank will be justified in providing economic assistance to Bangladesh "at a much accelerated rate" apparently convinced by people's participation in canal digging at Cox's Bazar and impressed by Ziaur Rahman's "dynamic leadership".

(Contd Table 10)

3.	FEER, Sep. 9,1980 p. 62	Basket Case to Bread Basket	Bangladesh once described as international basket case by Henry Kisinger when he was US Secretary of State, is taking a major step towards being a bread basket : President Ziaur Rahman is confident that in five years the country will be able to double its food production from 13 m. tons.
4.	Developing World, Jan. 2, 1981	Bangladesh enjoyes feast after years of famine	After years of food shortage, Bangladesh has a glut of grain for the first time in history following an unexpected record harvest last year and emergency purchase of grain.
5.	The Christian Science Monitor March 26, 1981.	10 years after independence, Bangladesh moves toward self sufficiency	President Ziaur Rahman is pursuing, prodding and exhorting his country toward a image that of a bread basket instead of an "basket case". Observers assign much of the credit to Zia personally. "He really does mobilize people to do things we think are impossible" a Wastern diplomat says. "While the diplomatic corps shakes its head, he hovers out and gets people to dig canals. We sit and wonder, "How did he do that?" "They have come a long way" agrees an international aid agency official. "they're not just looking for aid. There is a real effort to a degree of self-help".
6.	International Herald Tribune, 31.3.1981.	Bangladesh given a chance of food Success	Surprisingly, many international experts here believe that Bangladesh can achieve self sufficiency in food if not by a Ziaur's optimistic time table, then soon after.