

Prospect of Agricultural Export Processing Zone in Rajshahi*

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The idea of this paper springs from a report published in national dailies in February 2003. The report says “Prospect of setting up an agro-based Export Processing Zone (EPZ) in greater Rajshahi is bright as the region has surplus agro-products like fruits and vegetables” (The *Daily Independent*). The report came out following a visit of a three-member delegation of the Asian Development Bank on the establishment of an agro-based export processing zone in Rajshahi. It also says “the ADB team visited some possible sites near the city for preparing a feasibility report”. The purpose of this paper is to see how economics can contribute to understanding the issue of establishing an agro-based EPZ in Rajshahi.

Behind the above report of the newspaper is the idea of regional development of Rajshahi. Development plans of Bangladesh have also put emphasis on the necessity of regional development for special areas. The Fifth Five Year Plan 1997-2002 emphasizes balanced regional development (GOB, 1998). The Plan document states (p. 66) “... balanced regional development is very much needed because of differences in the current levels of development of the regions. In 1992/93, for example, per capita income of the Rajshahi Division was 18.33 per cent less than the national average, though the economy of the region has been growing faster in recent years than the country as a whole.

The objectives of this paper are as follows:

- 1) to identify the need for establishing an agricultural EPZ in Rajshahi;
- 2) to look into the suitability of agro-based EPZ in Rajshahi; and
- 3) to estimate benefits from the EPZ.

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To our knowledge, no study has been done on this specific issue. However, one study (Khan 2003) shows some static effects of establishment or expansion of agro-processing industries in Bangladesh. However, Khan fails to identify the dynamic effects of establishing agrobased industries. The present paper looks into both static and dynamic effects of establishing an agricultural EPZ in Rajshahi region.

Need for an Agro-based EPZ in Rajshahi

The Fifth Plan 1997-2002 identifies Northwest Region (Rajshahi Division) as a special area for development. It explains the need for industrial development of Rajshahi Division as follows (p. 66). Per capita income of the Rajshahi Division was (Tk. 6,830) lower than the national average (Tk. 8,363) in 1992/93 at 1984/85 prices and the level of poverty measured by the calorie intake standard was higher in Rajshahi. Though the division was surplus in food production, about 56 per cent of the population was below the poverty line. In addition, the division has a lower life expectancy (56.5 years), a higher incidence of illiteracy (72.9 per cent) and a lower coverage by immunization program in comparison to their respective national averages. The division had also a higher population growth of 2.1 per cent in 1995 than the national average of 1.8 per cent.

The area is now largely agrarian in character, relatively more of income (44.9 per cent) originating in agriculture with correspondingly more of people living in the rural areas (84.3 per cent) and higher proportion of landless households. Though the area has an edge over the rest of the country in several crops in terms of yield, this hardly compensates the low level of per capita income. Nominal wage was lower by a quarter of that of the national average in 1993/94 and real wage about one-tenth less. Higher agricultural growth cannot simply make up the lapses of growth in other areas, particularly in industrial production where value addition per unit of labour is much higher than in agriculture. Industries accounted for 2.93 per cent of Gross Regional Product (GRP) of Rajshahi against 10.56 per cent of GDP of the country in 1992/93. For various reasons such as relative isolation and higher transport cost, problems of raw materials and power supplies and scale of operation, capital is half as productive in Rajshahi as that in the country as a whole. Considering all these, the necessity for a planned approach towards the industrial development of the area can hardly be overemphasized. Current Situations of Rajshahi division are not much different than in 1992/93, as stated in the Fifth Plan. The level of poverty measured by cost of basic needs method was highest in Rajshahi. About 47 percent of the population was below the poverty line in 2000, while the national average was 33.7 percent (GOB, 2003, p. 128).

As stated in the above paragraph, capital productivity is lower in Rajshahi. This means investment is not profitable here. This may act as a strong disincentive for investments in Rajshahi. But the reason for low productivity of capital is the absence of complementary investment, that is, investment in a number of "complementary industries" together. Examples of complementary industries are shoe and cloth industry, mango and mango-processing industry. In order to increase productivity of capital in Rajshahi investments in complementary industries are necessary. The capital required for this kind of investment can be generated through government and private funds. EPZ can accommodate a good number of complementary industries. The idea of complementary investment is similar to the "Balanced Growth Strategy" suggested by Ragner Nurkse for developing countries. This strategy suggests a simultaneous application of public and private investments in a number of complementary industries so that one industry can become the market for another industry and thereby expand the size of the market (Mandal, 2000, pp. 206-207). If several industries are started at the same time, the resulting labour force may be large enough to create an internal market for the output of all industries and backward linkage may create adequate markets for producer goods industries (Gillis et al, 1996, p. 101).

In view of the necessity for industrial development of the Rajshahi division, the present paper focuses on establishing an agro-based industry in the region.²

Creating opportunities for establishing agro-processing and agro-based industries in the country has been emphasized in both the Industrial Policy 1999 and the National Agriculture Policy (April 1999). The Industrial Policy 1999 has identified agro-based industries as number one out of 16 select thrust sector industries. It envisions raising the share of these industries in the GDP to at least 25 per cent, within a decade, from a low base of 10 per cent prevailing over the last two decades. The National Agriculture Policy has identified the agricultural commodities that have relative high value adding capacity when compared with non-agricultural commodities. Agro-based industries constitute about 50 percent of the total industries of the country and provide 60 percent of the total employed labour force in the industrial sector.

In this paper, we will confine only on the processing of food industry. Data will be used for eight districts, Rajshahi, Naogaon, Natore, Chapai Nawabganj, Bogra,

² Agrobased/agro-processing industry refers to the subset of manufacturing that process raw materials and intermediate products derived from agricultural sector. Agro-processing industry thus means transforming products originating from agriculture. Indeed a very large part of agricultural production undergoes some degree of transformation between harvesting and final use. The industries that use agricultural products as raw materials comprise a very varied group, such as articles of textiles, pulp and paper, and food processing (fruit, vegetables, milk, meat or fish) (Khan, 2003).

Joypurhat, Pabna and Serajganj, known together as Rajshahi Agricultural Region. Data are taken from unpublished documents of Agriculture Extension Department of Rajshahi Region. Initially we decided to use data for the Rajshahi division. But later we realized that up to date information for the Division was not available in the latest publications of Bangladesh Bureau of Statistics (e.g., *Yearbook of Agricultural Statistics of Bangladesh 2000*). The Rajshahi Agricultural Region has a total land surface of 1.82 million hectares, of which presently 1.39 million hectares are under agriculture. It has a population of 17.77 million. The river Jamuna is to the east and the Padma is to the southern part of the region. Summary of economic indicators of the region is presented in Table 1.

Table 1: Key Indicators of Rajshahi Agricultural Region

Number of districts:	8 (Rajshahi, Naogaon, Natore, Nawabganj, Bogra, Joypurhat, Pabna, and Serajganj)
Area of the region:	1816145 hectares (ha)
Barind	538408 ha (30%)
Outside Barind	1277737 ha (70%)
Cultivable land:	1386551 hectares
Single cropped area	263445 ha (19%)
Double cropped area	818065 ha (59%)
Triple cropped area	305041 ha (22%)
Population:	17771222 persons
Male	9845179 (55%)
Female	7926043 (45%)
Number of farm household:	2108353
Small	484921 (23%)
Medium	484921 (23%)
Large	147585 (7%)
Landless	527088 (25%)
Marginal	463838 (22%)
Types of agricultural land:	1386551 hectares
Highland	180252 ha (13%)
Medium highland	831931 ha (60%)
Medium lowland	207982 ha (15%)
Lowland	166386 ha (12%)
Surplus food:	1836166 metric tons
Total cold storage:	64 (Capacity: 369512 metric tons)

Source: Unpublished information of Agricultural Extension Department, Rajshahi Region.

Suitability of Agricultural EPZ in Rajshahi

At present most export earnings of Bangladesh are made from readymade garments including knit wear (76.58%) which is followed by fish and shrimp (4.61%), jute goods (4.07%) and leather (3.46%) (GOB, 2003, p. 51). However, the situation may not remain the same after 2005 because of WTO implications. In that context Bangladesh has to find alternative export items to earn foreign exchange. The northern part of the country may be the ore of exports based on agricultural products. The production of exportable cereals, vegetables, fruits, meat and milk can replace the shortcomings likely to be created out of free trade under WTO.

Implementation of two EPZs declared earlier – one at Nilphamari and the other at Pabna (Iswardi) will take time. Moreover these EPZs are general in nature (mostly non-agricultural type). The proposed EPZ at Rajshahi for agriculture will by no means reduce the scope of establishing the other two EPZs. On the contrary it will add to the industrialization efforts of agro-based/agro-processing industry in the region for a sustainable and well formed linkage of production, processing and marketing. By adopting prudent policy Bangladesh can not only minimize the gap of the trade balance within a short period of time but also survive from the grasp of the free trade expeditions of other countries. Tables 2 and 3 show agricultural production potentials and processing opportunities of selected commodities.

Table 2 shows production of major agricultural commodities for eight districts of Rajshahi region for 2002-03. From this table, rice, potato and vegetables are the main crops in this region – 4.98, 1.78 and 1.25 million metric tons respectively. Among fruits, mango, banana and jackfruit are the major ones produced in the region. Table 3 estimates the annual requirement for various food groups for eight districts of the Rajshahi region for 2002-03. The calculations are based on per capita per day requirement (in grams) for various food items as recommended by the Bangladesh National Nutrition Council. For example, per capita per day requirement for foodgrains (rice, wheat and maize) is 453.60 grams, population of Rajshahi district is 2312075, annual requirement per person is 165.564 kilograms, therefore requirement for cereals by the population of the Rajshahi district is 382796 metric tons.

There are some comparative advantages that are pertinent to Rajshahi region for an EPZ. First, sufficient supplies of good quality raw materials (cereals, vegetables, fruits) are produced in the region. Table 4 shows the surplus or deficit in production of various food groups for eight districts of Rajshahi region for 2002-03. The surplus or deficit is estimated by deducting total production from annual requirement. From Table 4, the Rajshahi region has surplus in foodgrains, oilseeds and fruits – 1.84 million, 44165 and 269313 metric tons respectively. On

the other hand, it has deficits in the production of pulses, vegetables and potato groups. However, the districts of Rajshahi, Joypurhat and Pabna produce surplus vegetables. Data in Table 4 are estimated using per capita per day requirement (in grams) suggested by the Bangladesh National Nutrition Council.

Second, cheap labours and land are available in Rajshahi. According to the Fifth Five Year Plan 1997-2002 (as stated on page 3), both nominal and real wages was lower in Rajshahi division in 1993-94. Similar situations existed for this division in May 2002. Average daily wage rate for agricultural labour (male) in greater Rajshahi, Bogra and Pabna districts was taka 56, 60 and 58 respectively as compared to the national average of taka 70. Similarly, average daily wage rate for industrial workers (skilled) was also lower in Rajshahi in January 2003 – taka 123.06 as compared to the highest rate of taka 128.06 in Dhaka (BBS, 2003b, pp. 3 and 8).

Third, good infrastructures are also available in Rajshahi. Airport, rails, metal roads, bridges all provide easy transport of local produces throughout the country. Daily flights from Rajshahi to Dhaka help export of highly perishable products such as fruits and vegetables to foreign countries quickly. Intercity trains from Rajshahi to Dhaka through the Jamuna Multipurpose Bridge are also another transport for local produces.

In addition to the above comparative advantages, Rajshahi has better law and order situation, availability of cheap raw materials (normally one third of highest market price), suitable climates (prolonged and intensive winter, clean weather, relatively flood free zone), and capable entrepreneurs/private sector business potentials. All these advantages have made the Rajshahi region suitable for an establishment of an agro-based EPZ.

Potential Benefits from Agricultural EPZ in Rajshahi

This section estimates the benefits of establishing an agro-based EPZ in Rajshahi in terms value addition of some selected food items.

Rice (fine and aromatic): Rajshahi division is known as the granary of Bangladesh. Rajshahi region (eight districts) in this division has food (rice, wheat and maize) surplus of 1.84 million metric tons. Rajshahi, Naogaon, Chapai Nawabganj, and Natore areas produce good quality fine and aromatic rice (basmati, kalijira) those have local elite market demands as well as overseas market demands. At least 35,000 metric tons of fine and aromatic rice can be exported from Rajshahi for estimated foreign exchange earnings of US\$ 137 million per year (Table 5). Perhaps an example may be relevant here. China exports rice at higher prices and imports wheat at lower prices.

Table 2: Production of Major Agricultural Commodities in Rajshahi Region, 2002-03 (in metric tons)

District	Rice	Wheat	Maize	Pulses	Oilseeds	Spices	Mango	Banana	Jackfruit	Potato	Vegetables
Rajshahi	492955	76100	3375	11820	6261	142612	28650	88578	29400	658184	224763
Naiogaon	1162626	66980	5403	9043	15700	54371	21730	6997	15925	263495	197530
Natore	391154	54426	418	13130	7564	61391	28460	6552	15840	17562	61987
Nawabganj	398165	42648	4854	20090	4911	31826	49867	5274	5722	24931	90599
Bogra	1103455	11067	36395	1071	8603	20463	2950	9000	11220	423251	184980
Joypurhat	389849	9381	192	699	3516	15410	3860	7854	3000	326746	106600
Pabna	431397	83746	1346	30180	19101	209205	36180	18975	28910	23917	257452
Sirajganj	612386	21992	3939	21970	17425	13175	17070	3680	11925	45689	122453
Region total	4981987	366340	55922	108003	83081	548453	188767	146910	121942	1783775	1246364
Per hectare yield	2.83	2.32	5.31	-	-	-	-	5.83	19.37	13.92	16.36

Source: Calculated from unpublished documents of Agricultural Extension Department, Rajshahi Region.

Pulses include musur, moog, gram, khesari, mashkalai, matar and arhar.

Oilseeds include mustard and groundnut.

Spices include onion, chilli, garlic, turmeric, coriander, and ginger.

Table 3: Annual Requirements for Food Items by Population in Rajshahi Region, 2002-03 (in metric tons)

District	Population	Food grains (per capita per day 453.60 grams)	Pulses (per capita per day 112 grams)	Oilseeds (per capita per day 6 grams)	Fruits (per capita per day 85 grams)	Potato & others (per capita per day 423 grams)	Vegetables (per capita per day 213 grams)
Rajshahi	2312075	382796	94517	5063	71732	356972	179752
Naoagan	2797738	463204	114371	6127	86799	431956	217510
Natore	1725128	285619	70523	3778	53522	266351	134120
Nawabganj	1531002	253478	62587	3352	47499	236379	119027
Bogra	3296352	545757	134754	7219	102269	508940	256274
Joypurhat	933835	154609	38175	2045	28972	144179	72601
Pabna	2442442	404380	99847	5348	75776	377100	189887
Seraiganj	2732650	452428	111710	5984	84780	421907	212449
Region total	17771222	2942271	726484	38916	551349	2743784	1381620

Source: Population data are from documents of Agricultural Extension Department, Rajshahi Region. Annual requirements for food items by population are calculated by the author.

Annual requirement for food grains in Rajshahi district is calculated as follows. Population of Rajshahi district = 2312075. Per capita per day requirement for food = 453.60 grams (as recommended by the Bangladesh National Nutrition Council). Per year requirement per person = 165.564 kilograms. Therefore, annual requirement for food items by the population of Rajshahi district = 382796 metric tons.

Table 4: Surplus or Deficit of Food Items in Rajshahi Region, 2002-03 (in metric tons)

District	Food grains (rice, wheat and maize)			Pulses			Oilseeds		
	Require ment	*Net production	Surplus or deficit (-)	Require ment	Production	Surplus or deficit (-)	Require ment	Production	Surplus or deficit (-)
Rajshahi	382796	506143	123347	94517	11820	-82697	5063	6261	1198
Naogaon	463204	1091995	628791	114371	9043	-105328	6127	15700	9573
Natore	285619	394351	108732	70523	13130	-57393	3778	7564	3786
Nawabganj	253478	394059	140581	62587	20090	-42497	3352	4911	1559
Bogra	545757	1017641	471884	134754	1071	-133683	7219	8603	1384
Joypurhat	154609	353169	198560	38175	699	-37476	2045	3516	1471
Pabna	404380	456680	52300	99847	30180	-69667	5348	19101	13753
Serajganj	452428	564400	111972	111710	21970	-89740	5984	17425	11441
Region total	2942271	4778437	1836166	726484	108003	-618481	38916	83081	44165

*Net production of food grains is estimated by deducting 11.58% of total production (in Table 2) as seeds and wastage.

Table 4 continued

District	Fruits (mango, banana, jackfruit and others)			Potato, sweet potato and arum			Vegetables		
	Require ment	Production	Surplus or deficit (-)	Require ment	Production	Surplus or deficit (-)	Require ment	Production	Surplus or deficit (-)
Rajshahi	71732	200800	129068	356972	663482	306510	199752	224763	45011
Naogaon	86799	222663	135864	431956	281605	-150351	217510	197530	-19980
Natore	53522	82197	28675	266351	25470	-240881	134120	61987	-72133
Nawabganj	47499	67257	19758	236379	29925	-206454	119027	90599	-28428
Bogra	102269	42185	-60084	508940	445055	-63885	256274	184980	-71294
Joypurhat	28972	32016	3044	144179	338328	194149	72610	106600	33999
Pabna	75776	132724	56948	377100	45727	-331373	189887	257452	67565
Serajganj	84780	40820	-43960	421907	82063	-339844	212449	122453	-89996
Region total	551349	820662	269313	2743784	1911655	-832129	1381620	1246364	-135256

Source: Tables 2, 3, and unpublished documents of Agricultural Extension Department, Rajshahi Region.

Wheat: Rajshahi region produces 366340 metric tons of wheat. Wheat flour is widely used in bread and biscuit production. It is also possible to produce cereal based baby foods in the country. Locally produced baby food items could be substituted for imports and the surplus quantity can even be exported. Bangladesh could earn needed foreign exchange by exporting baby food items to neighbouring countries. There is ample scope of establishment of wheat based agro-processing industries in Rajshahi region. At least 25,000 metric tons of wheat can be processed for value addition, which can earn US\$ 250 million.

Potato: Rajshahi region produces 1.78 million metric tons of potatoes every year next only to rice. Within this region, Rajshahi district produces highest amount (658184 metric tons) which is followed by Bogra (432251 metric tons). Potatoes can be used as substitute for rice and as an industrial crop for export earning. Our estimate of requirement for potato consumption (including sweet potato and arum) in Table 4 suggest that the Rajshahi region has shortage in production, although Rajshahi and Joypurhat districts has surpluses. Several sources (see Khan 2003, for example) indicate that per capita consumption of potatoes is lower in Bangladesh. On this ground, several thousand metric tons of potatoes produced in Rajshahi region can be exported for foreign exchange earnings. Value added potato french fries can be produced from fresh potatoes for local elite market as well as for export markets. Potato chips also have domestic and foreign markets. Potatoes grown in Bangladesh are suitable for production of potato flakes (quoted in Khan 2003). Potato flakes have great international demand in developed countries like the U.K., U.S.A, Germany, Switzerland and Italy. Rajshahi EPZ can help establish a few potato flake-manufacturing industries and a good number of medium type potato fries manufacturing machine for boosting exports. By processing 50,000 metric tons of potatoes for french fries, potato chips and potato flakes at least US\$ 31 million can be earned per year.

Banana: Rajshahi region produces surplus fruits (banana, mango, jackfruit and others). A total of 147 thousand metric tons of banana is produced in Rajshahi region. Most bananas are sold fresh in the local markets. No processing industries have been developed to use banana as a raw material. Neither any step have been undertaken to export fresh banana from Bangladesh. Production of banana is not so seasonal. It is produced almost through out the year. Even so, its supply is found high in some months resulting in a fall in price, Due to absence of cold storage facilities it is not possible to keep the freshness of the fruits even for a few weeks. Fresh banana, dried banana, banana chips, banana flakes, banana shakes, and other banana based processed items have tremendous demand at home and abroad (Khan 2003). There is ample scope of establishing of banana-based industry in Rajshahi region. At least 25000 metric tons of banana can be processed

for preparation of banana chips and banana flakes valued at US\$ 30 million per year.

Mango: Production of mango is highly seasonal like most other fruits. Total production of mangoes in Rajshahi region stands at 189 thousand metric tons. So, there is ample opportunity for establishment of mango-based industries in Rajshahi region. Rajshahi is famous for production of very high quality fresh mangoes, which have great demand even in the local market. A huge quantity of green mangoes is damaged every year before their maturity. Green mangoes have alternative uses. Sweet- pungent pickles can be prepared from the green mangoes. Pickles are used as appetizers and for palatability of meat. The demand for fresh mango, jam & jelly, chutneys & pickles, mango leather, squashes, juice & drinks, mango bar, canned ripe mango is also very high at home and abroad. Due to lack of proper processing facilities of the green as well as ripe mangoes – thousands of mango growers of the country are being deprived of cash money. The country is also losing a huge amount of potential foreign currency at the same time. At least 25000 metric tons of mango can be processed for preparation of mango chatni, mango pickles, mango leather, valued at US\$ 33 million per year.

Export of fresh vegetables/fruits: From Table 4, the districts of Rajshahi, Joypurhat and Pabna produce surplus vegetables in the Rajshahi region. Export of fresh vegetables can stimulate a great enthusiasm for Rajshahi region as because the climate of this part of the country is very much favourable to produce them. Fresh vegetables like eggplants, beans, karala, chichinga, green papaya, green pepper all have great overseas demand. Similarly fresh mango, banana, papaya have great export markets. The proposed EPZ at Rajshahi can play a vital role to establish and maintain forward and backward linkages. At least 15,000 metric tons of fresh vegetables and 25,000 metric tons of fresh fruits can be exported for an estimated foreign exchange of US\$ 68 million.

Black Bengal goat: According to an estimate, 19.41 percent of sheep/goat population of Bangladesh are in Rajshahi region (8 districts). Rajshahi division has 38.34 percent of total sheep/goat population of Bangladesh (BBS, 2003a, p. 243). Black Bengal goat is most prevalent in Rajshahi division. The black Bengal goat mutton is of super quality, most delicious and free from odours. There is much more demand of this type of meat worldwide (Khan 2003). Establishment of mutton processing plants will be viable in this region. Establishment of meat processing plant in proposed EPZ in Rajshahi can help intake of hygienic meat as well as promoting export earnings. Moreover, the demand of processed meat throughout the country could be met up from the local supplies. At least 15,000 metric tons of meat can be processed for exports from the proposed EPZ that will earn a foreign exchange of US\$ 77 million per year.

Dynamic Benefits of Establishing Agricultural EPZ in Rajshahi: Table 5 indicates that by establishing an agro-based EPZ in Rajshahi will facilitate foreign exchange earnings of 626 million dollars per year. According to an estimate, cost of establishing an agricultural EPZ in Rajshahi may entail Taka 500 crores (US\$ 86 million) at best (Khan 2003). But Table 5 suggests that returns are in million dollars per year. Many foreign companies might also be interested in direct investment (FDI). The government may work as facility provider. The proposed EPZ in Rajshahi will help create opportunity of new jobs. Many farm families would be benefited out of the proposed EPZ. The proposed EPZ will ensure fair prices of the agricultural produces and local wage rates would be raised substantially. As a result living conditions of the common people would be increased to a satisfactory level. Export of agricultural products from Rajshahi EPZ could be substitute for imports. For example, there exists ample scope to derive edible oil from rice bran in the Rajshahi region. Extracting oil from rice bran could be substituted for imported oil. Second, export of baby foods produced from wheat can be substitute for imports of cereal based baby foods.

Conclusion

The Rajshahi region is endowed with suitable agro-climatic niches and natural bounties to boost production of cereals and non-cereal crops. The geographic location of Rajshahi is strategically suitable for export promotion because of good infrastructures and well-developed communication net works. Recent information indicates that there are a lot of demands for vegetables, fruits and other agro-products in many countries of the world. Fruits, vegetables and other agro-products can be processed through setting up agro-based EPZ in Rajshahi. The EPZ can also contribute a lot in the fields of ensuring fair price to the farmers, poverty alleviation by raising farm production and creating job in the agriculture sector which will help change the lot of the people of Rajshahi region.

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