INITIAL ENVIRONMENTAL EXAMINATION (IEE)
OF
BRAC DAIRY AND FOOD PROJECT

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February 1997

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1. INTRODUCTION

This report describes the findings of the Initial Environmental Examination (IEE) of the proposed dairy project of BRAC which is situated at Lakshmipura village of Gazipur district (Fig. 1). The main objective of this report is to identify the major environmental impacts due to implementation of the project along with some effective measures to mitigate the adverse impacts.

2. METHODOLOGY

This report is prepared on the basis of information available at BRAC and by undertaking visits to the project site for a reconnaissance survey of the surrounding areas. This was followed by evaluation of the information to determine the possible environmental impacts due to the proposed project. A checklist was used to conduct the Rapid Rural Appraisal (RRA) sessions, a survey method which was used for this purpose.

3. DESCRIPTIONS OF THE PROJECT

3.1 Type of Project

Based on the volume and nature of disposed waste the Department of Environment, Government of Bangladesh has categorized the different industries of Bangladesh into three categories:

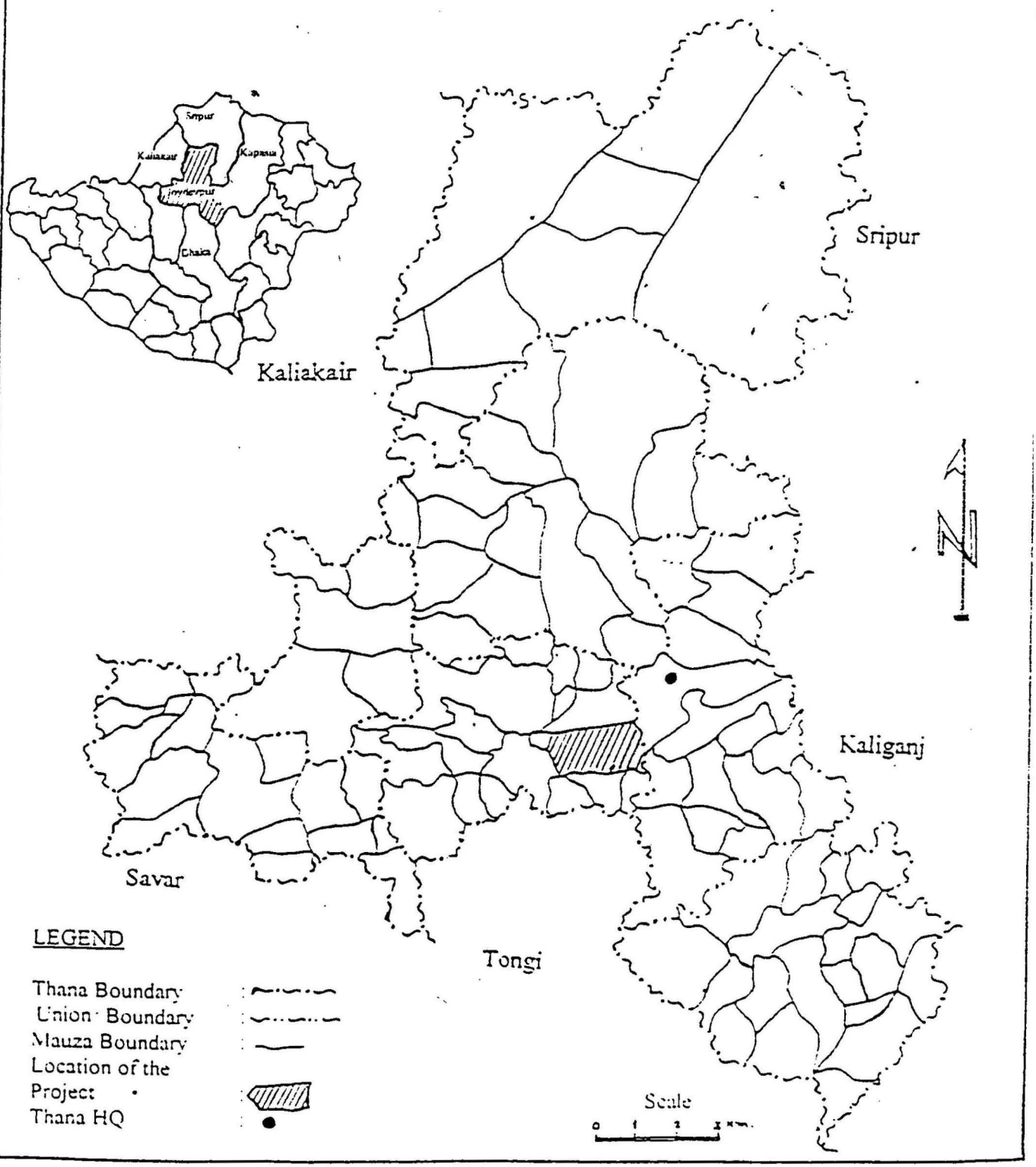
- **Green type of industry** - when no environmental impact assessment is required to establish a industry,
- **Yellow type of industry** - when only Initial Environmental Examination (IEE) is required, and
- **Red type of industry** - when a detailed Environmental Impact Assessment (EIA) is required to establish a industry.

According to the criteria mentioned above, BRAC Dairy and Food Project falls into the yellow category.

Figure 1

LOCATIONAL MAP OF THE PROJECT

JOYDEVPUR THANA



In the following steps, milk will be separated, standardized, pasteurized and then stored in the storage tank. Pasteurized milk from the storage tank will be packed in sachets of different sizes in the sachet filling machines and finally stored in the cold room for marketing purposes. Besides the production of pasteurized milk in sachets, other items would be UHT yoghurt drink, chocolate milk, butter and *ghee*.

The entire plant will be cleaned every day at the end of production. The cleaning process will be as follows:

The plant will be washed with normal water, then with hot 1.5% caustic soda, then again flushed with water and finally the plant will be sterilized with hot water, (90^0C). Depending upon the quality and quantity of milk processed, the plant will be cleaned with dilute 1.5% nitric acid once or twice a week. Sulfuric acid will be used for fat testing, but this acid will not go to the main waste water flowing system. There will be on-site treatment for this acid.

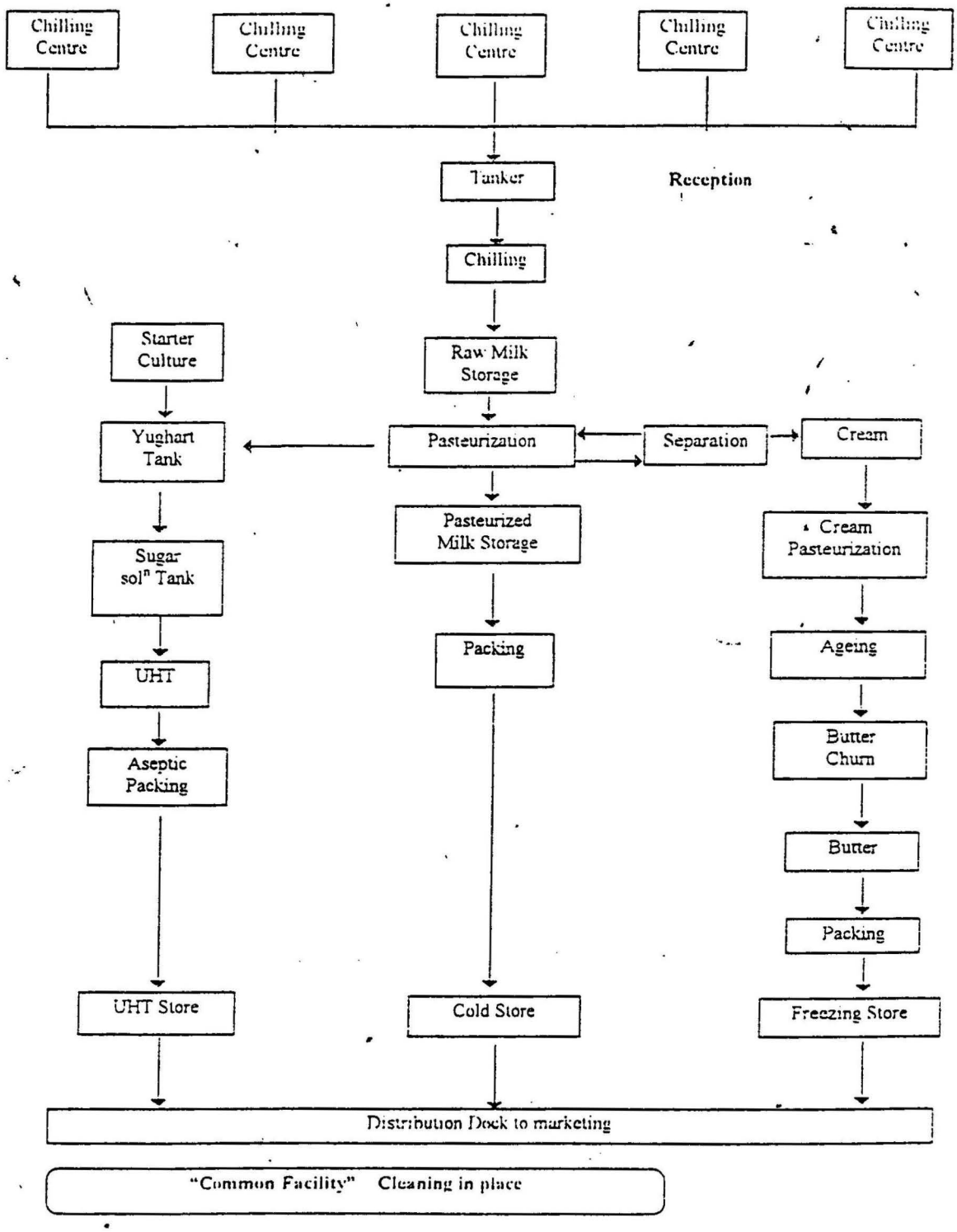
Flow diagram of the BRAC Dairy and Food Project is presented in Figure 3.

3.5 Production

Initially it is proposed to produce (I) Pasteurized liquid milk in polyfilm sachets, (ii) Flavoured milk, (iii) Butter, (iv) *Ghee* ,and (v) UHT yoghurt drink in aseptic packing. In future, production range could be expanded to UHT milk in aseptic packing, ice-cream, cheese, powder milk etc.

Around 200,000 litre water and around 160 m^3/hr natural gas will be used for the production purposes at its highest production level. A deep tube well will be set up for the extraction of ground water to meet the requirement of water.

Figure 3. Flow diagram of BRAC dairy and Food Project (Source: A.Z.M. Sayem, Consultant, Dairy Project, RDP)



4. ECONOMIC FEASIBILITY

As already narrated, installed capacity of the pasteurized milk plant will be 50,000 litres and UHT plant 8000-16000 litres per day respectively. Total investment will be around Tk. 166,512,500. After installation the plant is expected to operate at 30% (16000 L) of its capacity per day in the first year. In the second year the plant is expected to run 50 % of its installed capacity (27,000 L) per day. In the third year plant utilization is expected to be 70% of its capacity.

5. BASELINE ENVIRONMENTAL CONDITION

5.1 Physical Condition

The project area is a part of the Modhupur Tract. Madhupur highland in relation with its surrounding alluvial plains is an inlier. This inlier is covered with Dupi Tila Formation and Madhupur clay. The Dupi Tila Formation is mainly a sandy formation. It is the oldest lithological unit exposed along the faulted zones, river cuttings and also encountered in wells. This formation has been deposited in the fluviatile and partly deltaic condition during the late Pliocene time. According to aged people of the area, about 20/25 years ago most land of this area was covered by forests. There were some bushes and big trees at the raised land areas. Rapidly this forest was cleared for settlement and other economic activities due to increased population pressure.

Villagers are now using the plateau type low lands for agricultural activities. The agricultural land of this area is now triple cropped. Before the establishment of Bangladesh Rice Research Institute (BRRI), villagers could not cultivate three crops due to the absence of irrigation facility. Excess irrigation and domestic waste water of the BARI complex flows towards the project area, discharging into the *Chelai khal*, which drains into the Shitalakha river. According to local people, water coming from BRRI is rich in nutrient, thereby causing increased vegetative growth of rice plant with poor rice production. It is important to mention that the project area is a high land of the Madhupur

Tract so it was never used for agricultural purposes. The land for the project site was previous a brick field.

5.2 Water Quality

Water quality data of the project area was not available. But villagers reported that quality of water is not good. There are some perennial ditches where local people catch very small amount of fish basically for their own consumption. Excess water from BRRI has created permanent water logging in the agricultural lands close to the ditches; those are apparently eutrophic water full of algae, few hydrophytes (e.g. *Ipomeoae, Pistia, Lemna, Eichhornia, Colocassia, Enhydra* etc.).

According to local people water of drain and ditches of this area is polluted. This contaminated water causes skin disease, eye irritation etc. of the people who use this water either for fishing or other purposes.

5.3 Relief

Table land and hillocks are remarkable features of Madhupur Tract. The general slope is from the north to the south. The elevation ranges from 2.38 metres to 10.66 metres (8 feet to 35 feet). Although the topography of the area has already been changed partly by human activities, even then the four terraces such as Madhupur Ghar, Bhawal Garh, Dhaka Terrace and Recent flood plains are observable.

5.4 Drainage Condition and Water Supply

The Madhupur highland is well drained. The Banar, Sutia, Sitalakhya and Balur rivers of the Brahmaputra river system drain the major part of the Madhupur Tract.

Deep tube-wells supply water for domestic and irrigation purposes. Ponds and shallow tube-wells are also sources of rural water supply of this area.

5.5 Air Quality

During site visit it was observed that the ambient air quality of the project area was fairly good. The main reason being that there is hardly any industrial activity around the site which can deteriorate ambient air quality of the project area. Although, Munir Chemical Industry is causing severe air quality depletion at about 4 kilometre North of the project, it is not affecting the project area.

5.6 Climatic Condition

Madhupur Tract and its adjoining areas have a tropical humid climate having high summer temperature, excessive air humidity, heavy rainfall with cool and dry winter. The mean temperature of July is 27.78^0 C and that of January is 18.33^0 C. The average annual rainfall is about 203.2 cms. (80 inches). In July 1995, the maximum rainfall was 408 mm. Average maximum humidity was 85% and minimum was 74% in July and February, respectively. The area is occasionally affected by the devastating tropical cyclones and nor-westers associated with tornado. The southwest monsoon continuing from March to October causes rainfall in the area.

5.7 Vegetation

Humid tropical climate and poor soil condition of Madhupur Tract facilitated the growth of semi dense forest. The gazari covers most the major part of the area. The *sal* is the main species and others are *kumbi, jiyal, basak, shonalu, korai and jackfruit* trees. According to aged people, the area was self sufficient with forest resources but now they are facing acute problem with forest products particularly for fuel wood requirement. This is due to the encroachment of forest areas for agriculture, settlement and for other purposes.

6. IDENTIFICATION & EVALUATION OF THE POTENTIAL IMPACTS

Identification of potential impacts due to plant location, construction and operation of the proposed project has been done using a checklist (see Appendix for checklist)

6.1 Adverse impacts

The survey result implies that there will be no significant environmental impact due to project location in this area except the discharge of waste water from the plant. According to the production process, hot water, nitric acid, caustic soda etc. will be used for the cleaning purpose of the plant. It is assumed that, a maximum 0.5% milk will come out with waste water during the cleaning process. Approximate flow rate of the effluent from the plant will be 140 m^3/day and the maximum strength of the waste water will be: pH 4.3, BOD_5 4000 mg/l, COD 8000 mg/l, and SS 1400 mg/l.

Acidic water flow, high BOD_5 and COD content may cause severe water pollution, as a result of oxygen depletion in water and accordingly fish kill in the ditches and canals of the project area.

The polluted water can cause human health problem, and can also destroy aquatic vegetation. Waste water discharge may overflow thus increasing permanent water logging problem in the area.

It is assumed that the waste milk (maximum 5%) during the cleaning process could lead to can make bad odour in the area. The required hot water for the cleaning process will be about 5% of the total volume of water. Therefore, it will not raise temperature of the waste water.

6.2 Positive impact

The project will contribute significantly in the following aspects:

6.2.1 Income Generation

For efficient operation of the proposed programme, BRAC Milk Producers Organization (BMPO) will be formed at village level. Under each chilling centre total number of BMPO will be around 70 and the number of farmers involved will be 6,000 to 7,000. Total

number of farmers under five chilling centres will be around 35,000. From this figure it is found that a huge network of employment will be created who definitely will be able to uplift their socio-economic condition.

6.2.2 Nutritional Status:

Per capita national calorie requirement of our country is 2273 K.cal which is far higher than our production level. BRAC Dairy and Food Project is going to produce 50,000 litres of milk per day and other nutritious food so it will enrich the nutritional status of our population.

6.2.3 Conservation of Native Species:

It is observed that due to increased culture of the exotic cow species many of our local species with high potentials are in a threatening condition. Culture of exotic species is not only risk involved but also very costly. Necessary measures should be taken to conserve the local species which are suitable for our environment.

7. MEASURES TO MITIGATE ADVERSE EFFECTS

7.1 Establishment of Treatment Plant

Water pollution will be the only problem for this area due to intervention by the proposed project. To minimize the adverse impacts of waste water, a treatment plant is proposed to be set up before starting production. It may take few more months to design a treatment plant after submission of this report. Site for the treatment plant will be about 600 ft away from the processing plant. The effluent treatment plant will be located within the proposed campus. A tentative layout plan of the proposed treatment plant has shown in Figure 4. The treatment plant will be capable of treating the effluent and the national EQS will be met. The design of the effluent treatment plant (ETP) would be provided to the DOE for comments.

7.2 Disaster Management Plan and Health Hazards

The project proponent would develop and pursue an appropriate disaster management plan to protect the plant from flood, cyclone etc. Moreover, the plant will be fully mechanized, so that risks of injuries, accident and death in case of any process failure and natural disaster could be minimized. Beyond the above measures, the project would have full provision for fire fighting and first aid medical services. The project proponent will provide gloves for the workers who will be handling acid. Since the plant will be fully mechanized so, there will be hardly any chance of personal contamination or injuries.

8. RECOMMENDATION

In addition to the mitigation measures discussed earlier, the following measures are recommended for the proposed project:

- Wide drainage system should be established from the project outlet up to the existing canal.
- Water quality of the waste effluent should be monitored on a regular basis.
- Though there will be no gaseous emission from the plant, a green belt around the factory premises will contribute to protection of environmental quality as a whole apart from its aesthetic value.

9. CONCLUSION

The above study reveals that activities of the proposed project is not expected to have significant adverse effect on the environment. Moreover, it is understood that the project proponents will take necessary measures, if required, to mitigate any environmental problem due to the plant. Therefore, the selected location of the BRAC Dairy and Food Project may be considered acceptable. However, no industrial development can be expected without any adverse impact on environment. The beneficial impacts on the nation as well as on human beings would only be meaningful and sustainable development is only

possible if the adverse effects are minimized through strict maintenance and control measures which as proposed and recommended for the proposed project. Finally, it can be concluded that since a treatment plant will be set up in the proposed plant to minimize the strength of waste water, so EIA will not be required for this project. Thus, IEE will serve as the EIA of this project.

Figure 4. Location of the proposed effluent treatment plant.