

The open access resources in the rural Bangladesh: Its function and the change

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Abstract

Bangladesh is located on huge delta with highly dense population. The study investigates the situation of commonly used resources in rural Bangladesh from case study in two villages under different hydrological situation. In rural Bangladesh, Most land is privately possessed or possessed by the government, and the local commons are very few. Instead, wetland as *khas* land (owned by the government) was open to the community, and anyone could access. In addition, open access resources exist by refraining from addressing the private ownership such as inland surface water spread over private land like paddy fields in summer season, and various “fallen resources” like leftover of rice straw, and fallen cow dung. Such resources have supported the sustenance of the life of resource poor people. But the *khas* land is gradually privatized, and the open access resources are changing the situation largely from change of cropping patterns. Instead, social plantation activities on road side increased the usable resources for resource poor people. Main stream of rural development in Bangladesh has been training & loan program to activate individual income generation activities. But communal approach for increasing local resources, mutual help for setting minimum safety net is needed.

Key words: rural Bangladesh, open access commons, water body, by-products, cropping pattern, women

1. Introduction

Bangladesh is famous for huge delta and dense population on it. At the flood season, about one third of the national land used to be inundated (Johnson 1981), and because of flatness, the forest coverage is very limited. With dense population, many have no land or very limited land, and it has been said that there exists severe “competition for scarce resource” (Jansen, 1986).

Under such ecological condition as huge delta, limited agricultural land and forest, how rural people manage to get necessary resources to sustain their everyday life? Current paper examines rural people’s struggles and devices to

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manage necessary resources accessing to various local resources from detailed case study in two ecologically different villages.

2. Common resources in Bangladesh

Bangladesh is 147,600 km² wide with 150 million people. More than 80% of them dwell in rural area. 41% of rural households are landless (with less than 2 are of land). Thus, most of the rural households are engaged in various income generating activities, such as petty business, labor work, workers at rural industry (e.g. weavers). The prerequisite to be entitled as village members is to secure the place to live (homestead), then, they struggle to get everyday foodstuff and fuel. International rivers such as Brahmaputra, Ganges, and Meghna rivers run into Bangladesh, forming huge deltaic area. Watershed covers 105641km².

With such hydrological environment, rainfed rice is grown in rainy (flooding) season, and in dry season, various cereals, pulses, spices and vegetables were grown traditionally. After the introduction of green revolution, rice farming in dry season using irrigation become popular, exceeding traditional rainfed rice farming.

In national industry sector, garment industry is growing rapidly. Production of garment industry amounts to 20 billion US\$, taking second place in the world after China. Many youth go to Dhaka and other cities to get off-farm job.

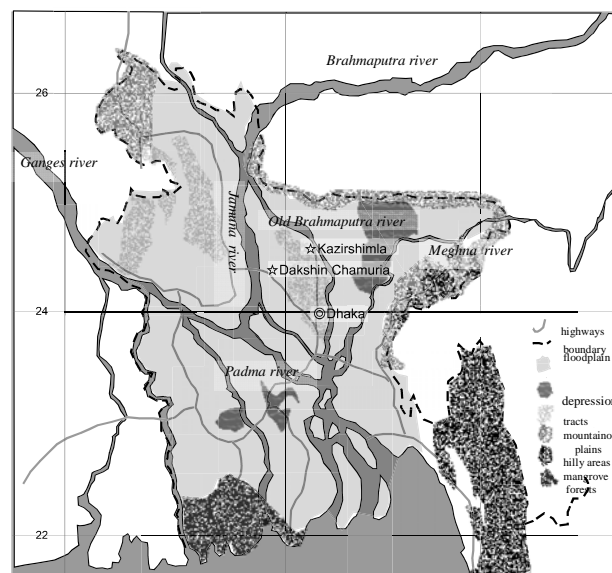
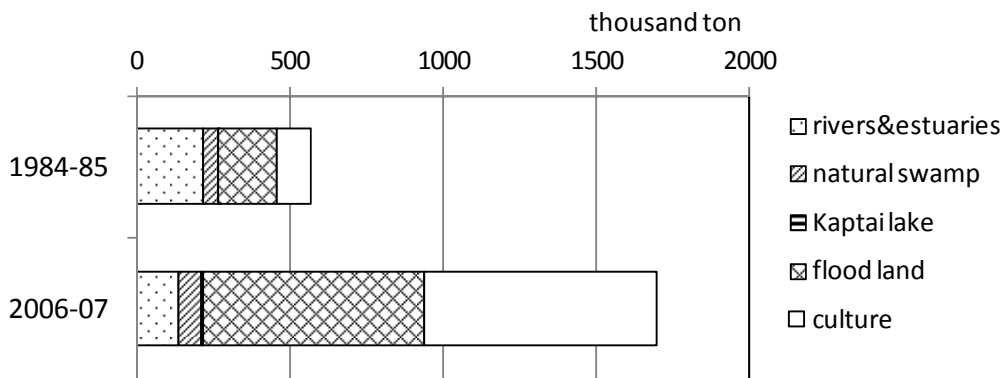


Figure 1. Location of research villages

Inland water body in Bangladesh

Permanent inland water body comprises 27.4% of land surface. When temporary water body-rainfed rice fields- is added, inland water body occupies 56% in rainy season. With regards to fish catch, rivers & estuaries and floodland were main fishing ground in 1984-85. In 2006-07, with the increase of fish culture ponds, the main fish catch originates from flood land and fish ponds (culture) almost evenly (Table 1).

Table 1 The change of fish catch from inland water bodies



(source: Bangladesh Bureau of Statistics)

Pre-colonial period, water bodies were open to public use, and fishers and farmers could enjoy customary rights to fish. During the colonial period, especially after the establishment of Permanent Settlement, water bodies were privately owned by *zamindars* (local land lords entitled as tax collectors by colonial government) or the tax attached to *zamindars*. The leasing out of water bodies also increased between *zamindars* and local well to do farmers. Navigable rivers and *Sundarban* (mangrove area) were controlled by colonial government excluding the customary rights of local people including *zamindars*.

After the abolition of *zamindari* system, ownership of majority of water bodies have been vested with the government while most of the seasonal water bodies in the floodplains have become privately owned. The government policy continues to seek revenues from leasing water bodies, which imposed unequal power structures between fishers and leaseholders.

Forests in Bangladesh

In Bangladesh, forest coverage is about 17% of land surface. Private forests are only 11% of total area, and most of them are rural homestead plantations. Rest are public forests, but 60% of them are now denuded. Natural forests throughout

the country are increasingly being depleted. In 1980s, the rate of forest destruction was 8000ha per annum with the estimated annual deforestation rate of 3.3% (Alam 2009). Major causes of deforestation and forest degradation include shifting cultivation, overexploitation of forest resources, organized illicit felling, conversion of forest land into non-forest use and encroachment.

Traditionally, forest used to be managed communally by the local communities, but at the First forest policy of India conducted in 1894, only 5% of total forest area was left to the communities, and 2% for private, and the rest was taken by the government. During World war II, forest area degraded, so the government increased the percentage of national forests after independent. Before the forests were taken by government, owners of the forests hastened to fell the trees. As a result, vast area of forests trees was felled, and forests were converted to the agricultural land.

Even after World war 2, colonial style of forest management continued, and the customary right of communities had been neglected. After the independence from Pakistan as Bangladesh, first forest plan was planned in 1979, but the communities continued to be ignored although 70% of forest products came from private forests (Millat-e-Mustafa 2002). After 1994, from the viewpoint of sustainable forest resource utilization and poverty alleviation, forest management with participation by local people came to be encouraged (Millat-e-Mustafa 2002).

Natural forest coverage is very poor in Bangladesh, and almost all the rural communities have no natural forest area. For rural people, homestead plantation has substituted natural forests, and trees planted in common spaces such as road sides and/or school yards conducted as social forestry movement since around 1990

3. Research villages and research method

Research villages

Research villages are Kazirshimla village (K village herewith after) in Mymensingh district on the natural levee of the Old Brahmaputra river, and Dakshin Chamuria village (D village herewith after) in Tangail district in the active floodplain of Jamna river system.

K village is located relatively high land, and homesteads were constructed by clearing natural forests. There is no natural forest anymore, but the homestead size is quite large compared to national average, and many trees grow. Since K village is located on the

natural levee, it is free from inundation in rainy season, but suffered from shortage of water. Thus construction of homesteads accompanied excavation of ponds. A river runs on the village border, and there is a natural swamp (*beed*) on the southern border.

D village is located on the active flood plain, and subject to be inundated during rainy season. Homestead has to be mounded 2-3 meter. In 2006, household number were 362 (K village) and 629 (D village), and the rate of Landless households were 24% for K village and 45% for 24%.

Research method

After conducting general baseline survey to all households, detailed surveys with case households were conducted.

1) food survey

In K village, food record keeping started in March, 2006 with six case households. They were selected to include various economic conditions (two middle farm households, three small farm households and one landless). The eldest daughter/son of the household was assigned to record everyday food (the name of the dish and ingredients, the source of the foodstuff, who cooked, cooking time, how many people ate, the fuel and its source, and the amount of the foodstuff). It took several weeks to become accustomed to the task for record keepers, and the records from June, 2006 to July, 2007 were used for analysis.

In D village, food record was conducted more simply. From June 2007 to May 2008, every first one week, the same recording was conducted by field assistants with everyday visits and interviews. Five households were selected by the same criteria (to include various economic conditions), and they were one medium farm household, three small farm households and one landless household.

2) time use survey was conducted to the same case households in D village for same period with food survey by recalling method.

3) fuel usage survey: 14 households were selected so that to contain various land holding, various size of homestead forest, various level of involvement to farming, and the name of fuel sources, acquiring place and acquiring ways were interviewed in 1993.

4. Results and discussions

Common resources as food source

Most food stuff were self produced, bought from markets/neighbors, obtained as

gifts from relatives or neighbors, or gathered from surrounding environments. Fish was the most one that are often obtained from surrounding environments, and wild vegetables followed.

Fish were obtained through various routes other than purchase like fish culture in own ponds, gathering open access water body, gift by relatives/neighbors, payment for the fish culture labor. As mentioned before, in K village, pond excavation was necessary to get water, and fish culture in ponds is commonly observed. By contrast, fish culture in ponds used to be rarely observed in D village because of shortage of land. But recently, the high profitability of fish culture has come to attract villagers' attention, and some farmers began to excavate ponds to culture fish. Figure 2-5 show the acquisition of fish by season and family.

In K village, all case families cultured fish, but A family and B family had access to jointly-owned ponds only, and the harvest share could not be expected very much. Instead of eating cultured fish, male members of B family frequently went to natural *beel* (swamps) on the edge of the village, and caught various natural floodplain fish. The *beel* is shrinking in size due to gradual privatization converting swamps into fish ponds and rice fields for *boro* (winter rice) cultivation as observed nationwide, but it plays an important role of supplying a free source of protein to local people. A boy in family C also enjoyed catching fish from the *beel* although his family cultured fish. The head of A family, busy with petty business and with poor health, could not fish at the *beel*. Instead, he sometimes worked as a night watch at a commercial fish pond, and received some portion of the harvest (fish) as pay. A family got fish as gifts from F family (the heads of the two households are cousins) especially during the fasting season and Eid (the largest festival for Muslim).

In D village, only one household culture fish (K family). So fish was obtained by either purchase or gathering (catching). The main source of fish was the floodplain and adjoining paddy fields in rainy season. Fish come into paddy fields with the flow of flooded water, and villagers are free to fish in others' paddy fields. When dry season approaches, the flooded water level falls gradually. Fish that could not move with the flow are left at shrinking water body, and fish catch becomes easier. At late autumn, villagers gather fish in the ditches, and by the recent decrease of fish catch, some villagers came to pump up the remaining water to catch all the fish. Fearing for the natural resource exhaustion, closed season for fishing is set by the government.

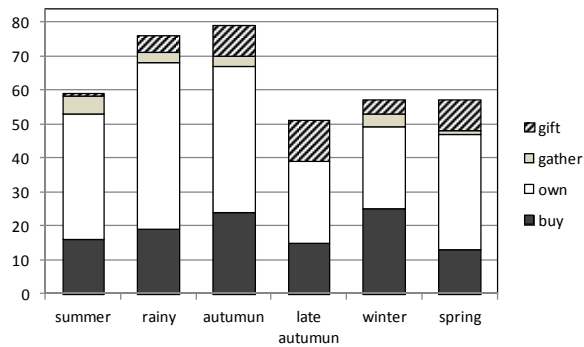


Fig.2 Source of fish consumed by season (K village)

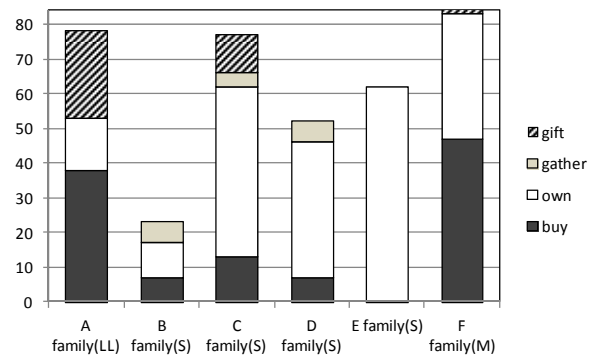


Fig.3 Source of fish consumed by family (K village)

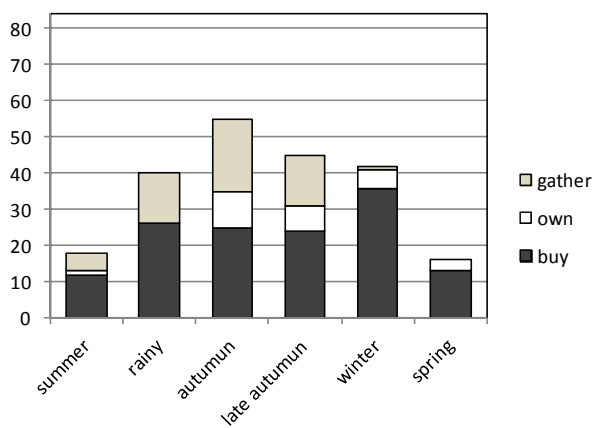


Fig.4 Source of fish consumed by season (KDvillage)

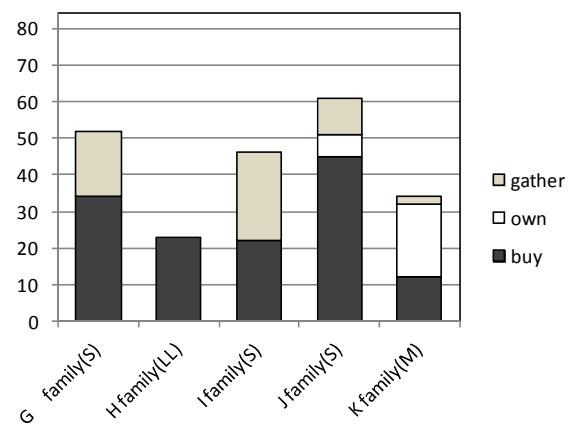


Fig.5 Source of fish consumed by family (D village)

(source: from food survey)

In D village, fish obtained as gifts were not observed. It may be because that fish culture was not popular in D village. The fish gathered from open access water body is just to meet everyday needs. G family and I family rely on natural fish about half the fish consumption. Landless H family did not go for fishing at all. This was because that family member is mother and a son only, son did not have time to go fish since he works as weaving worker for all day.

Wild vegetables such as wild taro, lotus, *Enhydra* sp. are also gathered from fallow fields and road sides, but it was not so frequent as fish.

Common resources as fuel sources

Another important resource to maintain everyday life is to secure fuels. While K village is rich in tree vegetation in homesteads, D village is located in the floodplain and is short of trees. Thus villagers have to seek for various fuel

sources. From the time use survey, women spent about one hour to gather fuel everyday.

Table 2 shows the variety of fuel source and importance in D village. Besides branches and leaves from homestead plantation, important fuel sources were by-products such as rice straw, wheat straw, jute stick, mustard plants, rice husk and so forth. Cow dung is also important fuel source. Wet biomass such as leftover of cow feed was dried again to use as fuel.

For those whose farm size is small or who do not raise cows, own resource is not enough. Women in resource poor families go for postharvest work to get some portion of by-products. Besides, many go out to seek for leftover of biomass. Leftover of traditional floating rice straw (*nara*) and cowdung were very important fuel source. *Nara* is also important as compost source, and owners also want to use for their own use. But in the village, anything that is fallen on the ground can be taken by anyone else, and resource poor families go for gathering *nara*. Cow used to go out for fields to eat grasses, and dropped dung everywhere. Such fallen dung also could be taken by anyone, and women and children of resource poor families would wander in the village to gather cow dung.

Even water plants such as water hyacinth are gathered from open access water body as fuel after dried up. Open access commons/resources were so important for resource poor families to sustain everyday life.

Change of open access commons/resources

The principle of fishing in the open access water body is not changed, but villagers felt that the fish catch decreased. Villagers in D village said that some particular species and snakes are rarely observed these days. As the reason for it, villagers explained that the inflow of fish through canals from river came to be obstructed due to the construction of roads and embankments, and that the use of chemicals for the cultivation of HYV rice influenced.

In K village, swamp (*beel*) which used to be *khas* land (owned by the government) came to be privatized or leased by the government gradually for two decades. Now almost all the area is privately cultivated as rice field in dry season or fish ponds. Villagers can still fish in the *beel* in rainy season, but not so broad or free as it used to be.

Table 2. Source of fuel in D village

| Resource | place | all sample houseohlds (n=14) | landless ⁴⁾ (n=2) | with simall(> 40are) land (n=6) | with large(<40 are) land (n=6) |
|---------------------------------------|--------------------------|------------------------------------|---------------------------------|---------------------------------------|--------------------------------------|
| leaves | total — | 14 | | 2 | 6 |
| | self homestead | 13 | | 1 | 6 |
| | gather rode side | 1 | | 1 | |
| jute stick | total | 14 | | 2 | 6 |
| | seif field | 7 | | | 1 |
| | buy | 4 | | 2 | 2 |
| | as labor | 3 | | | 3 |
| cow dungs | total — | 13 | | 1 | 6 |
| | self homestead | 8 | | | 3 |
| | buy | 2 | | | 2 |
| | gather rode side | 5 | | 1 | 2 |
| leftover of rice straw | total | 13 | | 2 | 5 |
| | self field | 8 | | | 3 |
| | buy | 1 | | 1 | |
| | gather | 6 | | 1 | 3 |
| mastard plant | total | 13 | | 2 | 5 |
| | self field | 11 | | | 5 |
| | as labor | 1 | | 1 | |
| leftover of cow feed | self homestead | 9 | | | 3 |
| empty grain husk | self field | 9 | | | 4 |
| branches | total | 8 | | 1 | 3 |
| | self homestead | 7 | | | 3 |
| | buy | 1 | | 1 | |
| rice straw | total | 8 | | 1 | 4 |
| | self field | 7 | | | 4 |
| | as labor | 1 | | 1 | |
| rice husk | total | 8 | | 1 | 4 |
| | seif field | 7 | | | 4 |
| | buy | 1 | | 1 | |
| wheat straw | self field | 3 | | | 3 |
| water hyasinth | total | 2 | | 1 | 1 |
| | self own pond | 1 | | | |
| | gather water body | 2 | | 1 | 1 |
| <i>Saccharum</i> plant | gather road side | 1 | | | 1 |
| kind of fuel that are gathered | | 5 | | 4 | 2 |
| | | | | | 0 |

(source: from fuel survey)

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The change of cropping pattern also influenced the use of open access resources especially in D Village where many villagers relied on open access resources. “Green revolution” was introduced in D village in 1975. Then rice cultivation in dry season spread gradually replacing the various cereals and pulses. It is said that before the “Green revolution”, farmers in Bangladesh grew more than 8 thousand varieties of paddy, but only 1500 is in gene bank, and less are grown in the fields. Even for the traditional rainfed paddy cultivation, HYV have come to be grown commonly. The HYV produces short straws compared to traditional ones, which bring about the shortage of fuel source. By the decrease of pulse cultivation, decrease of straw production, and shortage of time to pasture in the ground, cow raising also changed. They are now raised mainly in the cow shed in homestead and are fed purchased feeds.

By the change of cropping pattern, by-products such as various straws decreased, and so did *nara*, the most important fuel source. Fallen cow dung also decreased. With the decrease of various local resources, the needs for *nara* become intense although its production is decreasing. Resource poor families take it soon after the harvest. The owners also want to use *nara*, but they give up private ownership on this regard following customary communal right. It can be said that the shortage is shared among villagers.

In addition, the decrease of open access resources made women to rely on their homestead for getting fuel. Women have come to gather fallen leaves too often, which hindered the growth of young trees in the homesteads causing the degradation of its vegetation. The change of cropping pattern influences not only the changed crop itself but also influences on various cycle of resource utilization.

Open access resources and by-products are used directly by villagers outside market, its importance tends to be overlook not only by governmental /non-governmental agents but also by villagers themselves. Such resources help the sustenance of resource poor family. Women are in charge of securing food and fuel, and the decrease of such local resources increases the burden.

In the 1980s, social forestry program was introduced in rural Bangladesh, and in D village, one rural development program (which the author participated)

promoted social forestry, too. Various trees were planted on road side. Several years later, women from resource poor families came to gather fallen leaves. Village forests belong to each household (homestead plantation), and it is difficult to enter into other's homestead to gather fallen leaves (in large homesteads of rich family, some neighboring women still enter to gather fallen leaves). One cannot fell down the trees on the road sides freely, but the tree plantation on common space helps increasing usable resources for resource poor families.

Figure 6 illustrates former and present situation of local resources in both villages (mainly for D village where resource shortage is keen). Formerly, water body spread widely in the rainy season and many fish could be caught. Ample by-products such as leftover of rice straws (nara), and many works on postharvest work existed. Cows fell cowdungs, and such resources were useful for resource poor families. At present, water ways are interfered, and catch of floodplain fish decreased. With the change of cropping patterns, by-products decreased, and fallen cowdungs also decreased. Shortage of by-products made women to excessively rely on homestead plantation, and which degraded the vegetation. Natural swamps are gradually privatized for winter crops, or for permanent use (culture ponds). Social forestry increased common resource, which enabled resource poor women to gather fallen leaves as fuels.

There is one NGO named UBINIG that tries to grow out of capitalist economy by encouraging rural community (UBINIG 1995; 2000; 2006). UBINIG

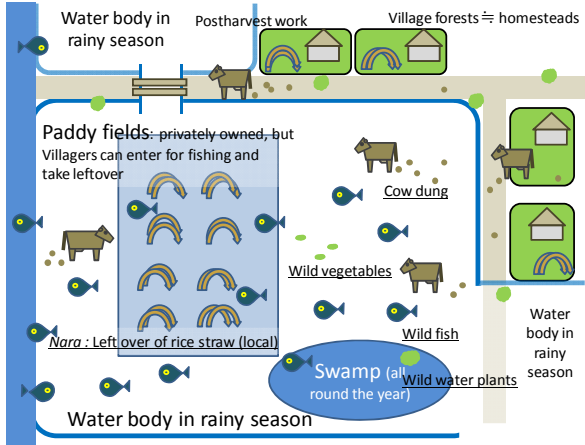


Fig.6-1 former situation

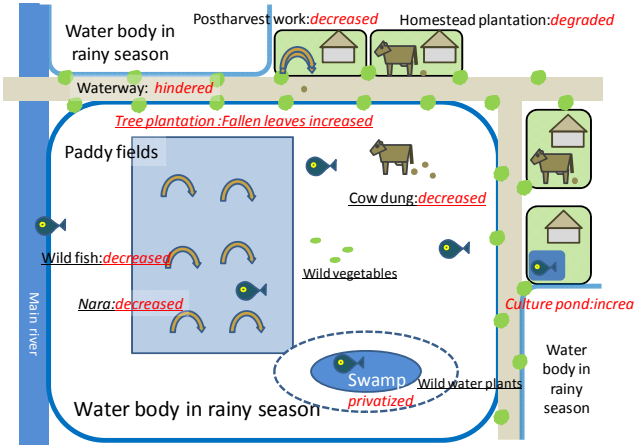


Fig.6-2 present situation

Figure 6 Change of commonly used resources

(source: by author)

focuses on the local resources such as wild vegetables, wild fruits, wild herbs, by-products, natural fish, and local indigenous knowledge fostered by local people. UBINIG tries to visualize the importance of such resources for re-evaluation, and try to activate the use of them. UBINIG establishes seed banks among local people to exchange local varieties without payment. Such activities are not only for technical or economic purpose. UBINIG tries to strengthen the human network and to reconstruct the community.

5. Conclusion

Commons or commonly used resources in both villages were open access ones. Open access resources are loosely managed or without management, and it tends to cause “the tragedy of the commons”. As mentioned before, rural Bangladesh is the place of “competition for scarce resources”.

In Bangladesh, the space that can be called as “the commons” is very limited. Forest coverage is so poor, and most of them are under the control of the government. In the research villages, there were few spaces that can be called as common space like school, market place and mosques, and rest is privately owned. But the giving up some portion of private ownership (like abandoning the ownership of the leftover on the ground, allowing others to enter into own paddy fields) allowed the access to local resources by resource poor people’s sustenance of the living. The change of cropping pattern decreased the variety of products and by-products. On the contrary, tree plantation on the common place increased the common resource that helps the resource poor family. UBINIG tries to re-construct the collective power of local community through revaluating local resources and knowledge.

Fujita (2008) criticizes that rural society in Bangladesh is the typical case that evolved being hindered the accumulation of social capital. Bangladesh society was explained as “elusive village ”(Bertocci,1970), and those who visited rural areas to aid them may be embarrassed with whom contact. In addition, rural leaders are often criticized as exploiting people, and should be excluded from assistance. The outside assistance to rural people in Bangladesh was in the shape of target approach, that gathers the entitled villagers as members, and typically give skill training and small scale loans for income generation.” Training and loan” program aims at increasing individual income, and paying little attention to the community.

As far as the people’s concern is limited to individual profit, resources will be enclosed, and resource poor people will suffer by exclusion. To support the

living of resource poor people, alternative approach to enrich the useful resources that can be used without money needs to be sought. Enriching the resources in the common places may be one effective way for it. By reevaluating the importance of such common resources for the community members, the appropriate use can be discussed. Communal approach for increasing local resources, mutual help for setting minimum safety net is needed.

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