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Gender Issues in Mining and Extractive Activities: A Preliminary Case Study of White Clay Mining in Bangladesh

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I. Introduction

Mining is not a major economic activity in Bangladesh. Nor has gender aspects in mining been looked into in any detail anywhere. Coal mining has only begun only recently and there is hardly any woman miner. There are, however, several small quarrying type activities such as stone quarrying and white clay mining in several places. And like any extractive activity which impact upon the societies whose livelihood depends upon, such extractive activities apparently affect men and women differently. This paper tries to make an exploratory introduction to the subject and tries to draw upon information from the field in case of artisanal mining of white clay. The paper is structured as follows:

Section II provides a brief country context and the role of mining in the economy in terms of GDP and employment by sex. The following section provides a brief historical description of the mining of white clay in the country. Section IV uses qualitative information from the area where white clay mining has been practised to look into the male-female differences in mining activities, their terms and conditions of employment and the impact of mining on women's home production and other roles.

II. Role of Mining

The contribution of mining in the economy is very small. The share of the Mining and Minerals sector in the national accounts in recent years had been slightly above 1% much of it accounted for by natural gas and oil (Table 1). Probably much of the rest is due to extraction of coal from Barapukuria which started production in recent years. Artisanal mining of peat in some areas, boulders and gravels in the north-east and white clay mining in the northern central districts account for the rest. What it means is that in aggregate terms, mining and most certainly artisanal mining has little significance to the economy. But in a given locality it may be of quite some significance. Also note that in

some cases as in the present, white clay is the basic raw material of a not so insubstantial industrial activity, namely ceramic industry.

Table 1
Role of Mining in Economy

Year	Contribution (%) to GDP			Employment	
	Natural gas and unrefined oil	All others	Total	Men	Women
2002-03	0.66	0.44	1.09	73,000	1,000
2003-04	0.68	0.43	1.11	na	na
2004-05	0.69	0.44	1.14	na	na
2005-06	0.71	0.45	1.16	na	na
2006-07	0.72	0.46	1.18	na	na
2007-08 (p)	0.73	0.47	1.20	na	na

Source: For GDP contribution, MoF (2008). For employment, BBS (2004).

Note: GDP contribution is estimated at constant 1995/96 prices. Employment refers to persons 15 years and above who were actually employed during the reference week in the rural areas.

na = not available

In terms of employment, again mining appears to be insubstantial. While very recent data are unavailable, the situation over the last five years does not seem to have changed much. Note also the insignificant role of women in the labour force employed in the mining sector as a whole. The proportion of employment in the total in rural areas had been only 0.2 percent.

It is possible to break the aggregate figure of employment in mining by the specific sub-sectoral activities. Here we find that the sub-sector specified as “Stone, clay, ceramic and refractory minerals” employ more than 42.4 thousand which is more than one half of the total for the mining sector as a whole (BBS: 2004, p. 119). The comparative figures for “Limestone and chalk” quarries and “Silica and other sand” collection are 15.5 thousand and 8.1 thousand respectively. These figures indicate that while mining as a whole may not be significant, within that tiny sector, artisanal activities including white clay mining are probably far more important than others in terms of direct livelihood, although here again we find the apparent absence of women (but see later).

It should be noted also that white clay is a major raw material for the ceramic industry which in 2002-03 employed nearly 140 thousand people of whom nearly 22 thousand had been women. This indicates clearly that the livelihood impact of white clay mining is far more and extends far beyond its direct impact.

Before concluding this section, it is of interest to look at the ethnic composition of the people of Bangladesh. According to the 2001 Population Census, the ethnic minorities (generally called tribals) numbered 1.41 million. A major concentration occurs in the south-eastern hilly districts of Rangamati, Khagrachari and Bandarban (40-42%). North central districts of Mymensingh and Netrokona comparatively have only a few, 2.9% and 2.3% of total, respectively. These are specific ethnic groups such as Garos and Hajongs. The Garo societies are matriarchal in which women are the main breadwinners. Hajongs are patriarchal. Both the ethnic groups are found frequently in the white clay mining areas.

III. White Clay Mining in Bangladesh

Initially discovered in 1957, white clay (kaolin) deposits are found in several places in the north-central districts of Mymensingh and Netrokona. The main deposits so far have been found in Panchkahania in Durgapur Upazila (subdistrict) of Netrokona which is adjacent to the hills of the Meghalaya State of India. White clay is often found in a series of hillocks as exposed deposits.

The total estimated reserve of white clay depends upon the depth of the deposits. Up to a depth of 15 metres the deposit is estimated to be 619 thousand tons (Islam: 1985). Up to a depth of 45 metres the estimated deposit is 2.5 million tons.

The mining has been taking place since 1960. Up to 1984, only a few companies have been engaged in mining and up to that period, 82,800 tons of white clay has been removed. In November 2007, a Department of Environment team visited the area and found 11 companies which have taken lease of mining from the Bureau of Mines (DoE: undated).

The leases are annual. Each leaseholder may get 10-30 ha of land to work upon. Much of the leased land is privately owned, some of it is purchased by the mining firms

while the rest is owned by the Government. Some parts of the mine land are under natural *shal* forests.

Practically all the mines save one are worked in open pit method and manually with crude and primitive tools. The clay is found in layers in the soil and once the hillocks are exposed and exploited deeper excavations are made for extraction of the clay. It has generally been observed that the deeper deposits are better in quality than those near the surface.

The Department of Environment (DoE) has stopped quarrying for white clay when there had been several devastating land slides that had taken place in other parts of the country and killed several people and demolished their homes in the hilly areas on the outskirts of the city of Chittagong. While in its strict sense the quarries had not been operated entirely legally, and there had been certain adverse environmental changes in the area, no major land slides in the area has been reported so far.

IV. Visit to the Mine Area

4.1 Method of investigation

The mine area has been visited twice, once for reconnaissance and again for more detailed collection of information. In both occasions, there was a checklist of issues which we tried to discuss with local officials, mine officials or local supervisors, persons who had been workers in the mines in various activities. On top of that we talked to some of the ceramic industry people in Dhaka. However, the most important part should have been the discussion with workers. Unfortunately as they have been disbanded, it was not easy to get hold of them. Nor was it easy to find the women who had been employed. The present findings should therefore be treated as very preliminary as often this is based more on recollection by other people rather than the concerned people directly, although some of them were also included in the discussion groups.

In addition to the above field work, we have also consulted the earlier literature related to white clay mining. In fact there had been only one major report prepared in 1985 by Islam (1985). Other secondary information has been culled from government publications as well as the recent DoE report.

Leasing and licensing for white clay mining

The whole production chain begins with lease of land for prospecting and extracting white clay. The prospecting company first applies for a lease of land from the government for mining. The actual license for mining is issued by the Bureau of Mines as the State is the owner of all mines. The leased in land may be under government ownership or private ownership. For the Government land, the lease is given by the District Commissioner's office. If under private ownership, some times the prospecting company buys of the land from the private owners. Usually the offered price is 2-3 times the market rate for land which makes it easy for the prospector to purchase the land. But not all do so. In that case, either the private owner him/herself extracts the clay and sell it off to the company, or the Company itself extracts the clay and pay the revenue to the land owner. But purchase appears to be the norm. Usually if the market price is Taka 10-12 thousand per *katha* (8 decimal) of land, the purchase price offers range from 20-30 thousand per *katha*.¹

Once an area is marked for extraction of clay, some time it may begin from the top itself if the clay is exposed. If not, the over burden have to be removed. Usually the clay is found at shallow depths of around 5 feet, some times up to 10 feet has to be dug before clay is found. See Picture 1 of a water-filled pit where the clay is seen to be almost exposed to the surface and Picture 2 of a kaolin deposit.

Production management

The leaseholder company usually sub-contracts the actual digging and extraction work to others who appoint workers and over them supervisors to oversee the whole work from digging, extracting, and transporting to company premises or trucks. Only 3 companies who are involved in producing ceramic goods are also mining the clay directly through their own management.

¹ Taka is Bangladesh currency. The present exchange rate is Taka 68 = US\$ 1.



Picture 1

A White Clay Quarry in Netrokona

Note the white clay veins almost from the top and its water-filled state



Picture 2

A White Clay Vein Mixed with Gravels in a Deposit

Work in the quarries

The pits hardly goes deeper than about 40-45 feet or 15 metres or so as these are generally worked with spades, shovels and baskets. Only one company is known to have used more modern methods of drills to loosen the clay and extract it. Otherwise, normally a team of 20-30 workers do a pit, men loosening and breaking the clay while women take them as head loads in baskets and carry them above the ground. If there are about 10 men, 12-15 women may be in the team.

Working men and women are local but they differ by ethnicity. Men are usually muslims and some times also hajong. Women are almost exclusively garos with some hajong. Bengali muslim women are extremely rare, possibly due the social institution of *pardah*.² Garo men are also rare because of the matrilineal nature of the garo society. Garo men hardly work as much as women who are the breadwinners.

The pit work is usually done in one shift from morning till mid-day for around 4 hours. Of course, for women then begins the second shift at home. But this is different in the quarries owned by public corporations such as BCIC. Here the working day is from 9 am to 4 pm.

Supervisors work from morning till afternoon. Once the production workers in the mines/quarries do their shift, they supervise the work of putting the clay in bags and their transport by van and then by boat to the loading points for trucks which take them to the factories near Dhaka. It appears that most companies have no office or depots for sorting out the clay. Only one does.

In BCIC owned quarries, workers get 1 day weekly holiday. In privately owned quarries there is no such weekend.

Transport of white clay

Once the white clay is taken above ground, these are put in bags each usually weighing 50-52 kgs. These are loaded in vans which are manually pushed. The main reason for this is that the road infrastructure in the area is much undeveloped. Given that this is an area

² See Westergaard (1994) for a description of the interrelationship between *pardah* and women's outside work.

which supplies the main raw materials to an important import-substituting industry, this is surprising. In any case usually young men aged 18-20 do this hard job.

Gender composition of work

The gender composition of the workforce in the quarries proper appears to be just around 1:1 or slightly more in favour of women. But in other areas of operation generally it is all men. There is only one woman supervisor, a garo lady in the public company which uses comparatively modern means of extracting the clay.

There are 12-13 quarrying companies in all. At any given time the maximum number of pits they operate is 5 or so. If all are working the quarries at the same time, the maximum number of employed persons would be no less than $25 \times 5 \times 12 = 1500$ workers, half of them would be women. Thus, the figures we have is similar to those reported by the DoE. If we use their figures, the total employed persons come to 6050 with 750 as women. That makes the proportion of women about 12.5 percent of total, small compared to other places in the world.³

Wages

Wages vary by gender as well as by type of work done. The wages are actually fixed in the pits by the quantity of clay lifted and estimated by bagful for payment of wages. The average wages for men in the quarries is Tk 80-100 while for women it is 60-70 per day. When asked why this differential particularly when the total productivity of the team in a given pit is the basis for wage payment, the stock answer is of course that men do the harder part of the job. No body thinks that going up the pit taking full head loads is hard job. On the whole the average wages of quarry workers whether in public or private quarries are rather similar, around Taka 20 per working hour as the workers weekends, when they have such facilities are uncompensated.

³ In Asia the comparative figures as reported by Hinton, Veiga and Beinhoff (2003) are India: 7; Indonesia: 10; Philippines: 25 and Papua New Guinea: 20. Figures for African countries such as Burkina Faso or Ghana are much higher 45% or thereabout. Of course as Lahiri-Dutt (undated) has argued women are also invisible in many government statistics making low figures in some of the countries rather suspect.

Even then the wage is not paid regularly. As a result, workers take loans from shop keepers and others including supervisors to subsist and this also ultimately lowers their net pay as interest has to be paid on the loans.

Van pushers and supervisors are luckier in that the former group gets the salary on a daily basis at a rate of Taka 7-15 per bag depending on distance. The supervisors get salaries on a monthly basis at the rate of Taka 1800-3000.

The public companies such as BCIC-owned BISF pay somewhat higher salaries. Men and women in the extraction pits both get Taka 113 per day and are paid once a month. The rate for van pushers is also the same. Supervisors get salaries at the government rate approved for BCIC.

Environmental impacts and its socio-economic consequences

As has already been mentioned, the pits are often worked only up to 40-45 feet or 15 metres or so. In many cases, however, the available deposits extend far below and as has been observed the deeper one goes the better the quality of the kaolin (white clay). Yet, because of the primitive nature of the extraction method, these can not be worked deeper and have to be abandoned. The study area has many such places where such abandoned pits can be found. These accumulate water and become fish ponds some times. In other cases, the overburden of the nearby pits are dumped into the abandoned ones or the land slides partially block them. What it means is that at least partially the landscape becomes devoid of any economic activity thus adversely affecting the livelihood prospects of the local people.

The Department of Environment is insisting that the quarry leaseholders should submit a workable plan for land and environmental management once the quarries are worked out. But so far there appears to be none that has been submitted. If a comprehensive environmental area plan can be worked out and put in effect, this may possibly improve the livelihood options of the people of the area.

Work environment

As described by the people involved in the quarrying and also the supervisors, generally there is not much disharmony in work places between men and women except the

differentials in wages. More importantly for women they can get back to the family during mid-day. But weekly holidays even when uncompensated probably would have made it better.

Kaolin (the main ingredient of white clay) is normally a non-reactive chemical compound and thus little health hazard is expected. It is known however, that if exposed on a prolonged basis through inhalation, skin or eye contact chronic pulmonary fibrosis may occur. However, if not worked in close proximity these problems are unlikely. In any case, people are not aware of these problems. What they complain about is that they get cuts and bruises from the tools they use as well as larger stones which loosen during clay cutting. Also, workers have to some time work in standing water in the pits which result in feverish conditions.

Land slides do occur. But incidence of land slides killing people is rare. In 2005, 3 persons died due to land slides in 3 quarries. They were all men and taking rest in between work.

The aftermath of work stoppage in quarries

The DoE report has categorically stated that since the closure of the quarries for white clay extraction, those involved in such works have been affected very adversely. Their basic means of livelihood has been lost. Some have coped, mainly men by migrating to towns in search of jobs. Some are now engaged in public works programmes related to the 100-days employment guarantee scheme.⁴ Given the wage rate in the scheme (Taka 100 a day), this may seem almost as good as that in the quarries and those who are involved may have a little respite perhaps. The male-female division in the programme is not known, however.

Only comparatively the large scale public company is still employing some people including a few women to load and unload bags of kaolin which they had stored from the period of extraction activity. The lady supervisor who works for the public company is also in employ and gets her salary as usual.

⁴ This scheme is expected to provide manual jobs for men and women for 100 days at Taka 100 per day. The allowance is to be paid even if no job can be found to employ them.

V. Concluding Remarks

Mining is not a common economic activity in Bangladesh. Large scale mining of coal has just begun. Other types of mining are basically artisanal for extracting gravels, peat, white clay and sand. We have tried to provide here a very preliminary picture of artisanal mining for white clay along with the role of women. Women's participation is not high and their involvement is probably more due to the matriarchal nature of their society in which women are the breadwinners.

Even within this microcosm we get a reflection of the gender differential if not discrimination that one observes in the Bangladesh society in that women get lower pay than men even when they work as a team whose average productivity should be the basis of pay. Also note that all those who work in the quarries do not get paid regularly. It affects women more as they all work in the pits, while where men predominate (transporting and supervision) they are better and more regularly paid.

But the problem right now is the lack of even this low-paying work as the Department of Environment has failed to take any concerted action regarding starting the work. People are trying to cope in various ways but possibly the women are less able to do so although they may have a little respite because of the new Employment Guarantee Scheme that has started operation in the area. But a longer term solution to the problem is necessary.

There is little doubt that certain environmental degradation has taken place. But this is not documented well. In any case, without the quarry owners being trained in the more modern process and environmental management, this can not perhaps be avoided. On the other hand, if more mechanized means are adopted, costs may go up and workers including women may have to accept even lower wages. But this is for the future and we shall have to wait till an acceptable working formula is reached between the Government and the mining lease holders.

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