

Implications of changing national policies on land use in the Chittagong Hill Tracts of Bangladesh

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Abstract

Land use in the Chittagong Hill Tracts (CHT) of Bangladesh had undergone changes over the past several centuries. The landscape, which was mostly covered with forest with interspersed shifting cultivation plots until the beginning of the colonial period, has gradually changed into a landscape with a blend of land uses. Overall, the forest area has gradually declined, while the area under shifting cultivation and sedentary agriculture has expanded. The process of the change was multi-directional. National forestry, land use, land taxation, population migration policies, and development activities, such as construction of a hydroelectric dam and roads, played an important role in this process. Shifting cultivation had inflicted little damage on the forest until the beginning of the colonial period. The pace of deforestation accelerated with the nationalization of forests which abolished tribal people's customary use and management rights to the forest, and allowed large-scale commercial logging both legally and illegally. The pace was further intensified by the policy encouraging population migration to CHT and construction of a reservoir on the Karnafuli River. Efforts were made to replace shifting cultivation with more productive types of sedentary agriculture. However, much change could not take place in the absence of secure land rights, supportive trade policies, and the required support services and facilities, including infrastructure. Locationally suitable land use evolved in areas where transportation facilities were available and farmers were granted land title with the necessary extension services and credit facilities. These findings have important policy implications for the promotion of environmentally and economically sound land use in CHT.

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1. Introduction

Like other mountainous areas in South and Southeast Asia, the Chittagong Hill Tracts (CHT) of Bangladesh are undergoing deforestation and land degradation arising from environmentally unsuitable activities such as shifting cultivation and logging (Farid and Hossain, 1988; Gafur, 2001). Shifting cultivation, locally known as *jhum*, characterized by preparing land by the slash-and-burn method, growing crops for 1 or 2 years and, then, moving to another plot, has been a dominant type of agricultural land use practiced by tribal communities in CHT ever since the origin of agriculture in this area. As elsewhere, shifting

cultivation was an environmentally compatible land use in the past when the land used to be kept fallow for a long period, up to 25–30 years (Sanchez, 1996; Brady, 1996). Though such land use practice always kept people under very poor conditions because of the very low return per unit of labor and land, the practice of keeping land fallow for a long period prevented accelerated soil erosion and forest degradation, and helped to restore soil nutrients extracted by crops (Fox et al., 2000). The cropping diversity typically found in shifting cultivation prevents the land from ecological destruction caused by monoculture and narrow genetic bases (Kid and Pimentel, 1992; Fox et al., 2000). With the growing population and state control over the forest, shifting cultivators were forced to shorten the fallow period gradually. Currently, most shifting cultivation plots are kept fallow for only 2–3 years

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and the land is used without proper care, which has led to degradation of land and forest in CHT (Khisha, 1982; Soil Resources Development Institute (SRDI), 1986). As a result, surface run-off and soil erosion have accelerated (SRDI, 1986; Danish International Development Agency (DANIDA, 2000). According to some recent studies, soil loss under shifting cultivation in CHT varies from 39 to 42 tons/ha (Shoab et al., 1998; Gafur, et al., 2000). Significant amounts of C, N, P and S are lost from the soil while burning vegetation for land clearing (Gafur, 2001). The erosion alone is washing away 27% of the nutrient content in the upper 10 cm of soil of CHT (Gafur et al., 2000; Gafur, 2001). When soil erosion occurs at a rate of 17 tons/ha/yr, an average of 75 mm of water, 2 tons of organic matter, and 15 kg of available nitrogen are lost from each hectare of land annually. In addition, soil depth is reduced by 1.4 mm, water-holding capacity is decreased by less than 0.1 mm, and soil biota populations are diminished considerably (Pimentel et al., 1995). As a result, the shifting cultivation with a short fallow period has become an environmentally damaging land use.

The mixed type of land use pattern that we see at present in CHT—some areas covered with forest and other areas being used for different types of cropping systems, with varying degrees of intensity—was not always like this. The entire area was covered with forest before the colonization of the country by the British rulers. This situation gradually changed over the years. The forest area slowly shrank, while the area under shifting cultivation and sedentary agriculture gradually increased. Therefore, there is growing concern about deforestation and land degradation arising from shifting cultivation in CHT (Hamid, 1974; Arya, 2000; Gafur, 2001). However, no serious attempt has been made to understand the evolution of different types of land uses under the influence of changing national policies during different periods. Future policies for promoting sustainable land use systems entail learning lessons from the land use implications of past policies and institutional arrangements (Niemeijer, 1996; Bryant, 1997). This paper makes an attempt to address this imperative need based on historical facts derived primarily from several published and unpublished literature sources.

2. Factors influencing land-use change: a conceptual framework

The analysis of land-use change revolves around the question: what drives the change? Inspired by the Malthusian theory of population growth, Boserup (1965) found the problem of land scarcity arising from a steadily growing population to be a powerful stimulus for land use change from the fallow forest to annual cropping systems and from rotational to settled agriculture. Boserup's contribution was a pioneer work in the process of seeking explanations for land-use change. However, with the advancement of knowledge, now it has become very clear that population is not the only factor explaining land-use

change. Land-use change is an intricate process that takes place under the influence of several biophysical, socio-economic and institutional factors (Dattoo, 1978; Grigg, 1979; Meertens et al., 1995). Population growth acts as a stimulus to progressive change in agricultural land use only when it is accompanied by the right policies and technologies. Otherwise it leads to 'involution' of land use (Geertz, 1963).

Population growth certainly influences land use. How and to what extent it influences the land use depend to a considerable extent on the prevailing property rights regimes. Despite steady population growth, land uses such as forest and grazing-land are little affected when the local communities have been granted exclusive rights to use and manage these resources (Ostrom, 1999). Such rights might be traditional as in areas with tribal communities or state granted; they authorize a designated community or group of communities to deny others access to forest and grazing-land. This is the single most important factor motivating local people to participate in sustainable land use. However, not everywhere does simply granting such rights to local communities promote sustainable land-use systems. Despite possessing use and management rights, local communities cannot prevent forest and grazing-land degradation if there is a lack of rules specifying the amount of resources to be used, creating and financing formal monitoring arrangements, and establishing sanctions for non-conformance (Ostrom et al., 1999). In some instances, the state agencies abolish traditional community resource management systems and assume all management responsibilities by themselves under the pretext of the local people not being able to manage resources effectively as had happened in Nepal during the 1950s (Fox, 1993). Despite the provision of tough rules and regulations, such centralized management systems accelerate the pace of forest and grazing-land degradation by alienating local communities whose participation is indispensable for sustainable management of these resources. Moreover, due to financial, technical and human resource constraints, the state agencies particularly in developing countries find it difficult to enforce rules and regulations effectively, and to take care of forest and grazing-land properly without public participation. Despite being the legal custodians, it is beyond the agencies' capability to monitor the status of such resources everywhere, not to mention effective management. In such a situation, everybody gets an opportunity to extract resources, but nobody has responsibility to take care of them (Agrawal, 2001; Karki and Tiwari, 1999; Wade, 1988; Gibbs and Bromley, 1989), eventually accelerating the pace of resource degradation as had happened in Nepal following the nationalization of forest in 1957 (Fox, 1993).

With regard to the agricultural land-use change, Schultz (1964) found that farmers' skill, knowledge and technological progress play an important role. However, others such as Lipton (1968) and Binswanger and McIntire (1987) reported that knowledge and skill are essential, but not

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