

15:05-15:20

Challenges and Potential Problems of Rehabilitating Degraded Tropical Peat Swamp Forest

Tetsuya Shimamura (Ehime University)

Development of tropical peatland has triggered serious environmental problems such as forest fires, loss of biodiversity and emission of greenhouse gases. To develop tropical peatlands, lands are drained, clearcut and burned. Drainage, in particular, increases vulnerability of tropical peatlands to fire. Recently, several attempts have been made to rehabilitate such drained peatlands in Central Kalimantan, Indonesia. In this paper, I review and illustrate, based on information from Central Kalimantan, the current state of knowledge pertaining to the revegetation of degraded peatlands and opportunities for rehabilitating peatland hydrologic and carbon sequestration functions; in addition, I point out potential problems of such rehabilitation efforts that may result from a lack of knowledge about ecological process and/or local communities by examining cases of conservation, re-wetting and re-planting.

Most of the remnant protected peat swamp forests are kept drained to a certain degree. Rewetting peat and re-establishing forest cover are important prerequisites for protecting remnant ecosystem functions such as carbon storage. Dam construction is a typical method for rewetting peat. However, a study evaluating the effectiveness of dam construction indicated that it did not dramatically improve the carbon budget. In addition, a recent study indicates re-wetting by dam constructions is not enough to ensure regeneration of tree species.

Tree planting is also important way to rehabilitate degraded peat lands. A program aimed at revegetation known as the Buying Living Tree System (the System), whereby local inhabitants plant commercial tree species on barren peatlands, has been implemented over the last decade. After the planting, the survival of the trees is monitored every three months and individuals are paid for maintaining the trees according to the proportion of surviving trees. The System appeared to functioning smoothly in the initial stages. However, problems including the abandonment of seedling have occurred after the conclusion of financial support, resulting in the death of most of the seedlings. Even when financial support had been continued, fields have been burned by others who did not receive financial support through the System. This example suggests that some proportion of the local population is willing to burn peatlands and that the majority of others do not have an

incentive for revegetation. The conclusion that the majority of local people are less interested in rehabilitation efforts is supported by research involving interviews of local inhabitants.

The dam construction example illustrates potential problems arising from insufficient understanding of underlying biological processes, and the Buying Living Tree System example demonstrates difficulties in rehabilitating barren peatlands in the context of local communities.