

## 24 **Accessibility as a Determinant of Environmental Dynamics and Socio-economic Disparities in Mainland Southeast Asia**

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### **Abstract**

Access and accessibility are important determinants of people's ability to utilise natural resources, and have a strong impact on household welfare. Physical accessibility of natural resources, on the other hand, has generally been regarded as one of the most important drivers of land-use and land-cover changes. Based on two case studies, this article discusses evidence of the impact of access to services and access to natural resources on household poverty and on the environment. We show that socio-cultural distances are a key limiting factor for gaining access to services, and thereby for improved household welfare. We also discuss the impact of socio-cultural distances on access to natural resources, and show that large-scale commercial exploitation of natural resources tends to occur beyond the spatial reach of socio-culturally and economically marginalised population segments. We conclude that it is essential to pay more attention to improving the structural environment that presently leaves social minority groups marginalised. Innovative approaches that use natural resource management to induce poverty reduction – for example, through compensation of local farmers for environmental services – appear to be promising avenues that can lead to integration of the objectives of poverty reduction and sustainable environmental stewardship.

**Keywords:** Accessibility; social distance; poverty; forest cover change; Southeast Asia.

## 24.1 Background

Rural areas in mainland Southeast Asian countries are subject to intense social, economic and environmental dynamics (Hirsch 2000, 2001). This is true for Laos, Cambodia and Vietnam – the geographic focus of this article (Government of Lao PDR 2000; Rigg 2006). Emerging business and employment opportunities are bringing forth an increasing number of actors involved in natural resource use and management who differ in terms of social and economic status (Parnwell and Bryant 1996; Woods 2003; Ducourtieux et al 2005; Fullbrook 2006). This growing number of actors can increase the potential for spatially overlapping and conflicting interests with respect to natural resources (Badenoch 1999, 2002; Thomas et al 2004; Tomich et al 2004; Turner et al 2007). While traditional subsistence-oriented farming households, for instance, are likely to depend on various forest products for domestic and local consumption, more commercially-oriented entities might lay claim to the same forest for timber and utilisation of other forest resources on a larger scale.

Access and accessibility are important determinants of various actors' abilities to utilise natural resources for their own benefit. Access to markets, information and other services has been shown to have a great impact on household welfare (Grootaert 1999; Baulch and Hoddinott 2000; Diagne and Zeller 2001). Physical accessibility of natural resources, on the other hand, has generally been regarded as one of the most important drivers of land-use and land-cover changes (Chomitz and Gray 1996; Angelsen and Kaimowitz 1999; Geist and Lambin 2002; Verburg et al 2004). We argue that both physical and socio-cultural aspects of access are crucial to a place-based understanding of human–environment interactions.

Against this backdrop, we draw upon two case studies in mainland South-east Asia to assess the impact of access to services and access to natural resources on household poverty and the environment.

## 24.2 Poverty–environment interactions in the development discourse

The idea that poverty and environmental degradation are causally connected, sometimes referred to as the 'poverty–environment nexus', is a much and long debated matter (Reardon and Vosti 1995; DFID 2002; Dasgupta et al 2005; Gray and Moseley 2005; Lufumpa 2005; Buys et al 2006).

In the scientific literature, some base their argumentation on the hypothesis of a vicious circle in which the poor are viewed as the chief cause of environmental degradation because of their need to overexploit natural resources to make ends meet, which in turn makes them more vulnerable and poorer (WCED 1987; Lele 1991; Bryant 1997; Scherr 2000). Others support a contrasting view, where indigenous environmental knowledge is seen as a key asset and a motivation for the poor to protect their environment (Brokensha et al 1980; Wilken 1987); from this perspective, commercialisation and intensification processes are considered to be the main causes of environmental degradation (e.g. Godoy 1984; Thrupp 1993). The idea of an environmental Kuznets curve suggests that the latter argument is true only up to a certain point of development, after which further development leads to greater environmental stewardship (Field 1997).

More recently, there has been a growing debate about the actual causes and culprits of environmental degradation in areas inhabited predominantly by the poor. Arguments range from blaming mainly traditional land-use practices, such as shifting cultivation, that are no longer sustainable due to population pressure (Myers 1993; Rambo 1996), to the contrary assertion that commercial logging, and not small-scale shifting cultivation, is to blame for forest losses and the resulting environmental degradation (e.g. Kerkhoff and Sharma 2006).

The latter view implies that even in areas predominantly inhabited by the poor, it is not necessarily the poor who are mainly responsible for environmental degradation. Other actors, who may reside outside the area and carry out some of their operations at a larger scale, might have a greater impact. Based on an analysis of international data, Redclift and Sage (1998) discussed this spatial mismatch between actors' places of residence and the locations in which they use natural resources, and also pointed out that this could lead to a spatial mismatch between resulting economic benefits and environmental degradation.

The varying impact of different actors on the environment once again raises the issue of a link between access and natural resources. An explicit and direct link between accessibility of natural resources and land-cover changes has been established in various studies (Chomitz and Gray 1996; Angelsen and Kaimowitz 1999; Geist and Lambin 2002; Verburg et al 2004; Castella et al 2005). Furthermore, natural resource users' access to services (such as credits, markets, information, etc.) has also been shown to shape land-use options and land-use practices (Leach and Mearns 1996; Lambin et al 2001).

The relation between accessibility and welfare, on the other hand, has received attention in various fields in the social sciences, particularly in the health care sector (Obrist et al 2007). Poverty proved to be an important factor in inadequate access to services (Gwatkin et al 2005). The following section discusses empirical evidence for linkages among accessibility, natural resources and poverty.

### **24.3 Accessibility, access, poverty and resource use: evidence from case studies**

This section discusses the findings of two individual case studies: one looked at dimensions of social service accessibility and poverty in Vietnam, and the other at natural resource accessibility and forest cover changes in the lower Mekong basin. Although the two studies are not entirely comparable due to differences in both geography and the methodologies applied, some important conclusions can nevertheless be drawn.

The study that explored the relationship between poverty, natural resources, ethnicity and social service accessibility in Vietnam was based on information from the following sources: 1999 Vietnam population census data, 1999 small-area estimated household per capita expenditure data for the population of Vietnam (Minot et al 2006), official Vietnamese national forest cover and forest quality data for 1999, and spatially disaggregated information on physical accessibility of social services (Epprecht and Heinemann 2004).

People in poor areas of much of Southeast Asia tend to rely heavily on local natural resources, particularly on forest resources, for their livelihoods (Sunderlin and Thu Ba 2005). Analysing relationships between forest cover and poverty in Vietnam, Müller et al (2006) revealed that forests – as a proxy for natural resources – tend to be most abundant in areas where the incidence of poverty is highest (Figure 1).<sup>6</sup> However, local people often have little control over natural resources. This is due to poorly defined user and property rights (McElwee 2004; Dasgupta et al 2005), limited or unequal knowledge of harvesting and processing techniques, and lack of information on marketing potentials, to name just a few factors.

Access to services, provided in small urban population centres, proved to be a determining factor for poverty incidence in Vietnam (Epprecht et al 2009). Moreover, Epprecht et al (2009) showed that access to such services

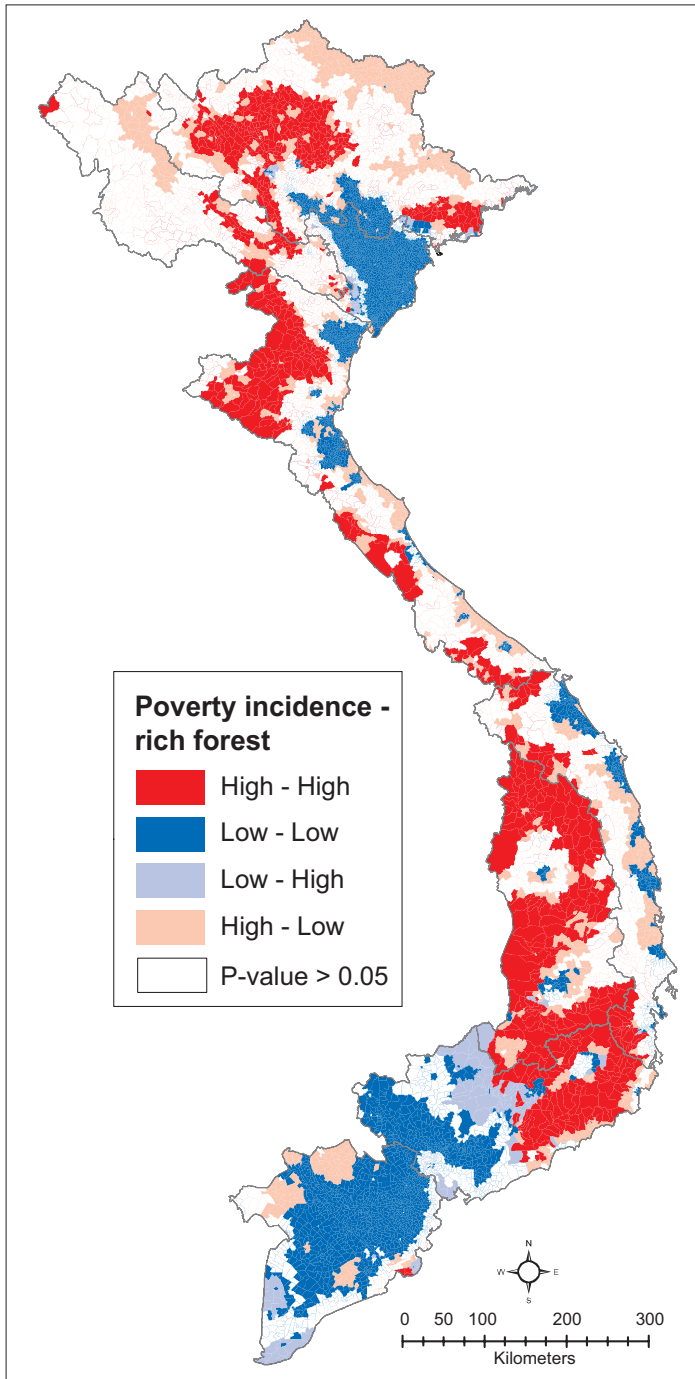
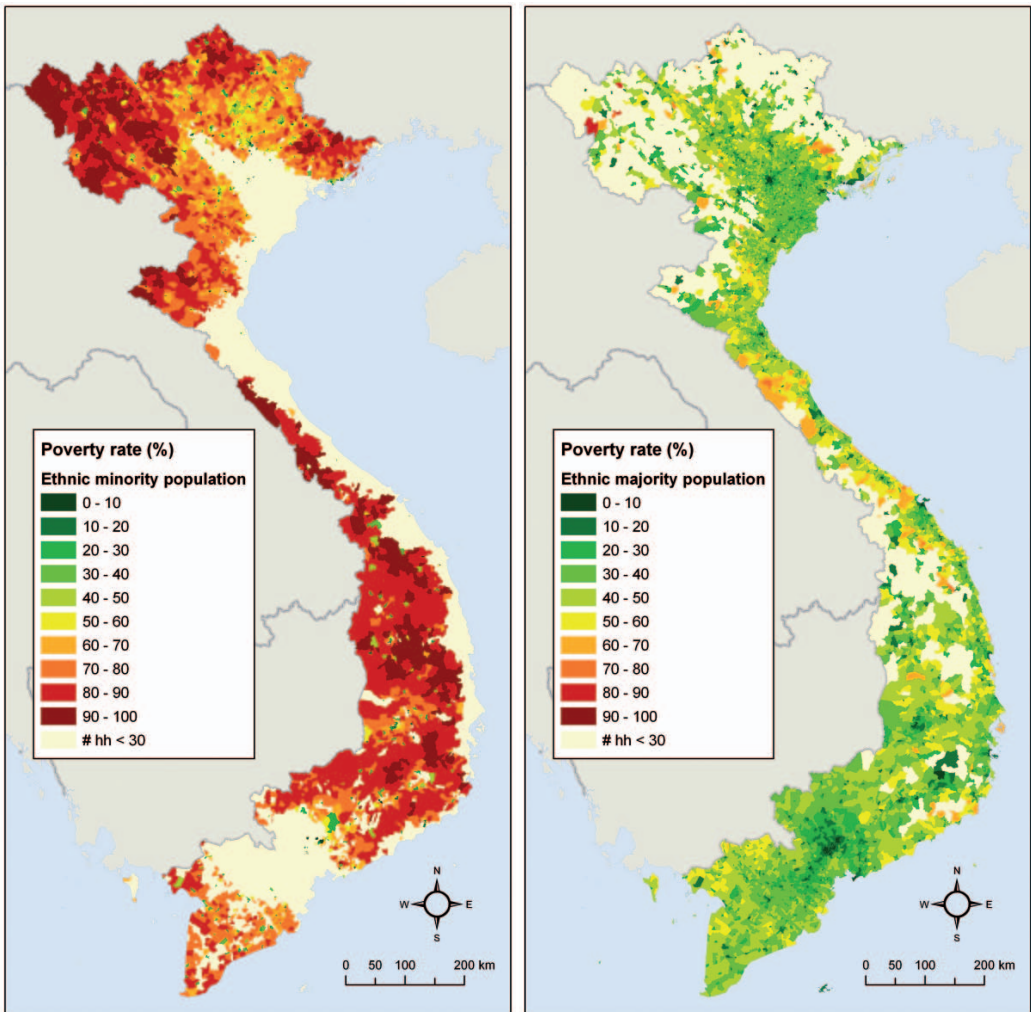


Fig. 1  
Spatial coincidence  
of poverty  
incidence and  
forests. (Source:  
Müller et al 2006)

in Vietnam is determined much more by socio-cultural distance than by actual physical distance: regardless of physical access to towns, ethnic minority populations in Vietnam are consistently and significantly poorer than ethnic Vietnamese (Figure 2). Epprecht et al (2009) conclude that this finding is likely to reflect unequal opportunities for off-farm employment, lack of influence in decision-making, obstructed access to markets, services and information, and disadvantages in achieving higher levels of education.

Fig. 2  
Poverty rates of ethnic minorities and the ethnic majority. (Source: Epprecht et al 2009)



The study conducted in the lower Mekong basin uses the only available and comparable regional land-cover data for 1993 and 1997, which are based on visual interpretation of Landsat imagery (Stibig 1996, 1997). The results of this study show that the accessibility of forests is a strong determinant of forest cover and forest quality dynamics (Heinimann 2006). The findings reveal that deforestation rates are significantly higher in villages closer to towns than in villages further away from towns, a fact that Heinimann (2006) attributes to a greater extent of commercial use of forest resources in areas closer to towns due to better marketing opportunities (Figure 3). However, most of the loss of economically and ecologically valuable dense forests nevertheless occurs far away from villages. Heinimann et al (2007) point out that the patterns of forest cover changes indicate that change in forest cover near villages occurs mainly in the form of forest degradation as a result of subsistence agriculture, whereas change in forest cover in more remote areas occurs mainly in the form of deforestation due to large-scale commercial activities that exploit the forest.

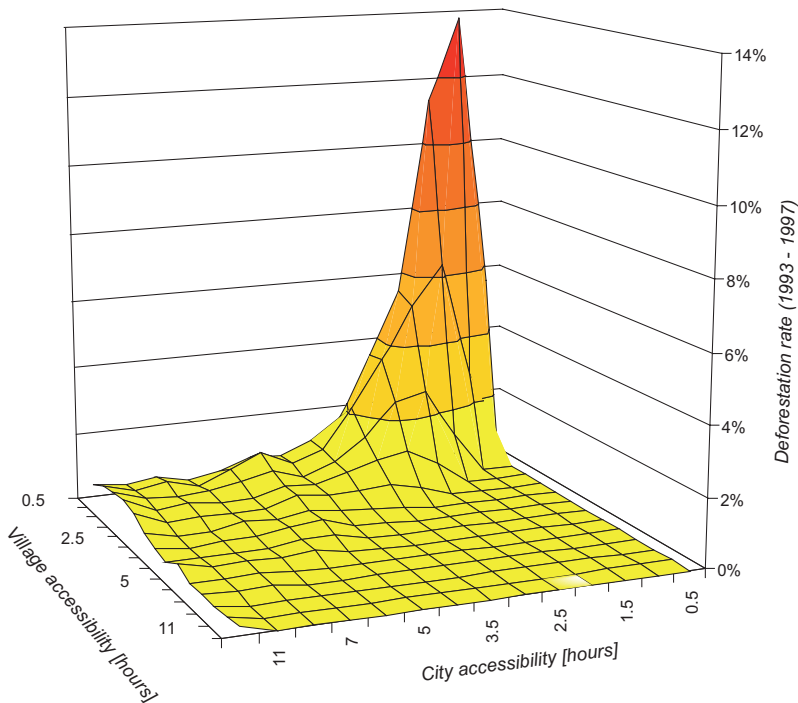


Fig. 3  
Deforestation rates in the lower Mekong basin in relation to village and city accessibility. (Source: Heinimann 2006)

## 24.4 Discussion

The two studies confirm that physical accessibility is an important precondition for access to natural resources, and at the same time a strong determinant of welfare. In addition, socio-cultural distances proved to be a key limiting factor for access to services in Vietnam, and hence an additional factor determining household welfare. This reflects unequal opportunities among actors competing for access to and use of available natural resources. Access to local natural resources is only partially a function of their physical accessibility; it also depends on socio-cultural distance from the respective decision-makers. Despite good physical accessibility of local natural resources, local ethnic or other social minorities may have little control and few rights with regard to use of these resources, resulting in potentially limited access to resources.

On the other hand, improving physical accessibility of natural resources and markets for people in remote places may also improve access to these resources for commercially-oriented actors who tend to live in population centres and who are economically better off. This raises the question of which effect is stronger: Does improved physical accessibility – which is very likely to lead to some form of increase in commercial use of natural resources in the newly accessible places – mainly benefit local actors through better access to markets, or does it mainly improve access to natural resources for external actors? And how is this reflected in land-cover change patterns at the meso-scale?

Physically less remote and socially less marginalised people are largely better off in terms of financial and technical means, information, and possibly political influence (for example with regard to land-use rights). It is therefore plausible to assume that these actors benefit more from changes in accessibility of natural resources than actors who are more marginalised in a socio-economic sense. On this basis one would expect an increase in commercial exploitation of natural resources near villages that have become more easily accessible.

However, this is not supported by the results of the research conducted in the lower Mekong basin. Findings here revealed that commercially-motivated larger-scale activities resulting in forest loss occur mainly in areas that are not easily accessible from local villages. Forest resource use activities close to villages were shown to result in forest degradation rather than deforestation. These dynamics cannot be attributed to any specific actors on the basis of the two studies presented here.



Based on the findings of the two studies, we conclude that large-scale commercial natural resource exploitation tends to occur beyond the spatial reach of marginalised population segments. It is not possible to say conclusively whether increased forest degradation patterns in villages closer to urban areas are due to actors exploiting nearby natural resources for commercial purposes, or whether they are a result of activities conducted mainly by those who have better access to the respective resources. It is likely, however, that in many cases the poor lack the means to transport natural resources to markets far beyond their village area for commercial use, while the better-off typically do have the means to travel further to extract resources. Furthermore, although predominantly subsistence-oriented actors may engage in unsustainable natural resource use practices (e.g. for reasons of economic survival), it is likely that these actors' dependency on natural resources for their very survival makes them more cautious compared to spatially disconnected, purely commercially-oriented actors.

Although empirical evidence from these two studies does not conclusively show that improvement of physical accessibility primarily benefits commercial actors in terms of access to natural resources for commercial use, it is likely that physical accessibility – although necessary for poverty reduction as part of an effort to provide market opportunities and access to services – may have a negative impact on the local population.

## **24.5 Conclusion**

Development dynamics in the form of rural commercialisation and an increase in the physical accessibility of ever greater parts of the region are fast-paced. Yet progress in ensuring the structural framework that must accompany these developments is relatively slow and time-consuming. This relates, for example, to guaranteeing land-use rights, improving the educational status of the local population, and providing adequate and timely information on available services in local languages. In this respect, efforts to reduce poverty accompanied by simultaneous environmental conservation or protection remain a big challenge.

Present power constellations, the slow pace of 'empowerment' of local communities through legal and educational improvements, and the high demand for and value of local resources at the regional level are an imminent threat to the local poor, and a long-term threat to the environment.

It is therefore essential that more attention be paid to improving the structural environment that presently leaves minority groups socially, economically and geographically marginalised (for example by ensuring faster devolution of land-use titles and developing legal mechanisms to claim and defend these rights). Innovative approaches that use natural resource management to induce poverty reduction – for example by compensating local farmers for environmental services as proposed by Gouyon (2003), Gutman (2003), the FAO (2004), and Wunder (2005), or more recently by compensating developing countries for reducing carbon emissions from deforestation (REDD) (Ebeling and Yasué 2008) – appear to be promising avenues for integrating the objectives of poverty reduction and sustainable environmental stewardship.

Consequently, future research within the framework of the Swiss National Centre of Competence in Research (NCCR) North-South programme in Southeast Asia will aim to link environmental service approaches with local people's access to information and services, their practices and options with respect to natural resource use, and the resulting impacts on household welfare. This will help to improve efforts to alleviate poverty and promote natural resource management.

## Endnotes

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<sup>6</sup> For details on the methodologies, see Müller et al (2006) and Sunderlin et al (2008).

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