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山地生態資源の持続的利用のための技術融合と制度設計

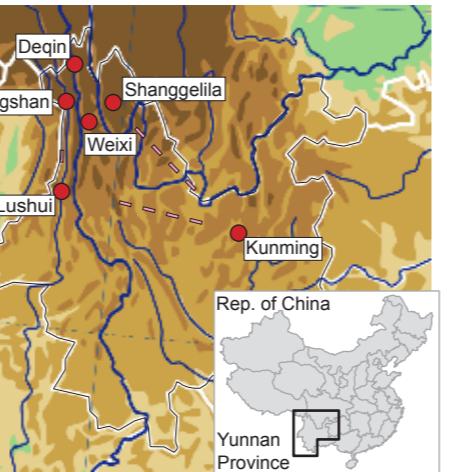
- 東南アジアを中心として -

グローバリゼーションの波は、政治連携や経済統合にとどまらず、人間の安全保障や貧困撲滅、さらに環境ガバナンスなど人々の生活・生業に密接に関連するレベルまでをも包摂しようとしています。本研究は、東南アジア大陸部を中心とする山地を対象地域として、市場経済の浸透や近代的資源管理制度の導入などによる住民の生態資源利用の変化過程を明らかにし、グローバリゼーション下で生態資源を持続的に利用するための技術融合と制度設計を提示することを目的としています。

- 中国雲南省北西部、サルワイン・メコン流域調査 -

中国雲南省の北西部にはサルワインやメコンといった大河川がごく狭いに集まって流れる地域があります。この地域では近年、道路網が整備されるとともに、電力供給のためのダム建設が進行しており、急速に開発が進んでいます。一方で、環境保護を目指した植林や移民政策も実施されており、地域は今まさにおおきくその姿を変えつつあります。そういう変化のなかで地域の人びとの生活がどのように変化しているのかを明らかにするため、2006年10月に現地調査をおこないました。

調査では、中国雲南省の省都である昆明(Kunming)から瀘水(Lushui)へと向かい、そこからサルワイン川を遡って貢山(Gongshan)県までの河川沿いの地域でサーベイをおこないました。次にメコン川流域へと移動し、維西(Weixi)県から徳欽(Deqin)県まで河川を遡り、住民の生活や自然環境に関わるいくつかの調査を実施しました。



Field Report

Dark Clouds Looming over Shangri-La



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During our mid-October excursion to Yunnan Province in China we observed surprising evidence of widespread landslide and surface erosion along the expanding road systems in the Province. Recently the Chinese government has been promoting tourism and rural development in this formerly poor and clandestine area of southwestern China. The general region is home to the headwaters of three great river systems that run in parallel within about 30 kilometers in the steep mountains of northwestern Yunnan - the Salween, Mekong, and Yangtze Rivers, the former two rivers flow through other Southeast Asian nations. During our recent research excursion, we were shocked to see the extent of new mountain roads contributing heavy sediment loads to these important rivers. Major roads serving this developing region as well as smaller roads designed to link remote villages, hydropower plants, and mining with major cities are being constructed at a rapid pace. While many environmental groups address da-

a rapid pace. While many environmental groups address damages caused by 'deforestation' and hydropower plants in the region, we saw little evidence that these practices are widespread and causing sediment problems in the three great river systems. Much of the current agriculture in the region appears to be rather sustainable and widespread forest clearing is not currently practiced. In fact, introducing sustainable forest management (including harvesting) in many steeper sites in the region would likely be desirable. Few people, including environmentalists, NGO's, international donors, and government agencies, clearly see and appreciate the magnitude of the problems associated with mountain roads related to sedimentation. Based on our preliminary observations, it appears that 80-95% of the direct sediment contributions into the headwaters of these rivers are now attributable to road erosion and landslides. The Chinese are constructing many of these road right-of-ways directly into

unstable hillsides with virtually no attention paid to optimal road location, construction practices (currently mostly just blasting is used), and erosion control measures. Thus, their objective appears to be only to construct the shortest possible linkages between locations of interest at the lowest cost with little or no regard for environmental consequences.

We conducted an erosion survey along a relatively new road to Weixi in the headwaters of the Mekong River. During the summer of 2006, seven people traveling down this road in a minivan were killed by a landslide originating from a cutslope. Our road survey length was 24 km with three subclasses of erosion hazard examined in detail. This survey showed that the combined sediment from soil erosion and landslides exceeded values reported from forest roads built in landslide-prone slopes of North America by about 180-fold. For the most unstable part of the new Weixi road these differences were more than 600-fold. To my knowledge these are the highest sediment values ever reported from roads of any kind. Most of the sediment originated from road-related landslides and the majority of this sediment directly entered the headwaters of the Mekong River (or deposited in riparian areas where it could be entrained during later floods) (Figure 2). Such levels of landslides and erosion indicate that the local government bodies are totally ignoring any sensible concept of land stewardship and disregarding the downstream, transnational consequences of this sediment which affects the poorer nations of Myanmar, Laos, Thailand, Cambodia, and Vietnam. Sadly, the multi-national Mekong River Basin Commission which is charged with the sustainable development of the basin is either unaware or ambivalent to this ongoing



Fig.1 Headwaters of Mekong River



Fig.2 Road from Daxingdi Township to Remote Village

environmental disaster, as are numerous international donors and environmental 'watch dogs' working in the region. Instead these organizations continue to 'bang' their 'drum' related to issues like 'deforestation', 'shifting cultivation', and 'development of hydropower facilities', all of which exert impacts, but were not deemed to be important contributors to sediment and river degradation in these important headwaters compared to impacts of mountain roads and trails.

Similar erosion/sedimentation scenarios are occurring throughout the region, including in the headwaters of the Salween and Yangtze Rivers. Near Daxingdi on the Salween River construction of a new mountain road linking remote villages was suspended because landslides were hampering construction activities. Nevertheless, sediment continues to pour down from the steep hillside because of these poorly planned road excavations (by blasting) (Figure 2). Such epic sediment loads in the headwaters of major transnational river systems are an indictment against the Chinese government. Furthermore these represent cumulative effects that may persist in rivers for decades. At the conclusion of our research excursion, we descended into the valley of Shangri-La only to see a huge sand and gravel quarry (supporting the vast developing road systems) located adjacent to an expansive wetlands. Formerly this area was called Zhongdian County; in 2001 the Chinese government renamed this Shangri-La, presumably to attract tourists. The current disregard for environmental conditions in this region contrasts strongly with the scenic and mystical attributes of Shangri-La portrayed in James Hilton's 1933 novel The Lost Horizon. As we walked to dinner during our last evening in Yunnan, an elongated dark cloud loomed across the Shangri-La valley - an omen of the transnational environmental catastrophe or James Hilton turning over in his grave (or both)?