

研究課題名:

**Assessing Local Knowledge of Slow-onset Drought Disaster in the Upper GMS and its Potential in Response
メコン河流域北部における緩慢な災害である早ばつについての現地の実践知識やその有効性を評価する**

1) 研究内容の要約・総括

・早ばつがある、早ばつが進んでいるメコン河流域北部のタイ北部、ミャンマー東北部、タイ北部、そしてカンボジアのトンレサップ湖3つの地域

Northern Myanmar, and in particular Shan State, is comparable to other natural-resource-endowed areas of Southeast Asia (see comparison with Tonle Sap watershed) in abundance of natural resources and the sustainable livelihoods they have made possible. Despite these resources and the local communal knowledge of their use, however, these ecosystems and their inhabitants are fragile and rapidly growing more so. Some causes of increasing fragility and hazards that push the slow-onset disasters in this region are anthropogenic. Large-scale development projects have quickly deforested large areas of mainland Southeast Asia, leaving both the ecosystems and the livelihoods without good alternatives. Further, as most of this area is high-altitude upland, livelihoods have long been at subsistence level, with little margin for experimentation with or creation of new options.

Further, while Myanmar is a food-producing country and the research area of Shan is a food-producing region with livestock, fish, rice, and other crops, according to the World Food Programme it continually suffers food insecurity and food gaps. Although the WFP emphasizes conflict-related issues in food insecurity, the issues behind recent conflicts, especially the large-scale development projects throughout Shan State that require enormous tracts of land, can be linked to the heightened risks in food production observed in the present research.

While the local cultivators understand these changes and their potential threats quite well, this research confirmed that they have little or no way to convey these facts and their degree of seriousness to higher authorities that could help, thus undermining their capacity to respond in a timely manner. However, some advantages in terms of technology-network readiness (as opposed to political or social trust-based networks) are observable in the immediate urban and peri-urban area. These include much greater access to education for the youngest children compared to 10 years ago, and much greater access to basic health care. Further, there is some prevalence of mobile phones among community leaders or those who have been outside villages; some prevalence, though far less, of smartphones; availability of transmission signals in the lower plateau and valley areas (not at higher and still forested altitudes); some radio and television reception, again at lower altitudes, though at higher altitudes some comparatively wealthier dwellers may have satellite dishes; and extension of electric wiring along main roads and to houses along the main roads and smaller feeder roads, (though very little on unpaved routes). Though these advances, which are not typical of all of Shan State, are cumulatively very helpful to non-farm economic participation for the local dwellers, they have not yet led to widespread participation in policymaking for the most remote among the

rural people, though their participation is now encouraged under the civilian government. More importantly, farm and forest labor and cultivation, and the food security it offers, are being eroded by large-scale dam construction along several of the rivers in Eastern Shan State and by outside-investor-based plantation agriculture that uses high volumes of soil-eroding chemicals.

2) 研究活動の要約・総括

① 出張: 現地調査、学会 など

◇ 9月24日～28日 カンボジア(学会)及びバンコク(会議、打ち合わせ)

◇ 11月8日～14日 タイ、ミャンマーのヤンゴン(同行者＝ロンキ先生)

◇ 2.15～2.22 バンコク、シャン州、タイ北部(同行者＝パンタネラ先生、オンマー・アウン先生)

② 活動 調査の内容

This research was based mainly on on-site surveys with experts in the relevant fields. Surveys were made in Northern Thailand and Eastern Shan State of Myanmar, and presentations were held at the Environmental and Economic Research Institute in Yangon and at the Royal Phnom Penh University in Cambodia. The team consisted of Dr. Edoardo Pantanella, Project Coordinator, Institute of Fisheries, Myanmar; Dr. Alfredo Ronchi, Secretary-General, European Commission MEDICI (Multimedia for Education and Employment Through Integrated Cultural Initiatives) Framework; Dr. Ohnmar Aung, Program Director, Smithsonian Global Health Myanmar. and the present author (政策・メディア研究科兼環境情報学部教授ティースマイヤ・リン)。

◇ Situation / progress of dam-building or planned dam sites along the Nam Lin (Sai River) and the Nam Lwe River (6 planned dams, according to JICA). Potentially impacted environments along the rivers: subsistence villages, forests, crops, game, livestock, local water resources). Access of local populations (upland and lowland; on-road and off-road) to expanding services of education (mainstream language) and health care

◇ Local experience of slow-onset (drought or reduction of spring water / flood / warming / drying / livestock and game / crop quality and productivity /

◇ Local knowledge OR local ignorance (for a reason) of anthropogenic factors (projects)

◇ Dividing OR uniting lines among disaster-impacted persons and responders

◇ Physical boundaries and connections: geography (extensively mountainous, crisscrossed by numerous rivers and creeks, lacking road infrastructure); also land conversion for large-scale projects (dams, mines, industry, highways, and plantations)

◇ National (local boundaries include not only ethnic-area boundaries but also those of the 4 countries sharing terrain and population: China, Myanmar, Thai and Laos)

◇ Environmental: Geographical and topological boundaries mentioned above; also climate boundaries (currently existing as well as shifting ones) which in turn determine livelihood boundaries that depend on vegetation, game, and availability of water (upland / lowland)

◇ Economic: the normal rich – poor boundaries have been spatialized and ethnicized. It is rare to find a local in-migrating Burmese who is poor and rare to find a local Palaung, Lahu or Akha who is rich. The poverty areas of Lahu, Akha, and Palaung ethnic villages were spatially marked in the past but are if anything more so now.

- ✧ There is a rural labor shortage, as in other parts of Myanmar.
- ✧ Social boundaries: see above. The boundaries between Burmese, Tai Yai (Shan) and ethnic minorities are growing more permeable with greater access to education in the mainstream language. Socio-economic boundaries are still firmly maintained, though new ones are emerging and they are shifting (the rich – poor or landed – landless boundaries are no longer Burmese – ethnic but now include Chinese – Burmese and Shan – ethnic).
- ✧ Information and technological borders AND bridging attempts between disaster-prone communities and the broader national or regional organizations that can assist.

Technology-based Readiness:

Not only, or not yet, digital technologies (computers, smartphones, Internet), but ●Roads ●Electricity near roads ●Phone signal ●Motorbikes ● Recent access to primary education in the mainstream language.

All of these make communications possible, thus enhancing the available forms of human security including economic (petty trade and other options), income, education, and access to health care (not only through clinic visits but also through home visits by healthcare workers). These “communications,” however, tend to be uni-directional and top-down.

- ✧ “Traditional” (20th-century, under various post-war land-use laws and promoted types of cultivation and promoted crops) small-scale agriculture here is not now conserving or making best use of the ecosystem. Other small-scale activities nearby including artisanal mining can degrade the cultivable environment.

Technologies and communications that can be accessed · used in livelihoods at present:

●Low-energy-consumption devices (small pumps, etc.) for small-scale farming; for artisanal mining (panning for gold in creeks)

Still lack devices for in-home use in labor-saving or for higher standard of living (refrigeration, rice cookers, TV / radio, water heaters, stoves). The precursors to these devices include outdoor grills / hibachis that rely on wood charcoal, thus contributing to air pollution. These increasingly networked spaces and communities are always seeking additional or further livelihood opportunities and can use low-tech networks and infrastructures to gain them.

A disadvantage is that these are not networked so much with each other, but with the “center,” that is, local, divisional and national government agencies, which also have the potential to withhold important information and to ignore, or not transfer or report, the local information.

3) 成果・Findings

- Expansion in scale and potentially in severity
- Increase in affected populations, and their impact on the economy
- Contribution to or resulting in sudden large disasters: landslides · severe prolonged floods
 - Extreme weather events that are no longer mitigated or modified by ecosystem services
- Local knowledge is being under-utilized in terms of support and diffusion, and in some cases even

exploited without support, in order to keep local-government costs low.

- In the target area local knowledge does not, at this point coexist with, but is rather being displaced by, high-level and technologized systems, devices and knowledge.

- A major problem is that the transmutation of this knowledge into “information,” as well as its transmission, have been blocked (through a combination of the boundaries mentioned above).

- One of the most intrusive obstacles to any type or inter-level communications is the evident disconnection between high-level stakeholders’ perceptions and unverified data on channels for communication with ordinary and rural citizens, and ground-level data from rural areas themselves.

Examples are below.

In terms of digital communications, stakeholders in the field of digital networking (ICT Promotion Committee of the National Government, in private computer and network corporations, and in national economic advisory positions), quote statistics to show that there are 40,000,000 mobile phones registered in Myanmar (if 1 phone per person = at least 70% of the population) of which 80% are smartphones (if 1 per person = 58% of the population). However, rural surveys over the past 6 years, before and after the democratic government and economic opening of the country, indicate that the Network Readiness indicators, in particular those which would enable mobile phone use, are not yet in place in such large numbers.

- Rural areas of the country comprise over 50% of the population and the adult population in them lacks school education and literacy as well as a reliable supply of electricity.
- While simple mobile phones and connection fees are now cheap, smartphones and roaming / Internet fees are not affordable to most of the rural population. Those who do possess them are mostly petty officials in villages who have bought them on credit, being able to obtain credit through their positions as village heads.
- Further, the roaming signal is not available in the mountainous areas of the country, including most of Shan State and a large portion of Kachin State, whose registered populations together comprise over 13 million persons.
- While rural literacy is not high among rural Burmese, the rural ethnic minorities (who dominate all States of Myanmar excluding those in the center and the Delta) has even lower literacy, and in the adult population speaks mainly their own ethnic language which normally has no writing system. This makes the use and spread of smartphones, dependent on language input and output, difficult.

4) 応用性 (塾内外・国内外) Applicability inside and outside Keio • Inside and outside Japan

- ◇ Impact on LMCM (Lancang-Mekong Cooperation Mechanism): inviting participants from China and / or the Upper Mekong Region to meeting organized by JSPS (学術振興会)
- ◇ Use of these data and findings for seminar students and trainees (undergraduate and graduate)
- ◇ Publicizing these data in conference papers and in publications in 2017–2018 (H. 29年度)

5) 今後の展望・将来性、発展性 Future considerations, further research

メコン河流域諸国の（経済）開発が人口増加（人口の都市部での集中傾向）、環境マネジメントのキャパシティの欠陥、そして気候変動によって脅かされている。中には、人間に起因している大規模開発プロジェクト、とりわけ大規模電力用ダムやダムのためのインフラ（新たな道路、建材の採集、プロジェクトが占めていく面積の開墾や地形の再形成）によつての生態系サービスの減少が見えてきている「緩慢なハザード」地が増えている。本研究対象地は人間を起因にする緩慢な災害の代表的な地域になっている。近年にこれらの急速な開発プロジェクトが起こせるハザードが大規模ダム（に加え、工業団地及び経済特区の）建設によつての森林伐採、農薬の使用を中心とする近代農業の普及、土壌退化、そして水源、森林、そして土地を巡る政策の不備が、農村生活環境の問題を深刻化してきた。さらに、これらの未解決な問題点が現在の社会生態系システムを劣化させるのみならず、経済的、社会的不安定性へも寄与している。

The major focus of this research was drought in the Mekong watershed areas of Myanmar, Thailand and Cambodia, including the related phenomena of desertification, land subsidence, inability to absorb floods, and deepening poverty from shrinking access to livelihoods, have been occurring over a long period but remain unmitigated. This environmental damage can be seen increasing year-by-year in the areas surveyed in this research, Northern Myanmar and Northern Thailand (with a comparison to the negative impacts of Lower Mekong tributaries' dams upon the Tonle Sap watershed in Cambodia). Particularly in Northern Myanmar, the pre-existing hazards of uninsured and non-financial-market-oriented cultivation and forestry in smallholdings combine with the existing and planned dam construction areas to deprive the area of irrigation water and of adequately absorbent soil in rain-fed agriculture areas. The fact that these slow-onset disasters, themselves harbingers of greater hazards to come, are spatialized into fairly remote and mountainous areas with as yet inadequate social, political, or digital access to decision-making bodies and research institutes is potentially as damaging as the environmental degradation itself.

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