



Sustainable Mekong Research Network



Policy Briefings

**SUMERNET Research Projects
Phase 2 (2010-2013)**

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Preface

The Mekong Region has undergone a transformation in recent years, with rapid economic growth, a strong drive towards regional economic integration, and a gradual shift towards more open political systems. However, poverty and social inequality – including gender inequality – remain significant challenges in the region. Sustainability is a major concern, as environmental degradation takes a toll on both ecosystems and livelihoods, and competition over limited natural resources becomes increasingly common, often cutting across national boundaries.

With the purpose of supporting sustainable development in the Mekong Region, the Sustainable Mekong Research Network (SUMERNET) programme was established in 2005. SUMERNET aims to inform and influence sustainable development by supporting credible, collaborative research and regional assessment, stimulating independent discussions on key regional issues, and engaging with decision-makers and stakeholders to foster more effective and sustainable policies and programmes.

Since then, after the first two phases – Phase 1 (2005–2009) and Phase 2 (2010–2013), SUMERNET has now expanded to involve more than 100 researchers and 50 affiliated institutions across the region. Throughout this period, the Stockholm Environment Institute (SEI)-Asia Centre has hosted the programme Secretariat. SUMERNET partners lead interdisciplinary, cross-national studies on major policy issues; engage with policy-makers, planners and stakeholders; and build capacity among both researchers and policy-makers. At the end of the second phase, SUMERNET generated numerous research studies and findings as well as policy-relevant recommendations on sustainable development in the Mekong Region.

During Phase 2, ten collaborative research projects addressed various sustainable development issues under four themes:

- Ecosystem services, resource use and impacts
- Transboundary issues
- Energy & climate change
- Poverty and livelihoods

The policy briefings compiled in this booklet are the fruit of this collaborative research work and engagement with policymakers and other stakeholders by the SUMERNET partners. The briefings have been developed with consideration of policy relevancy and based on the engagement of the project team with local and national policymakers.

We hope that this SUMERNET booklet of policy briefings will prove beneficial for researchers and also for policymakers and others towards understanding the various policy needs for sustainable development of the region in the Mekong Region. Additionally, we hope that this booklet will enable other researchers in the region to realize the importance of communicating research findings for influencing policy development.

Dr. Chu Thai Hoanh
Chair
SUMERNET Steering Committee

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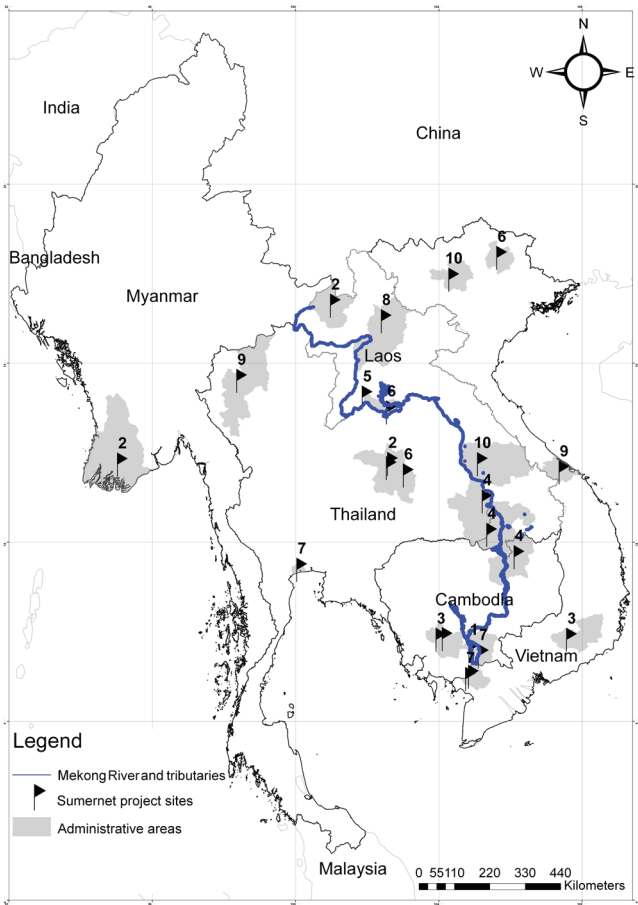
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The Mekong Region



SUMERNET Projects

1. Vulnerability assessment of livelihoods in Lower Mekong Basin: Adaptation options for enhancing capacity of people living in the most vulnerable flood-prone areas in Cambodia and Vietnam
2. Making economic integration work for the rural poor through contract farming practices
3. Evaluation of pilot program on payment for forest environmental services in Vietnam and policy implication for Lao PDR and Cambodia
4. Transboundary fish trade in the Lower Mekong Basin: Impacts on fisheries and rural employment in Cambodia, Lao PDR and Thailand
5. Impact of urban expansion on the hinterland and local responses in the Mekong Region: A study in Khon Kaen, Thailand, and Vang Vieng, Lao PDR
6. Research on integrating community-based participatory carbon measurement and monitoring with satellite remote sensing and GIS in a measurement, reporting and verification (MRV) system for reducing emission from deforestation and forest degradation-plus (REDD+) and agroforestry carbon sequestration activities
7. Communicating water-related climate change risks to improve local adaptation in the deltas of the Mekong Region
8. Climate change implications to food security and livelihood of small scale farmers
9. Sustainable urban tourism through low carbon initiatives: Experiences from Hue and Chiang Mai
10. Participatory social return on investment (PSROI): Greater Mekong Basin climate change adaptation planning and costing project

Table of contents

i	Preface
iii	Acknowledgments
iv	The Mekong Region
	THEME 1
1	Ecosystem Services, Resource Use and Impacts
2	A feasibility study on Payment for Forest Environmental Services (PFES) in Cambodia
5	Piloting Payments for Forest Environmental Services in Vietnam
	THEME 2
8	Transboundary Issues
9	Preserving the transboundary fish trade as a rural job source in Lao PDR, Cambodia and Thailand
	THEME 3
14	Energy & Climate Change
15	Improving local awareness to climate change risks in Prey Veng Province, Cambodia
18	Improving local awareness of climate change risks in Samut Sakhon Province, Thailand
21	Improving local awareness of climate change risks in An Giang Province, Vietnam
24	Compelling reason for local action: Climate risk reduction and adaptation in Lao PDR
27	Local power to act: Reducing climate risks for rice farmers
30	Reducing climate risks to small-scale rice farmers: Imperatives for local government action in Lao PDR and the Philippines
33	Towards a green pathway in Chiang Mai Municipality, Thailand
37	Preservation of garden houses for sustainable urban tourism in Hue City, Vietnam
41	Tourism and non-motorized transport in the Mekong Region: An opportunity for regional cooperation
46	Integrating community-based participatory carbon measurement and monitoring with satellite remote sensing and GIS in a measurement, reporting and verification (MRV) system for REDD+

THEME 4

51 Poverty & Livelihoods

- 52 Addressing livelihood vulnerability for improved flood management policies in An Giang Province, Vietnam
- 55 Rice contract farming practices in Cambodia: Up-scaling benefits to the rural poor
- 58 Making economic integration work for the rural poor through contract farming practices in the Mekong Region
- 61 Protecting livelihoods and the environment in Vang Vieng in Lao PDR through the ‘town planning committee’
- 64 Sustainable urban planning in Thailand: Infrastructure growth and pollution in Khon Kaen City
- 67 Participatory city planning to decrease negative impact of urbanization



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THEME 1 Ecosystem Services, Resource Use and Impacts

Ecosystem services are the benefits people obtain from ecosystems: provisioning services such as food and water; regulating services such as climate regulation and disease control; cultural services such as spiritual and recreational benefits; and supporting services, such as nutrient cycling and soil formation. The evidence available suggests that many types of ecosystem services are being degraded and managed unsustainably across the Mekong Region. This has the potential to jeopardise many of the development gains being made in Mekong countries, and in particular to reduce the effectiveness of or even reverse poverty reduction efforts being made, in particular, in rural areas where the livelihoods of many households are highly dependent on access to a range of ecosystem services.

POLICY BRIEF

A feasibility study on Payment for Forest Environmental Services (PFES) in Cambodia

Key findings

- The case study in Chambok Commune in Cambodia exemplified a community-based management suitable for PFES implementation.
- The factors contributing to successes include local organization, low administrative costs, transparency of benefit-sharing to service providers, and active participation of villagers in complying with the program regulations.
- The failures of some PFES programs are a result of inequity in benefit-sharing, lack of capacity to monitor participants and carry out measures for non-compliance, poor quality of services and lack of communication skills.

Motivation of PFES in Cambodia

Payment for Forest Environmental Services (PFES) is a new mechanism to promote forest conservation that is increasingly being used in Cambodia. Although the law on Payment for Ecosystem Services (PES) is not formally regulated, the Royal Government of Cambodia has set a number of policies in place to ensure increase in forest coverage and has supported PES through



Mekong Village © Flickr/JohnRathome (John Roberts)

the Reduced Emissions from Deforestation and Forest Degradation (REDD) mechanism.

For instance, the Oddar Meanchey project was successfully completed using the REDD mechanism as part of the collaboration between the Forestry Administration and PACT, a nongovernmental group in Cambodia. This project used PES as a mechanism for the distribution of benefits from the sale of carbon credits on the market. The project is expected to sequester 7.1 million metric tons of carbon dioxide over thirty years, while reducing poverty among approximately 10,000 participating households.

The RGC has also set policies to reform land administration and natural forest resource management in order to achieve the target of expanding forest cover to at least 60 percent of the total land area by 2015.

Factors for success and failure of PFES programs

The case study in Chambok exemplified a community-based forest suitable for PFES implementation. Nine villages in Chambok Commune paid US\$0.25 per month per household for clean drinking water that was generated from the hydrological flows of waterfall in the upstream.

The project found that the key factors required for the success of the PES program include clearly defined ecosystem services; flexible contracts and payments; transaction costs that do not exceed potential benefits; a reliance on multiple sources of revenue delivering sufficient and sustainable money; a close monitoring of compliance, land use change and the provision of ecosystem services; the flexibility to improve effectiveness and efficiency; and adaptation to changing conditions.

Many of the successful programs had simple, local arrangements with fewer administrative costs and they were able to disburse higher payments to individual villagers who provide the services. The active participation and involvement from villagers who comply with the rules and regulation of the program can ensure the success and sustainable operation of the program.

The projects were better-off when the payments were shared directly among all beneficiaries in a transparent way. In other less transparent projects, jealousy and conflict were prevalent in the operational management, and affected the program.

The lack of capacity of management committees to implement, monitor and enforce the rules can also contribute to the failure of projects. The poor quality of provided services and communication skills in particular with English language communication can also be factors that influence failure of projects.

Policy recommendations

- The Government of Cambodia and NGOs should enhance the capacity of management committees to effectively develop and implement the PES/PFES rules and regulations.
- Management committees should conduct continuous monitoring and evaluation to check the current status of projects and note any changes in existing resources.
- Existing stakeholders should enhance the awareness of downstream and upstream villages about PFES mechanisms in order to ensure more sustainable provision of services.

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POLICY BRIEF

Piloting Payments for Forest Environmental Services in Vietnam

Key findings

- The pilot project on “Payments for Forest Environmental Services” (PFES) showed promise as a mechanism for forest management and poverty reduction in Lam Dong and Son La provinces in Vietnam.
- The pilot PFES was the first fully self-reliant program for forest management and poverty reduction through collections for a PFES Fund. It generated about US\$4.46 million of which hydropower plants contributed 89 percent to the total PFES Fund.
- PFES resulted in enhanced protection of 209,705 hectares of forest land with cooperation of local communities. PFES proved effective as an incentive scheme to improve the participation of households, particularly poor households, in forest protection. The PFES program engaged with 7,997 households, of which 6,858 were ethnic minorities, in forest allocation and protection.
- The PFES scheme has increased the total annual income of participants by about 30 percent.
- Within two years of its implementation, the PFES program has lifted about 50 percent of participating households over the poverty line. This demonstrated the strong economic impact of the PFES program on local households especially in Lam Dong province.
- Since the project was begun, the area of forest invaded/encroached has been reduced and the number of reported cases of illegal logging and wildlife poaching has decreased by 50 percent.



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Introduction

Widespread deforestation in Vietnam due to various factors ranging from logging to clearing of forest areas for cash crop expansion is threatening key environmental resources. The loss of forest areas is having negative impacts on the livelihoods of communities, particularly ethnic communities, living in upland areas.

The Payment for Forest Environmental Services (PFES) program is being tested as a mechanism to both protect forests and improve the livelihoods of communities.

The Government of Vietnam Decision 380/QĐ-TTg that was initiated during 2008 to 2010 has led to the pilot implementation of the Forest Environment Service Payment (PFES) mechanism in Lam Dong and Son La provinces in Vietnam. The main objectives of the PFES pilot program were to socialize the protection of forests, implement socio-economic development measures to improve the livelihoods of communities living in forest areas, and reduce poverty for people living in upland mountains.

The Hue College of Economics conducted a research study to evaluate the performance and impacts of the pilot PFES program. The study also provided a set of recommendations that drew lessons from the pilot study and scaled up adoption of PES into a national policy.

Poverty and deforestation

Vietnam's upland region has the highest rates of poverty in the country, particularly amongst ethnic minority communities living in forests. The livelihoods of poor households have tended to be subsistence based with illegal logging of timber and wood, and forest slash and burn/encroachment for agricultural cultivation the dominant practice, and the leading cause of the deforestation that is occurring widely in Vietnam.

Forests play a critical role in supporting livelihoods of the poor and providing diverse environmental services. Deforestation is a leading cause of environmental problems such as climate change, biodiversity degradation, and soil erosion that in turn, have adverse impacts on the livelihoods of the poor people in this region.

PFES: A mechanism for forest management and poverty reduction

PFES has become an incentive scheme to improve the participation of households, particularly poor households, in forest protection. PFES participants were grouped to protect particular areas of the forest. Each group worked on the basis of community-based forest management. It means that more people spent more time on forest management as each household in each group had

the same responsibility and time allocated for forest protection. As a result, the area of forest invaded/encroached has been reduced and the number of reported cases of illegal logging and wildlife poaching has decreased by 50 percent.

Policy recommendations

The following recommendations are proposed to the central and provincial agencies to increase the sustainability of future PFES programs and their effective implementation.

- **Right household selection equals better poverty reduction** since defining and selecting the right households for PFES participation will increase the program's impacts on the poverty reduction objective.
- **Defining clear responsibility of stakeholders** in PFES, particularly PFES service providers, is one of the most important factors to enhance the willingness of PFES stakeholders to participate.
- **Increasing the monitoring of the quality of forest services and responsibility of PFES providers** in maintaining the quality of forest will increase the sustainability of PFES implementation.
- **Local voices need to be taken into account**, for this will increase the equity in PFES payment rate among households living in different catchment areas.
- **Increasing transparency in PFES fund allocation and management** among stakeholders, would lead to increased willingness to participate in the PFES program. Eliminating the deduction of 10 percent of total PFES payment for management costs, would lead to an increased budget for households and further incentivize them to protect the forests. Increasing stakeholders' participation in PFES fund collection and management will increase the sustainability of PFES.
- **Incentivizing households involved in PFES** by defining PFES payment rate for households should be based on the quality of forest maintained by households. An application of K-index = 1 does not incentivize households to invest more time and labor in forest protection. Ensuring the PFES payment rate for households in the subsequent program periods is not lower than the preceding payments is an important factor to incentivize households to put more effort in forest protection.

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THEME 2 Transboundary Issues

Chong Khnia commune, Siam Reap province: the atmosphere of buying and selling fresh water fish at Tonle Sap lake, a large fresh water reservoir linked to the Mekong River near central Cambodia. Villagers catch the fish during the night and sell them to merchants in the dawn who then ship them throughout Cambodia and to Thailand. The enormous amount of fish worth a fortune draws several groups of fisherman to Tonle Sap.

In the Mekong Region transboundary flows of goods and services appear to be growing in importance. Improved transport infrastructure is increasing trade in agricultural and manufactured products. Enhanced construction capabilities and access to financial services is leading to larger and more complex manipulations of river flows – for irrigation, hydropower, navigation and flood regulation. Advances in communication and information technology are changing the way people perceive themselves and others, their aspirations and how they organize. The outcome has been an overwhelming but uneven increase in interconnectedness. Flows, in short, have created diverse opportunities as well as risks and burdens.

REGIONAL POLICY BRIEF

Preserving the transboundary fish trade as a rural job source in Lao PDR, Cambodia and Thailand

Key findings

- In the Mekong region, over 20,000 people rely directly on fish trading for employment along just one trade route through Cambodia, Lao PDR and Thailand.
- The fish trade is on par with rice farming in terms of generating income. The fish trade sector provides up to 70 percent of household income for fisher households in Lao PDR.
- Depletion of fish populations in the Mekong River will cause many people to lose a major source of income.
- Many people employed by the fish trade sector are poor, rural villagers who have no other job opportunities.
- The size of the fish trade between Stung Treng, Cambodia; Champassak, Lao PDR; and, Ubon Ratchathani, Thailand has grown significantly in recent years.

Managing the Mekong River fisheries for economic benefits

The transboundary trade of fish between Cambodia, Lao PDR, and Thailand directly generates substantial employment for fishers, traders, and exporters. It also indirectly supports truck drivers, ice sellers, fishing gear makers and others. Over 20,000 people along just one route rely on the trade for much of their household income.

Most people who work in the fish trade are economically disadvantaged rural villagers with limited alternative employment options. The thousands of



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people identified in this study are a representative sample of the many rural people living in Lao PDR who stand to lose their livelihoods if a decrease in fish stocks occurs.

Fish stocks are threatened by irresponsible fishing methods, pollution from unregulated chemical use, rising demand and development in the region. Policymakers need to take account of the value of employment, income and other benefits that come from the fish trade sector in their economic analysis and planning for the future of the region.

SUMERNET study to understand transboundary fish trade

The SUMERNET collaborative research among Cambodia, Lao PDR, and Thailand investigated the fish trade along one of three major transboundary routes in the region—between Stung Treng, Cambodia; Champassak, Lao PDR; and, Ubon Ratchathani, Thailand. They aimed to quantify its direct and multiplier effects on livelihood and employment by determining how much income the fish trade sector contributes to actors at each point of the fish trade commodity chain: fishers, traders, and exporters. By determining how many people depend on the trade for employment, the researchers demonstrate the sector's significant and tangible economic value, and put a human face on a subject that most studies have primarily looked at from an ecological perspective.

The study results reveal that the size of the fish trade in this area has been previously underestimated, or has grown in recent years, compared to baselines.

The study estimates fish trade from Cambodia to Lao PDR to be 531 tonnes per year. The study also identified major changes to the path of the trade route over time.

Many fish used to pass through Lao PDR on their way from northern Cambodia to be sold in Thailand. However as Lao PDR has developed, demand from domestic consumers has now taken on a larger role as drivers of the trade. The cities of Pakse and Vientiane in Lao PDR have grown rapidly over the past decade, and they now consume most of the fish exported from Stung Treng, Cambodia that previously travelled on to be sold in Thailand. Officials interviewed for the study observed that fish exportation to Thailand along this route has virtually ceased.

The study found that greater numbers of tourists and growing wealth in Vientiane and Pakse are responsible for this increase in demand in Lao PDR for Mekong fish, which customers in restaurants and markets prefer to farmed fish. Study participants also explained that recent major road improvements connecting southern Lao PDR to Vientiane have enabled the trade to be conducted quickly and efficiently.

A healthy fish trade directly supports tens of thousands of jobs in Lao PDR for fishers, traders, and exporters; and indirectly supports truck drivers, ice sellers, fishing gear makers, and many others. Study results show that over 20,000 people are directly employed in the fish trade along the Stung Treng to Lao PDR route alone and that fishers rely on the sale of fish for around 70 percent of their household income. This places it on par with rice production as a crucial income source for rural Lao people.

Policy recommendations

The study results establish the fish trade as a major source of rural employment. A healthy fish population in the Mekong River is vital to maintaining economic prosperity among the people of the Lao PDR.

The Government of Lao PDR has passed legislation to prevent overfishing, pollution, and irresponsible development: the main threats to the fisheries. However, the study's researchers observed that these fisheries laws were incomplete, and have not been strongly enforced. Fishers, traders, and even officials interviewed were not always aware of what the laws are and therefore compliance is still low.

The international nature of the threats to the Mekong's fisheries presents significant challenges to sustainable management of this resource. The fish trade sector is not well-regulated or standardized among the three countries, leading to administrative arbitrage, trade inefficiencies, unfair practices, and a lack of a coordinated response to difficulties or environmental threats. Legislation at the individual country level alone is inadequate to address threats to the fisheries; regional cooperation is required.

Article 8 of the 2009 Fishery Law of Lao PDR states, "The Government promotes cooperation with different countries [within] the region and with international organizations in the work of fisheries through the exchange of lessons, information, science, technology [and] upgrading of the technical staff [and in] participation in and implementation of those Agreements and International Conventions to which Lao PDR is a party." Accordingly, the results of this study reiterate the need for the Government of Lao PDR to cooperate with the governments of Cambodia and Thailand, and consult these governments and international organizations on issues regarding shared fisheries resources.

Regional recommendations: Lao PDR, Thailand and Cambodia

- Strengthen and simplify law enforcement through capacity building for the fish trade stakeholders and the local officials.
- Consider a transboundary fish trade agreement between the three countries.

- Raise public awareness about the economic importance of fisheries through mass media.
- Improve transboundary information sharing.
- Improve multisectoral collaboration within the different ministries in each countries.
- Encourage the creation of a Fisher or Fish Trader Association at national and transboundary levels.
- Include the employment and incomes generated by the fish trade sector and the vulnerability of stakeholders in cost-benefit analyses of development projects for the river.

Cambodia

- Establish fish landing sites at the commune or district level especially at the border (in addition to larger cities) to make the buying and selling process of fish operate more smoothly throughout the supply chain.
- Knowledge on fish production technologies should be provided broadly to fish farmers. The government should pay more attention to fish culture by developing laws that support the fish culture industry. Fish culture should be promoted to become more commercial-oriented to increase household income.
- Migration to work to other countries by unskilled labour could be limited and taking fish culture into account, reduce shortages of domestic labour and unforeseen risk.

Lao PDR

- Enforce the 2009 Lao Fishery Law through an implementation decree to make it effective.
- Add articles related to size of fish, amount of fish traded per year per species, fishing gear specifications and quantity of fishing gear.
- Enforce existing fish conservation zones and create additional conservation zones to be monitored by district officials.
- Involve the Ministry of Industry and Trade and the Ministry of Natural Resources and Environment in overseeing the fish trade sector, in addition to the Department of Fisheries from Ministry of Agriculture and Forestry.
- Cooperate with the governments of Cambodia and Thailand, and consult these governments and international organizations on issues regarding shared fisheries resources.

Thailand

- Conduct comprehensive environmental impact assessments of all proposed development projects on the Mekong River, especially hydropower dams.
- Stop the transborder trade of fish species, such as the Mekong Giant Catfish, that have been declared endangered and critically endangered by international conventions, by cooperating with the Lao and Cambodian governments to standardize regulations, penalties, and enforcement of trade laws.

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THEME 3 Energy & Climate Change

In the Mekong Region, climate change impacts could be severe given the vulnerability of landscapes, freshwater systems and coastal areas in the region. Intense floods and droughts, coastal erosion, higher sea levels and heat waves are already affecting production of rice, fruit and coffee crops, and importantly, the fisheries on which millions of Mekong Basin people depend upon for food and livelihoods. In the coming decades these impacts could be more severe and unavoidable. In the future, the regular flow of the Mekong River may change catastrophically because the Himalayan glaciers are melting at a very rapid rate and there might be alterations in forest types causing locations of plant and animal ranges to shift. The overall impacts then could be felt on infrastructure development. Given the already observed and anticipated impacts, the Mekong Region needs to mitigate and adapt to the impacts of climate change while keeping focus on regional development priorities by co-shaping a form of regional economic integration that promotes equitable development.

POLICY BRIEF

Improving local awareness to climate change risks in Prey Veng Province, Cambodia

Key findings

- In the past, the annual floods in Cambodia after the monsoonal rains were viewed as predictable in timing and non-destructive in nature, bringing benefits such as sediment for crops and increased fish catches.
- More recently, the annual floods are more destructive, damaging rice farms livestock and infrastructure as well as resulting in disease outbreaks.
- In Prey Veng province, floods inundated more than 80 percent of the land area in the last three years. In 2000, floods affected approximately 30 percent of the population; more than 7,000 houses and almost 350,000 hectares of rice fields were lost.

Introduction

Cambodia is one of the countries considered most vulnerable to climate change in Southeast Asia in terms of natural disasters. Because adaptive capacity to climate change has remained relatively low, combined with limited financial resources, 17 of 24 provinces are vulnerable to the climate risks (USAID, 2007).

Floods bring both benefits and risks for livelihoods and the environment. Floods can damage rice farms, livestock and infrastructure as well as result in disease outbreaks. In the past, the annual floods were viewed as predictable in timing and non-destructive in nature, bringing benefits such as sediment for crops and increased fish catches. But in 2000 and 2011, more intense floods occurred. The period of inundation changed, becoming longer in duration than in the past by almost 70 percent. Local livelihoods in rural areas became more vulnerable to floods. The people most affected were farmers who depend solely on their rice crops as well as children, women and older people.



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In Prey Veng, floods inundated more than 80 percent of the land area in the last three years. Floods in 2000 affected approximately 30 percent of the population, destroyed more than 7,000 houses, and almost 350,000 hectares of rice fields (CARE, 2003). Due to little access to information about climate change risks, especially related to floods, drought and storms, local communities residing along the Mekong River in Prey Veng and other provinces are extremely vulnerable to the impacts of climate change.

According to NAPA (National Adaptation Programme of Action to Climate Change 2006), Prey Veng province was rated as one among the 24 provinces in Cambodia that is most vulnerable to floods, followed by Battambang, Takeo and Kampong Thom. In terms of drought, Prey Veng province was second to Battambang.

SUMERNET's partner, the Department of Environmental Science, Royal University of Phnom Penh, carried out the research project Communicating Water-Related Climate Change Risks to Improve Local Adaptation in Cambodia (in parallel with Vietnam and Thailand).

The research addressed the major issues of: 1) understanding how different stakeholders perceived types, levels and sources of water-related climate change risks and uncertainties, 2) developing effective communication models on water-related climate change risks with participation of local stakeholders in order to promote shared learning and strengthen local adaptation capacity, and 3) facilitating sharing good practices and experiences in climate change risk communication and advocating for replication of the communication models to delta communities in the Mekong region.

Assessment of climate risks in Cambodia

The research team selected two communes namely Svay Phlous and Angkor Ang located in Peam Chor district of Prey Veng province. The two communes sit on the Mekong River banks and are recognized to be at high risk of both flood and drought. The communes' population is hugely dependent upon agriculture, about 83.3 percent of the whole population in both communes. Rice and corn are the most common crops, followed by bean, watermelon and sesame, especially after the floodwaters have receded around November. Wild capture fisheries, fish aquaculture and livestock are also key sources for subsistence.

The research project used models for raising the awareness of people and communicating water-related climate change risks. The models were intended to improve local adaptation measures by focusing on the risks from floods, droughts and storms.

The communication model included using a short video clip helped in engaging people's participation using visual elements since many people have limitations in reading and understanding written material.

Another model used was the “talking farmer”: a series of posters of a farmer explaining the climate issues to make local people understand better the impacts in their village from floods, droughts and storms. The model also explained about early warning systems and preparedness.

These communication models are based on the local context and situations in terms of floods, droughts and storms and are continuously improved with feedback from the local communities. The models applied in the study site each have their distinct characteristics and uses: for example, the video is seen as easier to access than the talking farmer poster as the video can be viewed in different local gatherings such as village meetings and festivals.

Through the wider use of these models, local communities can get sufficient information and knowledge to cope with climate change risks.

Policy recommendations

- The relevant government agencies need to address the lack of understanding and awareness of the local communities in the study communes about climate risks including preparedness and early warning system.
- The government institutions such as the National Committee for Disaster Management (NCDM), Ministry of Water Resource and Meteorology (MOWRAM), Ministry of Environment (MOE) and concerned local authorities and civil society can adapt these communication models for their own use as appropriate.
- The relevant government agencies need to replicate the project’s communication models to enable people in other districts facing similar risks and hardship from climate change to learn about the impacts of climate change and the strategies for adaptation.

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POLICY BRIEF

Improving local awareness of climate change risks in Samut Sakhon Province, Thailand

Key findings

- Samut Sakhon province in central Thailand is already experiencing a multitude of impacts from climate change such as intense tropical storms and floods.
- The Tha Chin and Kalong subdistricts in Samut Sakhon province are unprepared for climate disasters such as floods. The most vulnerable groups are women, older people and those with physical difficulties.
- Improved climate change communication strategies should be developed to equip local communities with appropriate knowledge to make decisions for adaptation when climate-related disasters occur in the future.

Introduction

Climate change is already having a multitude of impacts on the tropical cyclone-driven climate of Samut Sakhon province, one of the central provinces of Thailand. Storm events in the last few years such as tropical cyclones NOCKTEN and NALGAE, caused heavy rainfall and floods, and affected many areas in Samut Sakhon. The floods affected or damaged 102,352 households, 5 main roads, 30 bridges, 3 hospitals and 12 schools had seriously been damaged (Bureau of Disaster Prevention and Mitigation in Samut Sakhon, 2012).

Furthermore, the disastrous floods in Bangkok in October–November 2011 raised the water level in the Tha Chin River as huge water flows drained down from the northern areas of Thailand and severely impacted the Tha Chin and Kalong subdistricts in Samut Sakhon.

It is estimated that by 2050, local mean temperatures will rise by 1.2°–1.9° C and mean precipitation will rise by 2–3 percent around Bangkok Metropolitan Region that includes Samut Sakhon; the sea level in the Gulf of Thailand could rise by up to 0.29 metres (JBIC, 2008). Tropical cyclones occur regularly in

Samut Sakhon and are likely to increase and become more intense in the future. These disasters will pose significant impacts on agricultural production, particularly rice, fruit and salt production. These challenges will place a high burden on the Thai government to assist affected people, especially vulnerable groups.



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Assessing climate change risks in Samut Sakhon

At present, most of the affected inhabitants from the Tha Chin and Kalong sub-districts in Samut Sakhon live in small and compact housing areas with most people's living standards below the poverty line. Housing tends to be single floor houses, so flood impacts are significant. During the last floods, one-third of the total affected people experienced more than a half-meter inundation for at least three days. The economic damage from flooding mainly impacted the agricultural sectors in these two subdistricts mostly due to the crop and aquaculture losses and halting of business activities.

Most people in the Tha Chin and Kalong subdistricts were unprepared for these climate disasters and experienced significant negative impacts especially the vulnerable groups such as women, old people and those with physical difficulties. This suggests that improved climate change communication strategies should be developed to equip local communities with appropriate knowledge to make decisions for adaptation when climate-related disasters occur in the future.

To address these issues, the SUMERNET project titled "Communicating Water-Related Climate Change Risks to Improve Local Adaptation in the Deltas of the Mekong Region" conducted research in three countries in the Mekong region simultaneously: Vietnam, Cambodia and Thailand.

In Thailand, the main objective of this project was to understand how different stakeholders in Tha Chin and Kalong subdistricts in Samut Sakhon province perceived the different types, levels and sources of water-related climate change risks and uncertainties. The development of effective communication models on water-related climate change risks with the participation of local stakeholders was conducted to promote shared learning and to strengthen local adaptation capacity.

The field survey undertaken by the project investigated how different stakeholders perceived the climate change risks such as floods and saline intrusion. The local people's knowledge and awareness about climate risks was also examined.

Communication models of climate change risks

Communication models developed by the SUMERNET research teams in Vietnam, Cambodia and Thailand aimed to encourage the local community to take short- and long-term measures to adapt to climate change. These measures included:

- Short-term: Strengthen houses structures, stock up on food, clean water and medicine, and improve security.

- Long-term: Take part in strengthening the dyke system, change crop types and cropping timing, use recycled energy such as biogas, solar cells.

Three risk communication models were developed and disseminated to local communities: video clip, SMS, and “talking farmers”, a series of posters using a “farmer” to explain climate change issues. The communication models developed under this project were tested to determine the most useful and effective tool for people to learn about climate change risks and to design adaptation strategies. The communication models are found to be really suitable in these two subdistricts based on the local context and situations in terms of floods. Moreover, the research team also went door-to-door to discuss climate change risks with households.

Policy recommendations

- In the future, climate change risks are expected to intensify every year while local people are still mostly unprepared in terms of adaptation measures and strategies. Thailand’s government agencies should undertake measures to build greater awareness about the climate risks among the vulnerable populations especially in coastal and low-lying areas.
- The SUMERNET project’s communication models should be replicated for use in other communities or subdistricts within the country facing similar climate change risks.
- Thailand’s government institutions such as the Department of Disaster Prevention and Mitigation, Ministry of Water Resource and Meteorology, Ministry of Environment and other concerned local authorities including the involved NGOs can redesign these two communicating models to match their local contexts.

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POLICY BRIEF

Improving local awareness of climate change risks in An Giang Province, Vietnam

Key findings

- Every year, a high number of people are killed by floods in Vietnam's Mekong Delta. In An Giang province, floods in 2000 killed 134 people (of which 94 were children); in 2001, the floods killed 135 people, of which 104 were children.
- In An Giang, the largest rice producing area in the Mekong Delta the third rice crop is more vulnerable to both flooding and drought.
- Improved strategies for communicating climate change risks should be developed in the Mekong Region. This can help to equip local communities with appropriate knowledge about the risks to make adaptive decisions when climate-related disasters occur.

Flood vulnerabilities in the Mekong Delta

The IPCC (2007) has identified the Mekong Delta in Vietnam as one of three 'extreme' global hotspots in terms of potential impacts of climate change. Extreme rainfall variability is already causing more frequent and destructive floods and droughts making the region's rice crops vulnerable.

Moreover, the delta's low-lying areas make it susceptible to saline intrusion (World Bank, 2010). The Government of Vietnam's Ministry of Natural Resources and Environment (MoNRE) has stated that a sea level increase of one metre could result in 39 percent of the Mekong Delta being inundated (MoNRE, 2012).

Every year, a high number of people are killed by floods in Vietnam's Mekong Delta. In An Giang province, floods in 2000 killed 134 people (of which 94 were children); in 2001, the floods killed 135 people, of which 104 were children (Nguyen Duy Can et al., 2012).



Apart from fatalities, damage to houses and crops by floods and saline intrusion is a major problem for people in flood-prone areas. In An Giang, the largest rice producing area in the Mekong Delta, people depend on intensive rice cropping, where the third crop is more vulnerable to both flooding and drought. More than 23,000 ha of autumn-winter rice were lost in 2010. In 2011, more than 6,000 ha of the third rice crop were lost to floods. Saline intrusion from the sea in the dry season of 2013 affected 6,000 ha of rice and more than 7,000 households in Thoai Son and Tri ton districts in An Giang (Huu Huynh, An Giang News, 2013).

The intensive rice farming in An Giang depends on a complex network of flood control dykes and canals; severe losses to crops occur if they are damaged. The frequent floods also increase the costs required to repair and maintain the damaged dykes.

Models for communicating climate risks in the Mekong Delta

These impacts illustrate that improved strategies for communicating climate change risks should be developed in the Mekong Region. This can help to equip local communities with appropriate knowledge about the risks to make adaptive decisions when climate-related disasters occur.

To address this need, the SUMERNET project “Communicating Water-Related Climate Change Risks to Improve Local Adaptation in the Mekong River Delta” was conducted simultaneously in three Mekong countries: Vietnam, Cambodia and Thailand.

The main objectives of this project were to understand how different stakeholders perceived types, levels and sources of water-related climate change risks in the context of uncertainty. Effective models for communicating water-related climate change risks were developed with the participation of local stakeholders and aimed at promoting shared learning and strengthening local adaptation capacity.

Three communication models – Short Video, SMS and “Talking Farmer” were developed and tested in An Giang province, Samut Sakhon and Prey Veng in Vietnam, Thailand and Cambodia respectively. Below are the findings from this test (Ngo Cong Chinh et al., 2013).

Along with the SMS, the Short Video, which was played at village meetings, did not bring positive results since it was more one-way communication without feedback and the content was not targeted to capture the attention of the audience.

The most powerful model was the “Talking Farmer” that was flexible in its use of different communication tools (such as video and maps). This also allowed

for two-way, participatory communication as revealed in the scores of those who actively participated in the “Talking Farmer” session being higher on knowledge of climate change impacts than those who passively listened.

Policy recommendations

- The government needs to recognise the need for more education and awareness-raising about climate change among vulnerable communities in the Mekong Delta.
- The government agencies need to be aware that successful risk communication does not guarantee people’s behavioural change and adoption of good practices in responding to climate change. But the absence of effective risk communication diminishes the chances of success in any climate change adaptation effort in the Mekong Region.
- Communication models such as the “Talking Farmer” could be improved by tailoring content to specific audience interests depending on livelihoods, vulnerabilities, gender, household activity, and so on.

Notes

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POLICY BRIEF

Compelling reason for local action: Climate risk reduction and adaptation in Lao PDR

Key findings

- For small-scale, subsistence farmers in Lao PDR, climate risks pose a significant threat to food security as crop losses can occur during the mid-year dry spell and the late-season rainfall and floods.
- Projected temperature and rainfall in the years 2020, 2050 and 2080 would be statistically different from the 2012 level in Luang Prabang and Savannakhet provinces.
- In Luang Prabang, rice yield is expected to generally increase across ecozones and time periods while in Savannakhet, rice yield is also expected to significantly increase across ecozones in the dry season but significantly decrease in the wet season.
- Climate adaptation is a challenge for farmers who mostly have low educational attainment, limited source of livelihood, low rice productivity, and reside in areas that are highly exposed to climate risks.
- Local governments should also have the capacity to formulate and carry out adaptation policies and programs to augment people's initiatives and provide adaptation options to improve farmers' resilience and adaptive capacity.

Assessing climate risks for small-scale farmers in Lao PDR

Climate risks pose a significant threat to the food security and livelihoods of small-scale subsistence farmers in Lao PDR. The heaviest crop losses can occur during the mid-year dry spell and the late-season rainfall and floods. In recent years, greater variability in the amount and distribution of rainfall is also causing losses to agricultural production.



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Thus there is an urgent need for establishing appropriate adaptation measures to address climate risks and its impacts on food security and the livelihoods of small-scale farmers. SUMERNET researchers from the National Agriculture and Forestry College in

Laos conducted a study in two provinces of Luang Prabang and Savannakhet to determine the impact of changing climate on local rice production and the appropriate adaptation options that should be taken.

Through the use of climate projection models, the study found out that projected temperature and rainfall in the years 2020, 2050 and 2080 would be statistically different from the 2012 level. Temperature in 2020 will increase by about 0.02 percent, while in 2050 and 2080, it will decrease by about 0.01 to 0.06 percent. The amount of rainfall in Luang Prabang will increase slightly from 12 percent to 19 percent while in Savannakhet, it will increase significantly by 60 percent in 2050 and 2080.

The combined effects of these changes in temperature and rainfall on rice production differ by location, ecozones and cropping season. In Luang Prabang, rice yield is expected to generally increase across ecozones and time periods while in Savannakhet, rice yield is also expected to significantly increase across ecozones in the dry season but significantly decrease in the wet season. These projected impacts have to be addressed to prevent more severe crop losses that will directly affect the food security and livelihoods of large numbers of people. The local government units need to implement policies and programs that will cater to the specific needs of households to cope with climate risks.

Vulnerability and response strategies

Research results further show that farmers across ecozones have low educational attainment, limited source of livelihood, low rice productivity, and reside in areas that are highly exposed to climate risks. They mainly depend on farming for their livelihood, which makes it difficult for them to support their family in times when adverse climate events prevent them from performing farming activities. The majority of the farmers live along riverbanks so they are exposed to the risks of flooding and landslides. Moreover, membership in community organizations and participation in collective action are low and community mobilization is difficult. It can be noted, however, that farmers believe that climate change is not beyond their control but are induced by human activities and exacerbated by infrastructure that clogs waterways. The adaptive capacity of these households has to be enhanced by providing them knowledge and skills on appropriate adaptation options and supplementary livelihood opportunities to improve their resilience.

The current adaptation actions undertaken by the local governments include construction of dikes and placing sandbags along riverbanks to prevent and control flooding. In Savannakhet, only one district has an appointed officer who is responsible to watch and inform people about river overflow. There is no defined act that would mandate the local governments to incorporate climate risk reduction and management and climate change adaptation actions in local development planning.

The local government units are aware that solutions need to include the construction of weirs and water gates, and installation of pumps to drain out stagnant water but they lack the funds to build the infrastructure. They also do not have experts who are capable of incorporating planning for climate change adaptation (CCA) and disaster risk management (DRM) into local development projects.

High adaptive capacity is essential to enable farmers to effectively respond to climate risks and mitigate the impacts. Local governments should also have the capacity to formulate and carry out adaptation policies and programs to augment people's initiatives and provide adaptation options to improve farmers' resilience and adaptive capacity.

Policy recommendations

These recommendations are intended for the local government offices at the provincial and district levels:

1. Develop a policy framework and program of action for DRM and CCA to rationalize national and local programs, projects and related efforts and their financing.
2. Emphasize climate change adaptation and disaster risk reduction and management in local development plans.
3. Create an office or sub-unit that will focus on capacity building, training and education of farmers and communities on climate risks management and adaptation options, and coordinate with different government offices to develop location-specific adaptation and mitigation strategies.
4. Provide training and seminars to raise farmers' awareness on climate change phenomenon and adaptation options to enhance their adaptive capacity.
5. Implement projects to provide alternative livelihoods to augment farmers' income for periods when they cannot rely on farming.

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POLICY BRIEF

Local power to act: Reducing climate risks for rice farmers

Key findings

- Exposure to climate risks in the northern to central Philippines seriously threatens rice farming and the sustainability of rice farmers' income.
- Downscaled climate scenarios for the period centered on 2020, 2050 and 2080 show that in Tarlac province there will be more pronounced rainfall during the wet season and a drier dry season while in Pangasinan, more rainfall is likely to occur throughout the year.
- Communities practicing rainfed lowland and rainfed upland rice need improvement in knowledge, skills and social networking to cope with climate risks.
- Constraints in climate adaptation that are faced by local government units (LGUs) include inadequate human and financial resource capabilities, limited appreciation of the climate change phenomena, uncertainty in climate scenarios and limited knowledge about adaptation options.

Climate change in the local context

In the northern and central regions of the Philippine, climate change risks are seriously threatening rice farming and the sustainability of farmer's livelihoods. Farmers in Pangasinan and Tarlac provinces reported that typhoon and continuous intense rain are the most frequent climate-related hazards that they have encountered. These brought farm income losses of 70–90 percent of total value of losses in lowland and upland rice farms in the two provinces.



A study conducted by UPLB researchers on downscaled climate scenarios for the period centered on 2020, 2050 and 2080 show that in Tarlac province there will be more pronounced rainfall during wet season and a drier dry season while in Pangasinan, more rainfall is likely to occur throughout the year. These projected changes could pose further risks to farmers and therefore require concrete adaptation action with the assistance of local government units.

Current farming practices

The most common need of irrigated lowland, rainfed lowland and rainfed upland rice households is improvement in knowledge, skills and social networking. There are rare community interactions related to climate and disaster responses, a low level of collective action, and inadequate support to keep them informed about the climate change phenomena and appropriate long term adaptation options. Having been used to typhoon events, which average 20 per year, the majority of local households believed that climate variability and extreme climatic events are a matter of fate and beyond their control. Thus, most of those who are exposed to extreme climatic events have learned to live with these disasters and have no long term adaptation plans. When crops are damaged by typhoon and flooding, their response is to repeatedly re-plant whenever weather conditions permit.

In irrigated lowland areas, water allocation conflict usually arises during dry months. In rainfed upland areas, soil erosion and degradation usually occur as their farming system is generally not compatible with their sloping terrain.

Current response strategies and constraints

The Philippines has major policy pronouncements that mandate the local government units (LGUs) to integrate climate change in the local development planning. This includes the Local Government Code of 1991, Climate Change Act of 2009, and the Disaster Risk Reduction and Management Act of 2010. To more effectively carry out this mandate, local policy makers should be aware of the needs and capacity of the households and community to help them better cope with climate change and enhance their own capacity to provide needed assistance. Local planners should direct efforts to adaptive capacity enhancement of households, small-scale farmers and local institutions.

LGUs face constraints in fulfilling this mandate because of inadequate human and financial resource capabilities, limited appreciation of the climate change phenomena, uncertainty in climate scenarios and limited knowledge about adaptation options.

Policy recommendations

Research results suggest that local governments should implement policies and programs that will cater to the specific needs of households and small-scale farmers to cope with climate risks since farmers' responses may not be effective enough to reduce the risks or prevent the recurrence of adverse impacts.

In Tarlac, where projected climate change could cause yield to decline by as much as 80 percent in 2080, there is a need to institute policies and programs that could ensure food security and people's livelihood such as regulating the conversion of prime agricultural lands to non-agriculture use and construction of suitable drainage and water storage facilities to collect and store excessive water during rainy months. For Pangasinan, the strategy should be to explore the opportunities that projected climate change is expected to bring. These include programs such as expansion of rice production areas to produce more food to further boost food security and livelihoods, and provide necessary support services (e.g. providing reliable seasonal climate forecasts; weather insurance products, etc.) to enable small-scale farmers to take advantage of the potential benefits that projected climate change will bring.

The LGUs of both provinces should also provide interventions such as information, education and communication campaigns to raise farmers' awareness about climate change and climate variability, and appropriate adaptation options and encourage community participation in climate change adaptation programs. LGUs should also assist the upland households located along the slopes who are highly exposed to natural disasters like typhoons and landslides.

Research institutions should develop technologies such as rice varieties suitable to extreme wet and dry conditions in Tarlac and other similarly situated provinces.

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REGIONAL POLICY BRIEF

Reducing climate risks to small-scale rice farmers: Imperatives for local government action in Lao PDR and the Philippines

Climate risks and impact

Lao PDR and the Philippines are among the Asian countries whose exposure to climate risks seriously threatens livelihood, particularly of those in the agriculture sector. Two recent studies conducted in major rice producing provinces in these countries reveal that the climate variability and extremes that are experienced by farmers significantly affect rice production and the farmers' livelihood. In the Philippines, farmers reported that farm income losses due to typhoons and continuous intense rain accounted for 70–90 percent of total value of losses in lowland and upland rice farms. The study further showed that the combined effects of increases in temperature and rainfall on rice production vary by location, ecozone, and cropping season. For Tarlac province, climate projections for the years centred in 2020, 2050, and 2080 show that there will be more pronounced rainfall during wet season and a drier dry season while in Pangasinan, more rainfall is likely to occur throughout the year. As a consequence of these projected changes, rice production in Tarlac may decline by up to 54 percent while rice production in Pangasinan may increase by about 48 percent.

In Lao PDR, farmers, who generally raise crops for subsistence, have already experienced heavy crop losses due to mid-season dry spell and late-season floods. Great variability in the amount and distribution of rainfall, which have already been experienced by farmers, also result in unpredictable agricultural production. The study also shows that rainfall will significantly increase in 2020, 2050 and 2080 in Luang Prabang and Savannakhet provinces. In Luang Prabang, rice yield is expected to generally increase across ecozones. However, in Savannakhet, rice yield is expected to significantly decrease in the wet season.



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These projected impacts have to be addressed to prevent more severe crop losses that will directly affect the food security and farmers' livelihood sources of the two countries.

Current response strategies and constraints

The Philippines has major policy pronouncements that mandate the local government units (LGUs) to integrate climate change in the local development planning. This includes the Local Government Code of 1991, Climate Change Act of 2009, and the Disaster Risk Reduction and Management Act of 2010.

However, LGUs are constrained with inadequate human and financial resource capabilities, uncertainty in climate scenarios, and limited appreciation and knowledge by LGU officials of the climate change phenomena and adaptation options.

In Lao PDR, there is no definite policy on integrating climate change adaptation in local development planning. The current adaptation actions undertaken by the local governments include construction of dikes and placing sandbags along riverbanks to prevent and control flooding.

Local policy makers should be aware of the needs and capacity of the households and community so that they could direct efforts towards planned adaptation to minimize adverse climate change impacts and explore opportunities that may come about.

Recommended local government actions

In Tarlac, where projected climate change could cause yield to decline by as much as 80 percent in 2080, there is a need to institute policies and programs that could ensure food security and people's livelihood. This includes regulating the conversion of prime agricultural lands to non-agriculture use; and construction of suitable drainage and water storage facilities. Research institutions should develop technologies such as rice varieties suitable to extreme wet and dry conditions. For Pangasinan, there should be programs on expansion of rice production areas and agricultural extension services such as the use of appropriate technologies to help farmers explore the potential benefits that projected climate scenarios may bring.

LGUs should also assist the upland households living along the slopes who are highly exposed to natural disasters like typhoons and landslides. The LGUs of both provinces should also conduct information, education and communication campaigns on appropriate adaptation options and encourage community participation in climate change adaptation programs.

In Lao PDR, there should be a policy framework on climate change adaptation and deliberate efforts to prepare climate change adaptation plans. Programs to develop or test the applicability of technologies that could increase food production under changing climate condition should be implemented. LGUs should create an office or unit that will focus on capacity building, training and education of farmers and communities on climate risks management and adaptation options. There should also be projects on alternative livelihoods to augment and diversify farmers' income and ensure sustainable livelihood.

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POLICY BRIEF

Towards a green pathway in Chiang Mai Municipality, Thailand

Key findings

- The transportation sector in Chiang Mai Municipality (CMM) contributes to significant Greenhouse Gas (GHG) emissions.
- Non-Motorized Transport (NMT) is an option to not only reduce emissions from transport but also provide income opportunities for the poor.
- Developing NMT zones in the city center of CMM will offset around 230 to 570 tons of equivalent CO₂ per year in CMM.

Introduction

A Greenhouse Gas (GHG) inventory study conducted by Chiang Mai Municipality (CMM) on tourism related activities showed that the transportation sector contributes to significant emissions. Stakeholders of the tourism sector related activities then identified Non-Motorized Transport (NMT) in CMM as one option that can not only reduce emissions from transport, but also provide income generating opportunities for the poor.

The policy brief is based on the research conducted for developing sustainable urban tourism through low carbon initiatives in Hue (Vietnam) and in Chiang Mai (Thailand). This research aimed to explore strategies for reducing carbon emissions while simultaneously alleviating poverty in the urban tourism sector of these cities.

The tourism service providers were estimated to emit about 0.44 million tons of CO₂ equivalent in Chiang Mai in the year 2011. The recommended mitigation

option to reduce GHG emission and to create clean and decent jobs to the local people included NMT in Chiang Mai.

The policy brief presents the background and issue related to the promotion of Non-Motorized Transport (NMT), and discusses how Chiang Mai Municipality (CMM) can promote low carbon tourism through introduction of NMT in the city.



Understanding the problem

Traditionally, NMT was one of the major modal shares in developing countries. For example, in Beijing and Delhi, walking and cycling together contribute to about 53 percent and 33 percent of the modal share respectively. However, with increasing motorization and decreasing inclination to use non-motorized methods, interest in designing measures and incentives for non-motorized traffic is given increased attention in small and medium cities.

NMT is mostly used for short-distance trips, with cycling particularly relevant up to 7.5 kms, and walking up to 2.5 kms. As up to 70 percent of cars trips cover less than 5 kms, NMT has a large potential to replace car travel. Facilitating NMT, particularly walking and cycling, will directly lead to the reduction of the CO₂ emissions.

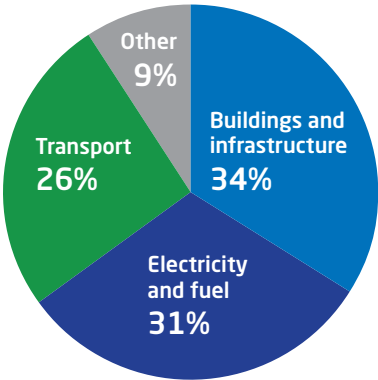
Cycling and walking are also access modes for public transport, and thus their promotion could lead to increased public transport use. Promotion of NMT also delivers important co-benefits, such as noise and pollution reduction, better health, and a greener environment.

Non-motorized transport for Chiang Mai municipality

Being important contributors of GHG emissions, cities also have an excellent opportunity to undertake emission reduction and reap important benefits. The small- to medium-scale cities like Chiang Mai could introduce NMT through the introduction of appropriate policies, and move towards a lower carbon development path.

Preliminary estimates of GHG inventory by the tourism sector in CMM showed that transportation was the major source of GHG emissions, equivalent to more than 4.2 million tons of CO₂ in 2014. Developing NMT zones in the city center of CMM will offset around 230 to 570 tons of equivalent CO₂ per year in CMM. NMT areas will not only help CMM to reduce its carbon emissions, but also provide wider economic and health benefits.

Being one of the most popular tourist destinations in Thailand, CMM could designate NMT in crucial tourist locations to both enhance recreational opportunities by reducing congestion and reduce emissions to overall benefit the local communities. The restricted motorized transport will provide



CO₂ emission of major tourism sub-sectors in Chiang Mai Municipality

opportunities for the tourists and others to purchase handicrafts and other goods from local vendors, thereby contributing to the local economy. It helps in the additional income generating opportunities for the tricycle drivers, bicycle shops, etc. Noise and dust pollution will also be minimized.

Non-motorized transport in Three Kings Square of Chiang Mai municipality

The emission per visitor per day was around 3 kg of CO₂ equivalent during 2011 within the city.

- Promoting NMT in the Three Kings Square area and Chiang Mai Moat (close to the center of old city) covering an area up to approx. 6,000 meters square will offset around 230 to 570 tons of CO₂ equivalent to 13,300 tree seedlings grown for 10 years.
- Around 23 percent of Thai tourists and almost 93 percent of international tourists walk or cycle in around the Chiang Mai Moat area.
- Majority of the street vendors, traditional convenience stores, bicycle shops, tricycle providers agree that NMT will lead to increased economic activity and hence create additional income.

Existing policy landscape for non-motorized transport

- The current policy sets aside 4 percent of the total area in CMM for NMT, and this might be increased to 10 percent.
- The Cabinet approved a policy at provincial level on Sustainable Green Areas 2007 to stimulate development of urban green spaces through private sector participation, local capacity building and improvements in laws, regulations and instructions.
- Sectoral policies at national level such as transport and environment and broader socio-economic development strategies such as National Economic and Social Development plans, all emphasize the development of low carbon and green city by increasing green area and energy efficiency.
- NMT is also one of the transport modes supported for mitigation of climate change under the climate change initiatives.

Policy recommendations for promoting non-motorized transport in Chiang Mai Municipality

Prioritizing options for NMT will help CMM in not only ensuring sustainable urban transport but also in gaining social equity and improving its tourism potential. The following recommendations are therefore suggested for ensuring sustainable urban tourism through NMT.

- Detailed traffic modeling exercise prior to implementation will help in the identification of appropriate boundaries, traffic displacement issues and potential areas that would benefit from mitigation measures.
- NMT should be developed within the framework of total cost accounting including all external costs and considerations for the poor.
- CMM should incorporate NMT components in its transport master plan and be in line with the broader national and provincial transport policy with clearly set targets.
- Prioritize transport infrastructure investments to NMT, including aspects such as safety concerns of the pedestrians and non-motorized vehicle owners, construction of segregated lanes, parking of non-motorized vehicles, control on the activities of street vendors and ensuring smooth flow of NMT traffic, wherever feasible.

The objectives of the municipal/provincial NMT policy/strategy plan may include:

- Integrated land use planning for NMT within state/regional transport and land use planning;
- Integrate NMT in other modes of urban transport; Promote NMT as an additional mode of urban transport;
- Prioritization of areas of NMT which provide facilities with international standard;
- Development of road safety programs; and
- Development of by-laws regarding non-motorized transport.

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POLICY BRIEF

Preservation of garden houses for sustainable urban tourism in Hue city, Vietnam

Key findings

- The tourism service providers in Hue city were estimated to emit about 0.5 million tons of CO₂ equivalent in the year 2011.
- For developing sustainable urban tourism, garden houses are perfect as they combine the values of nature and local cultural heritage with income from tourism.
- Income is generated for the owners and garden workers from the sale of fruits and vegetables from the gardens.
- Other income generating opportunities benefit the cyclo drivers and street vendors.

Introduction

The policy brief presents the background and issue related to the promotion of garden houses in Hue city of Vietnam, and discusses how local city authorities can promote low carbon tourism through the promotion of this cultural heritage.

The policy brief is based on the research conducted for developing sustainable urban tourism through low carbon initiatives in Hue city (Vietnam) and in Chiang Mai city (Thailand). This research aimed to explore strategies for reducing carbon emissions while simultaneously alleviating poverty in the urban tourism sector of these cities.



The tourism service providers were estimated to emit about 0.5 million tons of CO₂ equivalent in Hue city and about 0.44 million tons of CO₂ equivalent in Chiang Mai in the year 2011. The recommended mitigation option to reduce GHG emission and to create clean and decent jobs to the local people included promotion of 'garden houses for tourism' in Hue city.

Traditional garden houses for eco-friendly city

Nestled between nature, garden houses can be a prime tourist attraction in the otherwise busy streets of Hue city. Garden houses are perfect for sustainable tourism as they combine the values of nature and local cultural heritage with income from tourism. The income from the sale of fruits and vegetables from the gardens benefits the owners and garden workers. Restricting motorized vehicles around the garden houses also provides additional income for cyclo drivers and street vendors.

Traditional garden houses of the Hue city, Vietnam are a unique urban architecture known for their harmonious design with nature, and are examples of buildings designed in consideration of local climactic conditions. The Hue city's garden houses creates closeness between people and nature, and between the villages with the city, adding to the charm of the city. The distinctive garden houses of Hue are generally not seen in other parts of the Vietnam. Though the number has fallen recently, policies for promoting garden houses could be important for developing green tourism and towards making Hue an eco-friendly city.

In spite of the existing policy for the preservation of garden houses in Hue, they have remained in poor state of repair. More than half of the 2,000 garden houses in Hue are currently in a state of serious deterioration.

For example, although there was a plan to restore 150 typical houses in disrepair, only 52 were restored. Similarly, although the provincial People's Committee had decided in 2009 that each garden house owner would receive VND 100 million (US\$5,000) in financial support to restore the houses, many of them did not receive any financial support as the local government had promised. The delays and inadequacy of the local policies on garden house conservation have resulted in the lack of interest among the owners to preserve the garden houses. As the garden owners lack resources and required skills to maintain, repair and embellish the deteriorating garden houses, they have often given in to outside pressure to sell off their heritage.

Potential benefits in developing garden houses for tourism

On 1 March 2012, Thua Thien Hue People's Committee directed the implementation of its policy on preservation of the Hue garden houses to promote sustainable urban tourism during 2012–2020.

The potential benefits of improving garden houses for tourism purposes include:

- Economic growth, employment creation in both new (tourism related) and existing businesses; trades and crafts; opportunities for income growth; the creation of new markets for agricultural products; and, a broadening of city's economic base.

- Socio-cultural development, the revitalization of local crafts, customs and cultural identities; increased opportunities for social contact and exchange.
- Protection and improvement of both the natural and built environment and infrastructure.

Implementing solutions

Prioritizing options for development of Hue garden house for tourism purposes could include the following considerations:

- Provide awareness to the garden house owners, community and society about the historical and cultural value of garden houses.
- Establish the Hue garden house “Conservation Fund” with annual budget of at least 4–5 billion VND.
- Establish a board of management under the control of Hue City People’s Committee and the council of investigation for implementation of plans and assessment, evaluation, and classification of Hue garden houses.
- Promote Hue garden houses on mass media, campaign to attract organizations and individuals involved in the conservation, restoration and exploitation of Hue garden houses.
- Encourage garden house owners to be responsible for implementing and receiving preferential benefits under the garden house protection policy scheme.
- Encourage organizations and garden house owners to take part in activities, such as establishing local clubs, garden house group, associations, under the current legal framework, for conservation and promotion of Hue garden houses.

Policy recommendations

In order to further develop the garden houses for tourism purposes and to invest in tourism products and sharing of benefits, the following options are recommended.

- Plan and form a traditional village and small handicraft products center at Hue for tourists, with preferential policies on taxes for the village.
- Strengthen home-stay activities at Phu Mong-Kim Long areas as tourists normally do not go to that part of the city.
- Encourage organic vegetable farms in the garden houses, attracting both the local people and tourists for regular visits, in order to promote local practices on organic farming and to boost tourism.

- Organize regular tours to garden houses, especially the fruit gardens and famous trees of Hue.
- Promote environment friendly transportation such as bikes, horses, cyclos, etc. to visit the garden houses.
- Work in cooperation with travel agents to develop structured tours that combine non-motorized transport for the visits to garden house.

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REGIONAL POLICY BRIEF

Tourism and non-motorized transport in the Mekong Region: An opportunity for regional cooperation

Key findings

- About 70 percent of commutation covers less than 5 km, and NMT has a large potential to replace car travel.
- A 5 percent or 4 percent increase in walking or cycling mode share can reduce CO₂ emissions up to 7 percent at an estimated cost of 17 or 15 US\$/tCO₂.
- Study on GHG emission of tourism sector in Chiang Mai municipality in Thailand showed that developing NMT in the city centre (6,000 m²) could reduce up to 570 tons of CO₂ equ. annually, generate clean and decent jobs to the local people and improve the city's touristic potential.

Introduction

Developing countries of the Mekong Region have experienced rapid economic growth in recent years. Growth in the region (GDP) as a whole has averaged close to 8 percent per year throughout the early 1990s. One common feature of the region is growth of its small to medium size cities, which are undergoing rapid urbanization and are becoming major tourist destinations. Cities, in general, are major contributors of greenhouse gas (GHG) emissions, and the transport sector is one of the important and growing GHG emitter. However, cities in the region overlook the importance of planning for sustainable urban transport as a precursor to livable city. Non-Motorized Transport (NMT) – walking and cycling – not only improves the environmental quality by reducing GHG emissions and provides health benefits, but also improves the livability of the city and thus enhances its touristic potential.



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An opportunity for regional cooperation

The prospect of developing NMT, such as walking and cycling, in the cities of the Mekong Region is largely dependent on the local conditions and national policies and priorities. However, concerted efforts at regional level can help to strengthen the coherence of regional partnership on sustainable transport. The rapidly growing small/medium scale cities of the region can work to enhance/develop NMT in their cities and at the same time learn from each other to better catalyze their implementation. Several international agencies and development banks have developed strategic framework for region specific sustainable transport and interest of cities in such intergovernmental processes could generate interest among those agencies. The learning of experience from the Mekong Region will ensure standardization of process and technology and can facilitate exchange of good practices.

Sustainable development benefits of NMT

1. Air quality improvement
2. GHG emission reduction
3. Congestion and noise reduction
4. Health benefits due to exercise
5. Gender benefits (cycling can be particularly suitable for many short trips women in developing countries take)
6. Social equality and poverty reduction: Beside public transport, cycling and walking are usually poor's only medium, to access work, education, health-care and markets
7. Improves pedestrian safety
8. NMT, particularly cycling, is easy, flexible, cheap and fast
9. More attractive cities for tourists and residents, particularly if car-free zones are included
10. Reduced travel times due to improved traffic flow
11. Energy security due to lower vehicle energy use

Understanding the problem

Modal share of urban transport in many Asian cities has traditionally been largely based on NMT such as walking and cycling. The growing cities have an advantage as ownership of motorized vehicle is not high compared to mega cities/ developed countries and they have opportunities to embrace a lower carbon development path. Developing/ enhancing NMT facilities as a sustainable transport option will help these growing cities become more sustainable and livable, as it will positively impact health, environment, personal and social well being. Research in other regions (e.g. Latin America) have shown that even shifting relatively small percentages of modal share to public transport or NMT can be worthwhile (a 1 percent reduction in mode share of private automobiles represents over 1 MtCO₂ through the 20-year project period).

Policy landscape for NMT in Asia

Many Asian countries have either developed or strengthened their national policy for sustainable transport, and have integrated NMT components in their national/provincial/local plans. However, most of the government support for NMT in the region is in the form of plans and projects for pedestrian and pedestrian's facilities (e.g. pedestrianization of Malioboro road in Yogyakarta, Indonesia; Indian cycle rickshaw modernization project), and only few statutory and regulatory policies for comprehensive NMT exists. Some examples of national plans that encourage NMT include:

1. The Tenth Malaysia Plan (2011–2015) focuses on public transport and pedestrian-friendly street network towards building vibrant and livable city.
2. The National Environmentally Sustainable Transport Strategy for the Philippines identifies provision of NMT such as pedestrian lanes and bike lanes a strategy toward achieving environment and people-friendly infrastructure development.
3. Singapore's Land Transport Master specifically states in terms of pedestrian facilities, providing more covered link ways and pedestrian overhead bridges and underpasses as main priorities.
4. The Traffic and Road Transport Act of Indonesia gives priority to the safety of pedestrians and bicyclists.
5. The National Urban Transport Policy of India encourages integrated land use and transport planning, public transport, and non-motorized modes by giving them priority in investments.

NMT improvement and encouragement strategies

Some of the possible ways to improve and encourage NMT in each city include:

1. Walking and cycling facility improvements. Improved sidewalks, crosswalks, paths, bike lanes, bicycle parking and changing facilities that accommodate all possible users, including wheelchair and handcart users, and people who cannot read local languages.
2. Non-motorized transport encouragement and safety programs. Special programs that encourage people to walk and bicycle for transport, and teach safety skills.
3. Public bikes (easy-to-rent bikes distributed around a community).
4. Roadway redesign, including traffic calming, road diets, and traffic speed controls. Traffic calming changes roadway design to reduce traffic speeds; road diets reduce the number of traffic lanes; and traffic speed controls can involve driver information, changes in posted speed limits, and increased enforcement.
5. Improved road and path connectivity. More connected roadway and pathway systems allowing more direct travel between destinations.
6. Public transport improvements. Public transit improvements often involve pedestrian and cycling facility improvements, and can reduce vehicle traffic and sprawl.
7. Commute trip reduction programs. This includes programs that encourage use of alternative modes, such as improving bicycle parking or financial rewards such as parking cash out.
8. Pricing reforms. This includes more efficient road, parking, insurance and fuel pricing (motorists pay directly for costs they impose).
9. Smart growth (also called new urban, transit-oriented development, and location-efficient development) land use policies. More compact, mixed, connected land use, and reduced parking supply tends to improve walking and cycling conditions and encourage use of active modes by reducing the distances people must travel to reach common destinations such as shops, schools, parks, public transit, and friends.

Policy development and implementation scheme

Scheme for NMT policy development and implementation may include, but is not limited to:

- Consideration of the specific situation of a city. NMT design and development should take into account the local context of the city including the variations based in transport availability, travel flows and demand, scheme boundaries along with the local/national strategies influencing NMT design and development.
- Informing and engaging stakeholders. Plan a dedicated strategy to involve stakeholders and citizens, including local authorities, private businesses, civil society organization and local people.
- Policy announcement and dissemination. Ensure the formal adoption of NMT plan, rollout policy decisions and disseminate information to wider audience.
- Prioritizing investments and implement NMT activities. Develop effective measure of NMT implementation with well defined objectives, targets, funding requirement and formalize responsibility of all actors.
- Checking the progress of implementation. Identify problems and challenges of effective implementation, and monitor outputs and outcomes.

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REGIONAL POLICY BRIEF

Integrating community-based participatory carbon measurement and monitoring with satellite remote sensing and GIS in a measurement, reporting and verification (MRV) system for REDD+

Key findings

1. An early assessment of community organization strengths and experience will be useful in determining if community organizing and strengthening should be included in the REDD+ set of activities.
2. Training modules for community leaders and community participants in local languages facilitate knowledge transfer and help to ensure success in community involvement as it provides a rationale for why REDD+ projects would seek community support in measuring and monitoring forest carbon.
3. In projects where linkages are weak, or do not exist, between communities and local agencies, the success of community inclusion is less likely to occur. In identifying sub-national REDD+ project activities, an assessment of community linkages to local agencies should be made.
4. Training and capacity building, knowledge transfer for local agency personnel should be a part of the overall REDD+ readiness prior to project implementation. University researchers and NGO staff who may be part of a REDD+ activity should also be carefully vetted to ensure they have appropriate background, knowledge and skills.
5. Identifying land tenure and resource use rights for a project area will help determine the likelihood of successfully integrating community participation in forest carbon measurement and monitoring activities.



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6. Project areas where forest laws are well defined and clearly understood by local communities will have more chance of success in REDD+ activities.
7. The integration of local knowledge, tools and methods with modern scientific knowledge, tools and methods should be promoted in REDD+ activities working to build stakeholder participation from communities.

Introduction

Lao PDR, Thailand and Vietnam are all Parties to the United Nations Framework Convention on Climate Change (UNFCCC) and all three have ratified to the Kyoto Protocol. All three countries also are engaged in REDD+ activities: Laos with the World Bank Forest Carbon Partnership Facility (FCPF) and the Climate Investment Fund's Forest Investment Programme (CIF-FIP), Thailand with the World Bank FCPF, and Vietnam with the World Bank FCPF and the UN-REDD Programme.

Furthermore, all three countries belong to the REDD+ Partnership¹ adopted May 27, 2010, which “expresses the intent of the governments ... present at the Oslo Climate and Forest Conference on 27 May 2010 to provide a voluntary, non-legally binding framework for the interim REDD+ Partnership, within which the Partners may develop and implement collaborative REDD+ efforts”. Each country recognizes the necessity for a robust measurement reporting and verification (MRV) or evaluation (MRE) system that also includes monitoring as an important component. REDD+ safeguards and capacity-building are also important considerations for each country as they move forward with REDD+ activities.

Local communities as stakeholders in the measurement and monitoring of forest carbon

The Sumernet study on implementing an integrated community-based participatory and remote sensing measurement and monitoring system for REDD+ included three project areas, one each in Laos, Thailand, and Vietnam. The project team developed an approach that supports the participation of local communities as stakeholders in the measurement and monitoring of forest carbon. The approach includes capacity building and the use of an MRV/MRE on-line tool to quantify carbon stocks and to report emissions as ex ante scenarios or ex post calculations under a monitoring mechanism.

The outcomes of the 12-month project tasks and activities have provided important insights to REDD+ activities that support community participation, and important REDD+ safeguards, and also support capacity building and knowledge transfer. The three project areas are the National University of Laos Model Training Forest and three surrounding communities in Sangthong

1 See: <http://www.oslocf2010.no/pop.cfm?FuseAction=Doc&pAction=View&pDocumentId=25019>

District, Vientiane, Laos; 31 villages and 21 different forest parcels (a mix of sacred or traditional conservation forests and public, community forests) in three districts in Mahasarakham, Thailand; and two community forest areas in Na Ri District, Bac Kan Province, Vietnam.

The project tasks and activities included community meetings and workshops to introduce the project and conduct two-way knowledge transfer. Project team leaders learned of community use of forest resources and community management strategies while community people learned more about climate change, climate mitigation and adaptation, and REDD+ concepts.

From the results of the project, we identified important community and policy-related elements that affect and impact (1) community involvement and capacity in REDD+ project activities and (2) help in integrating community-based field measurements with GIS and remote sensing for a REDD+ MRV.

Building community involvement and capacity

Community leadership and organization: Project areas that have an organized community group with strong leadership are able to mobilize community efforts; project areas with less formal and perhaps less experienced community groups appear less able to participate in REDD+ activities.

Knowledge of climate change: Local people in even the most remote areas seem to have some knowledge of climate change. The depth of their knowledge and accuracy of their knowledge, however, is not uniform. Basic understanding of the greenhouse effect, carbon cycle, drivers of climate change, etc. is useful to provide context for why measuring and monitoring is important for REDD+ projects.

Linkages to local government agencies and others: the strength of a community's relationship with local government agencies in managing natural resources and others including academics, NGOs, etc. is dependent on many factors – personnel leadership and commitment, cultural and social norms, common goals in managing and using natural resource, even access and infrastructure play a role determining the strength of these linkages.

Commitment and capacity of local agencies to support and integrate community participation and facilitate capacity building: In addition to simply having linkages between communities and local agencies that are part of implementing a REDD+ project, there needs to be knowledgeable and committed agency personnel in place. The local and provincial agency staff, University researchers, or NGO agency personnel must have expert knowledge on REDD+ and climate change science, as well as knowledge in natural resource management and be able to work effectively with community people.

Policy recommendations

Tenure and use rights well defined: REDD+ interventions that target deforestation and forest degradation which may result from land and resource pressures from local people, must address rural livelihoods. In project sites where there are well-defined land tenure and access rights that include communities in forest land and resource management, or co-management with local agencies, show greater success in also establishing community willingness to participate in REDD+ measurement and monitoring. In such project areas, carbon can be viewed very clearly as a co-benefit, a public environmental service, which a forest provides in addition to the many important local benefits that communities benefit from (e.g. non-timber forest products, soil nutrients, regulated water flow, micro-climate conditions, etc.).

Clear, transparent and effective forest laws: This element is related to tenure and use rights. Forest Laws need to be clear and enforceable. They should be well defined and transparent to local communities, in particular regarding use and occupation rights. In forest lands where use and occupation rights are restricted there is less chance that communities will participate in measurement and monitoring.

Support local knowledge integrated with new technologies: Local knowledge of sustainable resource use and managements is often remarkably “scientific”. Trial and error and observations are certainly part of local knowledge tradition. The technological or modern scientific approach should not always supersede the methods, knowledge and practice of local people in managing natural resources. Local people have effective tools for measuring and monitoring forest that can be utilized. Simple means of calculating tree heights, ground slope, etc. do always require hi-tech tools. The effective computation of carbon from these measurements requires some advanced scientific knowledge.

National committees with clear implementation plans for data custodian, stewardship and standards: National REDD committees as part of the REDD readiness are developing implementation plans under such programs as UN-REDD, FIP, and FCPF, that define data stewardship, custodian and access rights, and standards. Such plans may differ from country to country based on national needs and requirements. The use of on-line MRV systems will need to consider the National REDD+ implementation strategy and plans, in particular, for data standards, management and access. MRV systems must be flexible enough to support different needs as they are defined by each REDD+ implementing country.

Data management tools: Forest biometric data collection can be done using simple or hi-tech tools. The diameter at breast height of a tree can be measured with a DBH tape or a simple tailor’s tape and the measurement converted to diameter. GPS devices are now common in University labs and with local

agencies in the field. The management of data measurements, however, must be systematic and uniform across biomass plots within a project location. Common print outs of spreadsheets, or data fields in data loggers are important. Tools to manage all project data are also very important. Ideally, with web-based service more and more common, data management can be developed as a set of tools for REDD+ projects that include basic description and management, document and file management, plot level data management and carbon stock calculations, geo-spatial data management and even emissions reporting.

Measurement and monitoring for REDD+ can effectively combine local, community data collection with expert analysis using remote sensing and GIS: National-level forest measurements often are conducted under National Forest Inventory (NFI) programs in which permanent samples are established and repeat measurement are taken every few years. Forest monitoring, to assess areas and rates of change, is most often conducted using satellite remote sensing. The combination of ground based plot biomass measurements with satellite remote sensing analyses is a powerful combination for measuring and monitoring REDD+ carbon stock and carbon stock changes. Integrating community level plot measurement data with geo-spatial analysis (GIS and remote sensing) supports REDD+ measurement and monitoring requirements for an MRV system. The combination recognizes the need to integrate community level abilities with professional, expert analysis. Measurement and monitoring of REDD+ carbon, therefore, is not dependent on ground only or remote sensing only techniques, but a combination of the two.

Develop advanced MRV systems that include other ecological and social data (beyond carbon) that scale: REDD+ projects may focus primarily on greenhouse gas emission fluxes, but also must be cognizant of additional ecological and social co-benefits. Forest Carbon MRV systems supported by governments should include additional data management and reporting functions to include ecological and social data. Such system should not be scale dependent and provide support from local level to national and regional level REDD+ activities. National REDD+ MRV systems can be supported through on-line technologies and include more than just carbon accounting. Such systems can be scalable and flexible to support a variety of national-needs objectives and implementation plans.

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THEME 4 Poverty & Livelihoods

Agriculture and allied activities support livelihoods of the majority of rural population in the Mekong Region. In recent years, land- and water-based livelihoods of small and marginal livelihood groups are increasingly becoming unsustainable, since their resource base has not been able to support the family's food and other essential requirements. As a result, rural households are forced to look at alternative means for supplementing their livelihoods. Given this context, Sustainable Livelihood is no longer a rural phenomenon. The issues of rural-urban migration and trends in rural non-farm incomes and the expansion of urban-based economic activities have to substantial orientation to new thinking on Sustainable Livelihood analysis. The nature of poverty-environment interlinkages in rural and urban areas is therefore somewhat different from that which prevailed in the past. Under these circumstances, the policies, processes and practices, especially those associated with the environment and livelihoods, also address different phenomena and issues.

POLICY BRIEF

Addressing livelihood vulnerability for improved flood management policies in An Giang province, Vietnam

Key findings

- In Vietnam's Mekong Delta, key plans, policies and regulations for flood management are ambiguous and often not directly applicable to the local context especially to support local people's livelihoods.
- Local-level government agencies cannot implement policies effectively due to the inherent policy ambiguity.
- Flood management efforts by state agencies are fragmented and confusing given many sectoral policies (e.g. agricultural policy, etc.) and line agency responsibilities making implementation of these policies a barrier to effective flood management.
- Proper assessment of local livelihood vulnerability remains a challenge.
- Development activities initiated for coping with flood disasters often ignore the needs of people's livelihoods and end up worsening flood-related vulnerability and poverty.

Flood management and local livelihoods

An Giang province in the Mekong Delta is one of the most vulnerable provinces in Vietnam to seasonal floods caused by annual monsoonal rains.

In 2000 and 2011, huge floods resulted in the loss of hundreds of lives and severe damage to property. The severe floods prompted the government to initiate and implement policies for flood control and management as well as measures to prevent future flood disasters.

But despite these policies and measures implemented by both the central government and local line agencies, flood disaster management and prevention has not been effective. One key factor is the lack of understanding of how



people especially the poorer sections live and make their livelihoods. There is a lack of mechanisms for assessments of local livelihoods and vulnerabilities to help people cope better with floods.

The failure of the previous flood management plans and policies has highlighted the need for future measures to be more responsive to local contexts and emphasize improving local people's livelihoods. It also underscored the need for more studies to understand and assess people's livelihoods in the flood-prone areas in the Mekong Delta to better link flood-related policies to local needs.

SUMERNET research to improve flood policy-making

The SUMERNET study used a livelihood vulnerability index (LVI) to analyze five livelihood assets and differences in vulnerability patterns and develop appropriate policies at the provincial level. The assessment of livelihood assets helped to identify the key factors that caused livelihood vulnerability and to understand people's living conditions in the flood prone areas.

The assessment has helped in providing policy-makers and community-based organizations ways to monitor vulnerability, and to evaluate potential program or policy effectiveness by introducing scenarios into the LVI model for baseline comparison in flood areas.

Policy recommendations

The SUMERNET study identified some elements that emerged from the study's identification of promising livelihood practices in the province. These elements are viewed as pivotal for making policies that can be more responsive to local contexts, and enable more sustainable ways of assessing and improving people's livelihoods in flood-prone areas.

- Diversification of farming is needed to help people earn their living and help to reduce flood risks in flood prone areas. The Department for Agriculture and Rural Department (DARD) and the Committee for Flood and Storm Control need to outline measures for diversifying and improving farming practices.
- Financial support, such as interest-free loans for production activities, is needed to help people to cope with floods and livelihood risks. The Agricultural Bank and the Policy Bank should come up with suitable financial support mechanisms.
- Community-based organizations are often crucial in assisting people to cope with floods. Village authorities should assist in building up local-level groups and facilitate greater involvement of local people in community-based organizations such as Farmer's Association, Women's Union, etc.

- The key state agencies involved in flood management such as the Department for Agriculture and Rural Department (DARD) and the Committee for Flood and Storm Control (CFSC) can use the LVI approach in assessing and understanding people's livelihoods, vulnerabilities and risks. LVI is a useful tool for development planners and policy makers to evaluate livelihood vulnerability to flood impacts in order to improve people's livelihood in flood-prone areas.

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POLICY BRIEF

Rice contract farming practices in Cambodia: Up-scaling benefits to the rural poor

Key findings

- About 80 percent of the national rice production is cultivated in the wet season, and only 20 percent is produced by irrigation in the dry season.
- For farmers in Cambodia, access to agricultural machinery and water infrastructure is of significant concern. Only 16 percent of households in our study had access to agricultural machinery equipment such as water pumps, hand tractors, planting or harvesting machines.
- A third of farmers who have engaged in rice contract farming dropped out in the first two years demonstrating low levels of commitment.
- Both contractors and farmers broke contractual agreements or rules (e.g. late payment) with 62 percent of interviewed farmers citing difficulty in meeting the quality standards of the contract farming company)
- Most farmers, particularly the older generation, are not familiar with, or cannot easily adapt to, new techniques required and provided by contract farming companies.

Contract farming: Posing new challenges for subsistence rice farmers

The Government of Cambodia is committed to increasing rice productivity with the aim of becoming a major rice exporting country in the Mekong Region. The national agriculture policy of 2010 set a target for milled rice exports to reach least 1 million tons by 2015. Rice exports are an emerging market for Cambodian smallholder farmers.

The government has been promoting “contract farming” as one of the approaches to develop commercially oriented smallholder rice production. In

early 2011, the government approved a sub-decree to formally encourage and support contract farmers.

Although several rice companies have been promoting the contract system for a few years, rice farming under contract to the commercial sector is still a new phenomenon among



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smallholder farmers in Cambodia. Many farmers who have traditionally grown rice mainly for subsistence are trying to come to terms with the complexity and challenges inherent in contract farming.

The SUMERNET study on “Making economic integration work for rural poor through contract farming practices in the GMS” looked at rice and sugarcane contract farming practices in four countries (Cambodia, Lao PDR, Myanmar and Thailand). The study found that some of the challenges and constraints in Cambodia were:

- Access to agriculture machinery and water infrastructure are still important issues for Cambodian farmers. About 80 percent of the national rice production is cultivated in the wet season, and only 20 percent is produced by irrigation in dry season (USDA, 2010). In the survey, only 16 percent of households interviewed had access to agricultural machinery equipment such as water pumps, hand tractors, planting or harvesting machines.
- A third of farmers who have engaged in rice contract farming dropped out in the first 2 years demonstrating an inability to deal with the complexities of the system.
- Both contractors and farmers broke contractual agreements or rules for instance late payment of the contracted sum for the harvest. Moreover, farmers find it difficult to always meet the quality standards of the contract farming company.
- Contractors were often not providing enough technical support.
- Coordinating mechanisms among stakeholders that could deal with farm-related challenges were limited.
- Most farmers, particularly the older generation, are not familiar with or cannot easily adapt to new techniques that are required by contract farming companies.

Failure to address the above challenges could have two consequences. First, farmers might be less interested in engaging in contract farming of rice. Second, rice quality needed for international markets might not meet and thus government target to export 1 million tons of milled rice by 2015 would also likely not be met.

Policy recommendations

- The government needs to ensure that commercial contractors improve and expand the benefits offered to contracted farmers. This includes access to equipment like tractors and pumps and providing low interest loans.
- The government should play a mediation role to support farmers in facilitating contractual arrangements and ensure that farmers benefit from the farm contracts.

- Younger farmers need to be encouraged to join contract farming as they might show a greater willingness to adapt to the new agricultural skills required.
- Expansion of irrigation infrastructure such as canals needs to be considered in areas where farmers are still dependent on rain-fed rice cultivation. The lack of access to irrigation creates constraints and corresponding variability in quality and yield, making it more difficult for farmers to meet the contracted conditions. Other than irrigation canals, large-sized community ponds can be constructed as an additional option for areas with water scarcity.

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REGIONAL POLICY BRIEF

Making economic integration work for the rural poor through contract farming practices in the Mekong Region

Key findings

- The governments of the Mekong Region are promoting “contract farming” as one of the approaches to develop commercially oriented smallholder rice production.
- Regional policy on contract farming and practices must be shaped to respond to the specific needs identified by farmers

Introduction

The governments of the Mekong Region are promoting “contract farming” as one of the approaches to develop commercially oriented smallholder rice production. In Cambodia, for instance, in early 2011, the government approved a sub-decree to formally encourage and support contract farmers.

Although a number of rice companies are now involved in the contract farming system, rice farming under contract to the commercial sector is still a new phenomenon among many smallholder farmers in the region. Particularly in countries like Cambodia, small-scale farmers who have traditionally grown rice mainly for subsistence are still trying to understand the complexities and challenges inherent in contract farming.

Therefore, regional policy changes to promote contract farming and the implementation of contract practices should respond to the specific needs identified by farmers.



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The SUMERNET study on contract farming in Cambodia, Lao PDR, Myanmar and Thailand has attempted to model the policy recommendations in response to information provided by farmers, contracting representatives, government representatives and other

experts, while comparing the hopes for the future with the status of contract farming on the ground. Each recommendation is designed to respond to the way impacts are felt by contract farmers and to engage the stakeholders, both the farmers and contractors on a level that takes into account the strategies they currently employ in contract farming.

Policy recommendations for regional government action

1. Contract farming needs to be promoted as one of the mechanisms for more farmers to gain a foothold in sustainable commercial farming practices, with an aim to increasing their profits, knowledge and management skills.
2. Policies should enable small farmers to enter contracts effectively; governments should provide a legislative framework to encourage contracting companies to broaden their farmer base.
3. There must be a balance between the negotiating power of the contractor and the farmer; encouraging farmer associations and creating fair and equitable markets can achieve this.
4. Governments have a responsibility for capacity building in farming communities and should be more proactive in: providing broad extension services, especially in safe chemical application, sustainable land use, and minimizing environmental impacts; introducing farm monitoring guidelines; and strengthening and enforcing compliance.
5. Public agricultural research should partner with growers and contractors for practical improvements in crop yield and environmental sustainability. The countries of the Mekong Region need to look more closely at combining their research efforts and the possibility of funding industry-specific research through commodity-based levies, contributed to by farmers and companies alike.

Policy recommendations for regional governments that directly involve farmers

1. Small-scale farmers should be encouraged to form their own networks within communities, assisting smallholders to share labor, agricultural machinery, and transportation, to acquire inputs with economies of scale and to help in negotiations with buyers.
2. Farmer associations/cooperatives, independent of government but legally enfranchised by government, should be parties to the development of contract farming policy, and enabled to lobby for farmer benefits in contracts and on behalf of farmers in resolving disputes over contracts. Access to membership should be equitable and small farmers should be enabled to join.

Recommendations for contractors

1. Farmers should always be given a copy of any written signed agreement, and if there is a third party, e.g. witness/guarantor, they should also receive a copy.
2. Contractors' training programs for farmers should be improved, with attention to industry-specific technical knowledge, business planning and rights under contracts.
3. Contracts often provide farmers with credit, access to which should be monitored carefully, with attention to equity. We support the expansion of contract farming, but the objective of including poorer farmers must be viable in economic terms; and all lenders, both private and government, should be responsible in choosing creditors who are able to repay their loans. Contractors providing farm management should improve the repayment capacity of contracted farmers.
4. Forums involving farmers, contractors, government and NGOs should be organized (at least annually) to develop the common interests of contracting parties within specific agribusiness industry and to resolve any problems encountered.
5. For contract farming to work effectively, all players must have a clear understanding of the supply chain in their industry and of their own part in sustaining its integrity. Policies that can contribute to this awareness are: voluntary codes of practice; effective training; and incentives such as contractors awarding farmers' company share offerings.

Notes

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POLICY BRIEF

Protecting livelihoods and the environment in Vang Vieng in Lao PDR through the 'town planning committee'

Key findings

- The most favourable impact of urban expansion was on education opportunities for the hinterlands and people's participation in local administration, specifically the village committee.
- The people of Vang Vieng town were proud that their town had become an international tourist attraction that also provided them more opportunities for interaction and insights with the outside world.
- The mining and destruction of nearby mountains for construction and the noise, dust and smoke pollution from factories and trucks has led to environmental deterioration and caused many health and environmental problems for residents.
- The environmental degradation caused by the expanding tourist industry negatively affects farmers and seasonal migrant workers.

Introduction

Urban planning is considered a new field of national planning in Lao PDR since the country's economy has so far largely been based on rural and agricultural development. However, the increase in the number of urban centers has resulted in government efforts at sustainable urban planning and management.

In 2011, the urban population growth rate in Lao PDR was at 4.9 percent, the highest among the countries in the Mekong Region. Of all its urban centres, Vang

Vieng town is one of the fastest growing in Laos. This growth is due mainly to its attractiveness as a tourist destination.

Vang Vieng is a small town on the only main road connecting the capital city of Vientiane to the country's tourist capital of Luang Prabang. Vang Vieng slowly became another tourist



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attraction sites especially for young low-income backpacker tourists. The Government of Lao PDR (GOL) welcomed this trend. At present, Vang Vieng city has a population of only 20,000 persons, but the level of consumption of the town, lifestyle of people living in the town affected by the foreign tourist arrivals and service sector investors, investments, and the number of migrant workers coming from rural areas to work here, has made the town far more urbanized than many of the larger towns in Laos.

Recognizing the importance of analyzing the rapid urban expansion of Vang Vieng and its impacts on the hinterlands, the SUMERNET partners from Khon Kaen University's Center for Research on Plurality in the Mekong Region, conducted a study to look at the positive and negative aspects of rapid urban expansion in Vang Vieng town.

The research study identified several major positive and negative impacts from the rapid urbanization of Vang Vieng town.

1. **Education, participation and international exposure opportunities**

The most favourable impact was on education opportunities and people's participation in local administration, specifically the village committee. Other favourable impacts were related to the overall quality of life and standard of living, socially and economically, at both household and village levels.

People were also pleased that Vang Vieng town had become an international tourist attraction that provided them more insights about the outside world.

2. **Environmental degradation**

The mining and rock-blasting of mountains for construction activities and the noise, dust and smoke from cement factories and rock-transporting trucks have caused many health and environmental problems and destroyed the town's natural beauty.

3. **Rural people and reliance on Vang Vieng markets**

Rural people in the hinterlands rely on Vang Vieng's markets for selling their produce. Many were seasonal migrants who own small pieces of land and produce vegetables for the Vang Vieng markets as their main livelihood. The environmental degradation caused by the expanding tourist industry is negatively affecting the livelihoods of farmers and migrants.

There is a problem of degradation of water quality in the Nam Song River due to the direct release of the town's waste water and dumping of garbage in the water bodies. Villagers have to find other often costly sources of water for domestic use and consumption. The water pollution is also affecting the rural consumption of fish and riverbank vegetables.

Though the people of Vang Vieng town and its hinterlands recognize the importance of tourism for income and livelihoods, they also perceive that this development based on the extraction of natural resources poses long-term risks to their way of life. But they often have very little say about the future of development of Vang Vieng town. For example, decisions on limestone mining concessions are made at the provincial level.

Policy recommendations

- Establish the Vang Vieng Town Planning Committee with the Vientiane Provincial Governor as chairperson to draft guidelines for the sustainable development of Vang Vieng town.
- The committee should have representation from the relevant sectors such as: 1) Central Level: Ministry of Industry and Commerce; Ministry of Information, Culture and Tourism 2) Provincial Level: Vientiane Province Governor (directly responsible for town administration); Department of Industry and Commerce; Department of Information, Culture and Tourism 3) District Level: Vang Vieng District Governor; Urban Development and Administration Authority; experts on national industry planning and tourism planning; other related organizations with expertise in city or development planning, environment, tourism, and rural community development; members of the private sector; and civil society.
- Revise the policy on giving concessions for new cement factories in Vang Vieng area. Increase control and supervision to minimize the health and environmental impacts from existing factories.
- Monitor the activities of industrial factories emitting dust, smoke and smell as well as any mineral extraction activities that are affecting communities and the natural environment.
- Support greater community participation in decision-making on tourism development activities. Moreover, strengthen communities to increase their awareness and bargaining power to better deal with the health and environmental problems from factories, projects and production activities that have expanded into the communities.
- Increase the public relations and information dissemination efforts about tourism development projects of the district agencies to more widely reach the affected communities.

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POLICY BRIEF

Sustainable urban planning in Thailand: Infrastructure growth and pollution in Khon Kaen city

Key findings

- Rapid and often haphazard expansion of urban infrastructure in the Mekong Region's towns and cities is leading to health, cultural and environmental impacts.
- The growth of Khon Kaen city in northeastern Thailand has created both positive and negative impacts on its rural hinterlands.
- Urban problems extend beyond the urban areas to the peri-urban and rural hinterlands, as cities usually grow by extracting resources from rural areas for urban consumption and processing.
- Pollution of the suburbs is increasing as solid waste and effluents created in the urban areas are released or dumped into the surrounding hinterlands.

Rapid urbanization and concerns

The cities and towns in the Mekong Region are undergoing a burgeoning growth in infrastructure expansion including residential apartments and condominiums, commercial areas like large shopping malls, and the expansion of energy and transport systems especially roads and flyovers. At present 31 percent of the population in the Mekong Region are living in these urban areas.

But as the cities and towns spread outward to the suburbs, the urban expansion, however, remains both unplanned and haphazard, raising health and environmental concerns. Some of the concerns of this rapid and mainly unplanned urbanization extends beyond the urban areas to the peri-urban and rural hinterlands.



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The growth of the cities usually takes place by extracting resources from the rural hinterlands for urban consumption and processing. The solid waste and pollution created in the urban areas are dumped in the surrounding hinterlands. These problems are continuing to escalate, particularly in medium and small sized cities that form the major characteristics of urban areas.

Khon Kaen city: Spreading outward to the hinterlands

Recognizing the importance of analyzing the rapid urban expansion and its impacts, the SUMERNET partners from Khon Kaen University's Center for Research on Plurality in the Mekong Region, conducted a study to look at the issues of urban expansion on the hinterlands of Khon Kaen city in northeastern Thailand.

The research identified some of the major impacts and concerns of the inhabitants in Khon Kaen's hinterlands. The study found that the expansion of Khon Kaen city, although providing benefits to its urban population through expanded housing, shops, roads and other services, had created many negative impacts on its rural hinterlands.

Loss of agricultural land to speculators and infrastructure expansion

Farmers are selling their agricultural lands to land speculators, developers and others from the city; the lands are then used for building houses, apartments, shopping centers, transport area such as bus terminals, etc. After selling their lands, the farmers usually take up wage labour or other work, or move on to buy land further away from the expanding city.

Lack of proper management of solid waste

Khon Kaen city's solid waste is collected and dumped without either treatment or proper management on a piece of rural land in the northern suburb of the city. Although a small solid waste recycling project has recently been initiated, this is unable to deal with the large daily amount of urban waste. In addition, the improper management of infectious waste and the waste from construction projects in the city have been posing health problems for the nearby residents.

Effects of infrastructure growth

Sometime the expansion of transport infrastructure such as the bypass road creates problems to other hinterland communities by blocking waterways used for farming, transport or small-scale fishing. This has resulted, particularly during heavy monsoonal rains, in the repeated flooding of communities and paddy fields in the eastern part of Khon Kaen city.

Loss of cultural values

As the city spreads outwards, it is also having a significant influence on the socio-cultural values and way of life of the hinterland communities. The parents express concerns about the changes in lifestyle and behavior of their children as

well as the increased incidence of crime and spread of drugs in the surrounding villages.

Administrative gaps

For managing the urban areas, the local administrative system for Khon Kaen province is divided into smaller administrative zones such as city and sub-district municipalities. However, the expanding impacts from Khon Kaen's urbanization have surpassed the capacity of the city municipality and its administrative zones to deal with these impacts.

Policy recommendations

- **Establish a Regional Planning Committee for Khon Kaen.** This can include members who are representatives of related offices and sectors such as Khon Kaen city municipality; surrounding sub-district municipalities; Provincial Administration Organization (PAO); experts on city planning, city and rural community development; and civil society representatives. Also, the Khon Kaen Provincial Governor or Chairman of Khon Kaen Administration Organization may be appointed as the Committee's Chairperson.
- **Establish a land use plan.** This can help deal with the city's problems that extend beyond the city's municipal authority. A committee should be set up to establish procedures and guidelines for the sustainable development of Khon Kaen city and its surrounding areas. The land-use plan should cover the area of Khon Kaen city and its surroundings up to a radius of five kilometers from the city's bypass road.
- **Participation of stakeholders is key for land-use planning.** The planning process should be inclusive of people from all sectors, especially those who are affected by development projects. Consideration should be given to the natural environment and the culture and way of life of local communities. For sustainable city development, emphasis should not be only on building infrastructure for commercial benefits. Moreover, supervisory mechanisms should be out in place to ensure the land use follows the relevant rules and procedures such as residential and commercial zones, minimum green areas for parks, etc.
- **Khon Kaen city municipality should prepare a plan to minimize the city's environmental impacts on suburban areas.** The municipality should focus on solutions to the key problems faced by the surrounding sub-district municipalities such as the improper dumping of city wastes.

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REGIONAL POLICY BRIEF

Participatory city planning to decrease negative impact of urbanization

Key findings

- Sustainable urban development is important to the city and its hinterlands as well as for the overall economic and social development of the Mekong Region.
- The production and service processes in Khon Kaen city in Thailand and Vang Vieng town in Lao PDR have generated huge amounts of solid waste. In the absence of improper waste management, the land and agricultural areas of local communities have often been used as garbage dumping areas.
- The rapid infrastructural development is causing impacts for hinterland communities such as bypass roads that block waterways and irrigation canals that also cause floods in Khon Kaen.
- In Vang Vieng, the destruction of limestone mountains through rock-blasting and mining has resulted in large craters as well as dust and smoke from the associated factories, that have damaged the town's natural landscapes and affected the tourist industry.
- Legal loopholes are used by the business sector while the public and civil society often have no opportunity to participate in decision-making on urban planning and activities that affect their ways of life.

Recognizing the importance of urban expansion and its impacts, the SUMERNET project under the collaboration of Center for Research on Plurality in the Mekong Region, Khon Kaen University, together with Faculty of Social Sciences, Lao National University, initiated a research study titled “Impact of Urbanization on the Hinterland and Local Responses in the Mekong Region: A Study of Khon Kaen Thailand and Vang Vieng Lao PDR”.



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Rapid urban growth in the Mekong Region is creating both opportunities and problems while also cutting across traditional bureaucratic and urban geographic boundaries. A rethinking of the city planning mechanisms and processes is needed. Sustainable urban development is important to

the city and its hinterlands as well as for the overall economic and social development of the Mekong Region. Participatory urban planning is still regarded by governmental agencies in countries like Thailand and Lao PDR as a new idea.

Policy recommendations for Khon Kaen and Vang Vieng

- Set up a committee to set system and guidelines for sustainable development of Khon Kaen and Vang Vieng. The committee should compose of members from related sectors, namely:
 - a. Khon Kaen city-region Planning Committee should be established with members who are representatives of related sectors such as Khon Kaen city Municipality; affected surrounding sub-district municipalities; Provincial Administration Organization; experts on city planning or city development planning, city environment, city and rural community development; and civil society sector. Khon Kaen Provincial Governor or Chairman of Khon Kaen Administration Organization may be appointed as the Committee's Chairman.
 - b. Vang Vieng Town Planning Committee should be established with members who are representatives of related sectors such as: 1) *Central Level*: Ministry of Industry and Commerce; and Ministry of Information, Culture and Tourism 2) *Provincial Level*: Vientiane Province Governor ; Department of Industry and Commerce; and Department of Information, Culture and Tourism 3) *District Level*: Vang Vieng District Governor; Urban development and administration authority; experts on national industry planning; experts on national tourism planning; other related organization with city planning or city development planning, city environment, city tourism, city and rural community development; private sector; and civil society sector. Vientiane Provincial Governor may be appointed as the Committee's Chairman.
- Support community participation in decision-making on development activities that have impacts on communities. At the same time, strengthen communities in their learning on bargaining power to gain benefits from factories, projects and production activities that have extended their production stations into communities.

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The Sustainable Mekong Research Network (SUMERNET) programme was established in 2005 with the purpose of supporting sustainable development in the Mekong Region.

SUMERNET aims to inform and influence sustainable development by supporting credible, collaborative research and regional assessment, stimulating independent discussions on key regional issues, and engaging with decision-makers and stakeholders to foster more effective and sustainable policies and programmes.

The policy briefings compiled in this booklet are the fruit of this collaborative research work and engagement with policymakers and other stakeholders by the SUMERNET partners. The briefings have been developed with consideration of policy relevancy and based on the engagement of the SUMERNET project teams with local and national policymakers.

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