



## Crossing Borders, Changing Landscapes: Land-Use Dynamics in the Golden Triangle

JEFFERSON FOX

# AsiaPacific

## I S S U E S

**Analysis from the East-West Center  
No. 92  
December 2009**

*The East-West Center promotes better relations and understanding among the people and nations of the United States, Asia, and the Pacific through cooperative study, research, and dialogue. Established by the U.S. Congress in 1960, the Center serves as a resource for information and analysis on critical issues of common concern, bringing people together to exchange views, build expertise, and develop policy options. The Center is an independent, public, nonprofit organization with funding from the U.S. government, and additional support provided by private agencies, individuals, foundations, corporations, and governments in the region.*

*Papers in the AsiaPacific Issues series feature topics of broad interest and significant impact relevant to current and emerging policy debates. The views expressed are those of the author and not necessarily those of the Center.*

**SUMMARY** Over the last half-century, public policy has affected land-use practices across the borders linking China, Thailand, and Laos. Political and economic reforms have facilitated labor mobility and a shift in agricultural practices away from staple grains and toward a diverse array of cash crops, rubber being one of the foremost. China has promoted the conversion of forests to rubber agroforestry in southern Yunnan—profitable for farmers, but a concern in terms of biodiversity and long-term viability. In Thailand, the response is at the other end of the spectrum as the government's concerns about land-use practices and watershed management have led to policies that dramatically constrain land-use practices and limit tenure rights. In Laos the future is not yet clear. Government policies provide weak support for both private land ownership and protected areas. In a global environment where national policy has such a dramatic effect on land use and land cover, the factors behind land-use change merit close examination.

*Fifty years ago the landscapes of this region were so similar that a traveler would not know when she had crossed a border from one country to another*

The Golden Triangle spreads across the mountains of northern Thailand, northern Laos, northeast Burma (Myanmar), and southern Yunnan Province, China. Fifty years ago the landscapes of this region and the daily lives of its inhabitants were so similar that regardless where the political boundaries were drawn a traveler would not know when she had crossed a border from one country to another. Shifting cultivation (also called “swiddening”) had been practiced for at least a millennium and had greatly influenced land cover and land use across this region, and most people tended to be defined and to define themselves as ethnic minorities. Today the region is being recast as a new landscape of opportunity, the “Golden Economic Quadrangle” or the “Greater Mekong Sub-region.”<sup>1</sup> The change in nomenclature is more than an advertising gimmick. Border regions formerly

peripheral to state power are now sites for exchange, commerce, and trade. New transport links and free trade agreements are shifting the dynamics from center-periphery relations within each nation state to relations between states, based on regional markets and comparative advantages in land use, crop production, labor, and capital.

How agricultural practices along a transect crossing from northern Thailand, via northern Laos, to southern Yunnan, China, are changing in the wake of evolving market dynamics is the focus of a study begun in 2004 by East-West Center researchers and collaborators.<sup>2</sup> Upland peoples in the region have participated in trade for centuries, but in recent decades patterns of land use have changed rapidly in response to development projects, markets, and state policies. As patterns of trade shift from serving subsistence and domestic markets in each country to regional and global exchanges of resource-based commodities, manufactured products, and even of labor, the project traced how these changes affected sustainable resource use and land cover. This transect was selected as the study’s primary focus because of the diversity of political, cultural, and economic influences on land use found there, and because of expected changes in land cover and land use due to the expansion of an international highway from Chiang Mai, Thailand, to Kunming, China (see map).

Over the past 50 years, land-use practices in these three countries have been under the sway of vastly different economic and political regimes. Thailand has had an open market and democratic government; China and Laos have moved from planned economies to more open markets. Thailand, which never experienced land collectivization, has been the most reluctant of the three to provide legal recognition of land titles on sloping lands and slow to afford citizenship rights to minority peoples. In China and Laos, political and economic reforms have afforded, albeit in different ways, private usufruct rights to natural resources. Economic and political regimes in the three countries have produced divergent landscapes with different implications for livelihoods and environmental services such as soil and water conservation, biodiversity conservation, and carbon sequestration.



**Fig. 1. Study transect from Chiang Mai, Thailand to Kunming, China.**

Commonalities, however, also exist across the region. These include government programs to discourage shifting cultivation (because of its association with opium production and its perceived environmental impacts) and a transition to commercial agriculture facilitated by state policies supporting markets and capital accumulation through the expansion and upgrading of roads, electrical infrastructure, and telecommunication networks, and in providing tax breaks and other subsidies for investors in capitalist development.

These human-induced changes have important implications for the area's largely poor, rural, and highly vulnerable farming households, as well as for regional biodiversity, watershed hydrology, local and regional meteorological processes, and continental-scale climate. With montane mainland Southeast Asia being the headwater region for major river systems—including the Mekong, Chao Praya, Irrawaddy, and Yuan-Hong (Red)—hydrologic change there could have serious consequences for the approximately 200 million inhabitants of mainland Southeast Asia's lowlands. Reviewing the results from primary research and secondary sources shows how land use has changed over the last 50 years and reveals some implications of these changes for local livelihoods and the physical environment.<sup>3</sup>

---

#### **Incentives for Rubber Cultivation in Xishuangbanna**

In response to military needs highlighted by the Korean War, the Chinese Central Committee introduced rubber to Xishuangbanna in the early 1950s as a strategic industrial product to be produced on large-scale state collective farms.<sup>4</sup> During this period, local minority farmers labored on agricultural communes. In 1982, the Chinese government dismantled the farming communes and introduced a new ideology of land use, turning farmers into entrepreneurs responsible for caring for their own needs. Former communal farmers received land, but now needed cash to pay for education, health care, and local services once provided by the communes. To get cash, farmers converted available land to commercial

crops. Initially, low elevation swidden lands became wet rice fields and uplands were used for livestock, but a major state campaign encouraged upland farmers to plant rubber at elevations below 700 m in fields formerly used for swiddening. State farm personnel provided seedlings and technical training. Later, a subsidized state anti-poverty campaign encouraged farmers to plant rubber on sloping lands.

After 2002, China strengthened incentives for planting rubber with a “Grain for Green” campaign intended to promote the development of China's western provinces (which include Yunnan) and to stop shifting cultivation. The program provided farmers grain for eight years if they planted forest cover on degraded slopes, and in Xishuangbanna, the authorities decided to count rubber trees as forest cover.<sup>5</sup> Almost simultaneously, the world rubber price began to rise dramatically, and farmers planted even more rubber. As a result, over the past six years, minority farmers have planted rubber in household woodlots, village forests, and on remaining sloping land. At elevations of 300 m and higher, rubber has become ubiquitous. Today, many ethnic minority small farmers in Xishuangbanna have achieved unprecedented wealth, yet their success may be tenuous. Monocultures are problematic environmentally and economically, and betting solely on rubber makes farmers vulnerable to fluctuations in world markets, disease, and pests.

Ecologically, Xishuangbanna is much like other tropical regions of Southeast Asia that contain high levels of biodiversity and are threatened with deforestation and environmental degradation. Xishuangbanna has the highest biodiversity in China and is included in the Indo-Burma biodiversity “hotspot” identified by international conservation organizations.<sup>6</sup> It represents only 0.2 percent of China's area but contains 16 percent of the nation's total species of higher plants, 21.7 percent of mammal species, and 36.2 percent of bird species. The Chinese government set aside approximately 240,000 ha, or 12 percent of the total land area of the prefecture, as the Xishuangbanna Biosphere Reserve yet almost all land between 300 m and 1,100 m not protected in the reserve (and perhaps some within) has been

*In 1982, the Chinese government dismantled the farming communes and introduced a new ideology of land use, turning farmers into entrepreneurs*

converted to ordered rows of rubber.<sup>7</sup> The conversion of primary and secondary forests to rubber threatens biodiversity.<sup>8</sup>

Rubber also has negative implications for hydrology. Recent NASA-funded research suggests that rubber trees drop their leaves during the dry season and begin to bud again around the equinox (the peak of the dry season) when soil water is the least available.<sup>9</sup> In similar settings where precipitation and atmospheric demand are out of phase, changes in native vegetation have resulted in dramatic decreases in streamflow and groundwater levels.

---

#### **Land Use in Northern Thailand: Retaining Forests at the Expense of People?**

Unlike their Chinese counterparts, Thai national policymakers have been concerned for years about land-use practices and their implications for watershed management.<sup>10</sup> The Ping River Basin supplies much of the water for central Thailand, including Bangkok. In the 1960s and 1970s, large areas of the basin were set aside as forest reserves, to protect forests and watersheds; many of these areas were subsequently declared national parks and wildlife sanctuaries. In the mid-1980s, Thailand launched a national program to classify all lands in the country according to their watershed characteristics, which, under the guise of science, further restricted the ability of people to use land. Over the past 20 years, the proportion of farm holdings in the Ping River Basin has not increased.

In addition to constraints on land-use practices, most people in midland and highland zones of northern Thailand have no form of official recognition of their rights to use land for any purpose whatsoever because their land is claimed as state forest land or because its use is restricted because of its watershed status. Normal institutional sources of credit do not accept such land as collateral, and it is often difficult to defend against encroachment by outsiders. In addition, local governments have no legal basis for imposing taxes or otherwise regulating land use. While local land-use practices in many areas still include various forms of agriculture, state agencies have continued to expand protected forest areas that legally

exclude all other forms of land use. The resulting tenurial insecurity discourages livelihood strategies requiring longer-term investment at the community or household levels.

Although the national government forbids or heavily restricts agricultural land use in most upland areas, such land use persists, illegally, in many forms and continues to evolve—often sanctioned and governed by local institutions. Thus, there are substantial and growing discrepancies between what land use is recognized by institutions at national and other levels. Since 1969, for example, the Royal Project Foundation (RPF) has promoted new crops to replace opium in the highlands of Northern Thailand, often on land where farming is forbidden by the national government.<sup>11</sup> Most of the crops introduced were temperate, high-value, capital-intensive vegetable, flower, and fruit crops. Subsequent RPF marketing strategies, including the Royal Project outlets and a brand name, have tapped well-off urban segments of the market for these products.

The growth in the non-farm sector has increased employment opportunities for farm households. A 2005 survey of farm households in Chiang Mai, Lamphun, and Chiang Rai found that non-farm income constituted approximately one-third of total household income.<sup>12</sup> This income comes from a range of activities, including trading, handicrafts, food processing, wood carving, construction, wage labor in factories and on neighbors' farms, and from remittances. The growing tourist sector in northern Thailand has also provided many villagers with income earning opportunities. In Mae Wang watershed, for example, ecotourism services and handicraft production for tourists have flourished and now provide substantial supplementary income for villagers.

The environmental impacts of these land-use and other policies are not yet known. Studies have documented the expansion of tree cover in many villages where swidden agriculture used to be practiced or was practiced more widely,<sup>13</sup> but no comprehensive study suggests that tree cover has increased significantly in the region, and little work has been done on the ecological characteristics of this newly regenerated tree cover.<sup>14</sup>

*Most people in midland and highland zones of Thailand have no official rights to use land for any purpose*

---

### **Northern Laos: A Different Story**

In northern Laos a different story has unfolded. Post-war political insecurity until the mid-1980s prevented development efforts in the uplands; government agents, however, encouraged upland people to move to lower elevations and to consolidate their villages into larger centers that could be assisted by government service providers.<sup>15</sup> In the 1990s, the Lao government introduced laws to demarcate forests and protected areas, and in 1996, the National Land and Forest Allocation Policy (LFA) was proclaimed national policy to support delineation of village boundaries and recognize villages' rights to manage and use agricultural land and limited forest resources.<sup>16</sup> The LFA categorized forest areas and agricultural lands at the village level and, in the process, sought to stop shifting cultivation in upland areas.

In the mid-1980s, the Lao government began to liberalize market policies and to promote private sector activity. Subsequently, the government removed agricultural price regulations, production quotas, and agricultural taxes—actions that allowed farmers to sell their products freely, without government intervention. In the mid-1990s, the government changed agricultural policy goals from improving food production to emphasizing integration of rural farmers into the market economy.

In the early 1990s, the government opened international borders with neighboring countries and began constructing improved roads. These changes launched new economic opportunities, particularly for farmers living near roads, and released an influx of people and goods. Chinese investors initiated new projects including investments with relatives who lived across the border as well as small-scale private investment that encouraged farmers to move from subsistence to production of cash crops. A Chinese national government program provided Chinese investors with government funds for projects that sought to eradicate opium in Laos and Burma. With the expressed purpose of eradicating opium, these investors supplied Lao farmers with planting materials for cash crops like rice, watermelons, chilies, and pumpkins in the lowlands, and maize, sugarcane, and

rubber, in the uplands. The combination of investment capital and market opportunities encouraged Lao farmers to plant these crops in their dry season paddies and upland agricultural fields, including active swiddens and forest fallows. These incentives also created opportunities for agricultural wage labor in areas where production of cash crops became prominent and motivated upland households to move to lower elevations, near roads, to access agricultural land and wage labor opportunities.

In 2002, the Lao national government initiated a national campaign to eradicate opium cultivation in upland areas by 2005. Villages that were found cultivating opium were fined and their leaders detained in district centers for “reeducation.” This triggered another exodus of upland people to lower elevations, where they often settled near relatives or earlier settlers. The number of Akha villages in Sing District declined 20 percent between 1995 and 2005, as villages were relocated at lower elevations and consolidated.<sup>17</sup> The total population in mountainous subdistricts declined, sometimes by 30 to 50 percent. Meanwhile, between 2000 and 2004, lowland agriculture expanded in Sing District at annual rates of 4 to 11 percent, and rubber cultivation by small holders in the uplands increased at rates of 3 to 7 percent.

Land use is changing rapidly in northern Laos, reflecting broader patterns operating in other parts of the uplands of Southeast Asia.<sup>18</sup> The commercialization of farming has created a new source of income for many families, while at the same time stimulating land markets and accelerating land alienation. Unlike in neighboring Xishuangbanna, where land-use and tenure policies are clear and communities have maintained legal rights to their land, some communities in northern Laos are selling their land and beginning to experience a chaotic pattern of land-use and tenure change. The future may depend on the extent to which outside agencies, including NGOs and government programs, help these communities protect their lands from illegal speculators.

A key input in rubber cultivation is labor. With plantations expanding beyond local labor capacity, labor shortages and migration, internally from other

*Opening borders and constructing improved roads launched new economic opportunities*

parts of northern Laos and externally from China, is already underway and will continue to rise in the coming years.

The environmental implications of land-cover change in northern Laos are also not yet clear. In Sing District, between 1988 and 2004, dense forest cover declined from 68 to 42 percent and secondary forest increased from 16 to 35 percent.<sup>19</sup> Overall, 7 percent of total forest cover has been lost during this 16-year period, and forest fragmentation has increased. The loss of forest cover and forest degradation has been concurrent with the rapid expansion of rubber plantations near towns and roads.

---

### **The Political Economy of Border Landscapes**

Public policy has affected land-use practices over the last half-century across the borders linking these three nations. Political and economic reforms have facilitated labor mobility and a shift from staple grains to a diverse array of cash crops. Policy objectives in Thailand and Laos have been similar with respect to conservation and the expansion of protected areas; both countries have attempted to segregate agriculture from forested landscapes. But Laos is seeking to implement localized zoning processes aimed at providing security for land use by local households and villages, including recognition of village forest areas and local commercial production of both non-timber forest and agroforest products. Thailand, on the other hand, seeks to limit local use of forest products to subsistence purposes. Policies in China have been considerably less aggressive in expanding exclusionary protected areas and restricting production of non-timber forest products. Although state policies in Laos and China continue to favor large-scale plantations managed along scientific lines, in practice, it is often local residents from ethnic minority communities, described in official discourse as backward, who have been quick to draw on long-standing trans-boundary networks of kinship and exchange to exploit new opportunities and markets.

Conventional wisdom distills the diverse accounts of the changes and experiences of the people and places of this area into two contrasting narratives.

One narrative portrays a bright future for regional development—the promise of the Golden Economic Quadrangle. The other narrative is a story of unfulfilled promise derived from many local-level studies of reforms subverted by entrenched interests and failed development initiatives. The reality, however, is richer and more textured than either of the dominant narratives.

Clearly, from the perspective of many ethnic minority small farmers in Xishuangbanna, the conversion of forests to rubber agroforestry has been an overwhelming success. Their household income has multiplied, and they count themselves among the middle-class in a rapidly changing market economy. Minority farmers are proving to be more adept than former state farms and are leading commercial agricultural production in ways development organizations and local government could not envisage, taking advantage of a more open market and becoming wealthy by planting rubber. Conservationists, however, see the conversion to rubber as an unmitigated disaster destroying one of the earth's most biologically rich landscapes. The farmers have also made themselves vulnerable to market and environmental forces. A long-term fall in rubber prices or an outbreak of a new virus affecting rubber trees could quickly reverse their good fortune.

In Thailand, the protection of over half the landscape under some form of conservation or watershed management has probably been a success from the perspective of a conservationist (although we still know little about the ecology of these regenerating secondary forests). But the protection of the landscape has come at the cost of upsetting people's livelihoods and many people being denied legal right to their ancestral land.

In Laos, the future is not yet clear. Laos could follow the example of Thailand, a protected landscape where people have been excluded and land use curtailed, or the example of Xishuangbanna, an agroforestry landscape where forests no longer exist outside of protected areas but farmers are getting rich. As in China, state agents plan development initiatives based on land area or production targets, little recognizing that markets and farmers' strategies are

*The worst scenario would be for Laos to convert its landscape to a rubber monoculture and fail to protect the interests of small farmers*

*From being the instrument of change, land use has become the outcome of change*

largely driving land-use change. The worst scenario would be for Laos to convert its landscape to a rubber monoculture and fail to protect the interests of small farmers.

The roles of policies and political-economic change in these agrarian transformations are only beginning to be unpacked, but it is already clear the dynamics of land-use change has evolved. Across this border region there is a shift from land-use change directed by national governments for the purpose of driving larger social and political projects, to land-use change

driven by global political-economic forces. From being the instrument of change, land use has become the outcome of change driven by expanding and internationalizing commercial opportunities. In China, Thailand, and Laos, these new opportunities overlie a physical, social, and political landscape shaped by 50 years of intensive state building, development, and expansion. With ever-increasing mobility, trade, and migration, the policy decisions of these countries will continue to have long-term and expanding economic, social, political, and environmental effects.

#### Notes

<sup>1</sup> The term “Economic Quadrangle” (sometimes called the Golden Quadrangle) has its origins at the Chiang Rai (Thailand) Chamber of Commerce whose members think it a more desirable moniker than the infamous “Golden Triangle” to describe the area of potential economic growth and development including Yunnan, Burma, Laos, and Thailand. The Greater Mekong Subregion (GMS) is the term used by the Asian Development Bank to describe the area comprised of Cambodia, the People’s Republic of China, Lao People’s Democratic Republic, Myanmar, Thailand, and Vietnam.

<sup>2</sup> This work was supported by National Science Foundation (NSF) grant number 0434043 and National Aeronautics and Space Administration (NASA) grants NNG04GH59G and NNX08AL90G. NSF-funded collaborators in China included Xu Jianchu, Kunming Institute of Botany; Lu Xing and Zhang Peifang, Yunnan University; Nicholas Menzies, UCLA; and Janet Sturgeon, University of British Columbia. In Thailand, they included David Thomas, World Agroforestry Center, Chiang Mai; and Benchaphun Ekasingh, Chiang Mai University. In Laos, they included Khamla Phanvilay and Sithong Thomanivong, National University of Laos; and Yayoi Fujita, University of Chicago. Spatial information and modeling was done by John Vogler, East-West Center, Hawai’i. Project collaborators on the NASA-funded projects included Tom Giambelluca, University of Hawai’i; Alan Ziegler, University of Singapore; Peter Troch and Maite Guardiola, University of Arizona; and Omer Sen, Istanbul Technical University. The views and opinions expressed in the paper are those of the author, and all mistakes and omissions are the author’s responsibility. For more information on this project, visit <http://research.eastwestcenter.org/mmseal/>.

<sup>3</sup> N. Menzies, “Ideological landscapes: Rubber in Xishuangbanna, 1950 to 2006” (submitted to *Asian Geographer*); D. Thomas, *Developing Watershed Management Organizations in Pilot Sub-Basins of the Ping River Basin* Bangkok: Office of Natural Resources and Environmental Policy and Planning, Ministry of Natural Resources and Environment, 2005. K. Phanvilay, “Impacts of Land-use and Land-cover Transitions on People’s Livelihoods in the Uplands of Northern Laos: Case Studies from Bokeo and

Louang Namtha Provinces” (forthcoming PhD dissertation, Department of Geography, University of Hawai’i). M. Guardiola-Claramonte, P. Troch, A. Ziegler, T. Giambelluca, J. Vogler, and M. Nullet, “Local Hydrologic Effects of Introducing Non-native Vegetation in a Tropical Catchment,” *Ecohydrology* 1 (2008): 13–22.

<sup>4</sup> This section is based on N. Menzies, “Ideological Landscapes,” and J. Sturgeon, *Border Landscapes: The Politics of Akha Land Use in China and Thailand* (Seattle: University of Washington Press, 2005).

<sup>5</sup> M. Bennett, “China’s Sloping Land Conversion Program: Institutional Innovation or Business as Usual?” *Ecological Economics* 65, no. 4 (2008): 699–711.

<sup>6</sup> N. Myers, R. Mittermeier, C. Mittermeier, G. da Fonseca, and J. Kent, “Biodiversity Hotspots for Conservation Priorities,” *Nature* 403 (2000): 853–858.

<sup>7</sup> H. Guo, C. Padoch, K. Coffey, A. Chen, and Y. Fu, “Economic Development, Land Use and Biodiversity Change in the Tropical Mountains of Xishuangbanna, Yunnan, Southwest China,” *Environmental Science and Policy* 5 (2002): 471–479.

<sup>8</sup> H. Li, T.M. Aide, Y. Ma, W. Liu, and M. Cao, “Demand for Rubber is Causing the Loss of High Diversity Rain Forest in Southwest China,” *Biodiversity Conservation* 16 (2007): 1731–1745.

<sup>9</sup> Guardiola-Claramonte et al., 2008

<sup>10</sup> This section is based on Thomas, *Developing Watershed Management*.

<sup>11</sup> D. Thomas, B. Ekasingh, M. Ekasingh, L. Lebel, H. Ha, L. Ediger, S. Thongmanivong, J. Xu, C. Sangchyoswat, and Y. Nyberg, *Comparative Assessment of Resource and Market Access of the Poor in Upland Zones of the Greater Mekong Region* (Chiang Mai, Thailand: World Agroforestry Center, 2008).

<sup>12</sup> B. Ekasingh, K. Tong Ngam, T. Promburom, S. Sinchaikul, and N. Thinrach, “Production Systems and Land Use Productivity of Farmers in Chiang Mai, Chiang Rai and Lamphun,” *Journal of Agricultural Economics* 24, no. 2 (2005): 49–69.

<sup>13</sup> Thomas, *Developing Watershed Management*.

<sup>14</sup> See P. Elliot, P. Navakitbumrung, C. Kuarak, S. Zangkum, V. Anusarnsunthorn, and D. Blakesley, "Selecting Framework Tree Species for Restoring Seasonally Dry Tropical Forests in Northern Thailand Based on Field Performance," *Forest Ecology and Management* 184 (2003): 177–191.

<sup>15</sup> This section is based on Y. Fujita, S. Thongmanivong, T. Vongvisouk, K. Phanvilay, and H. Chanthavong, "Dynamic Land Use Change in Sing District, Luang Namtha Province, Lao PDR" (unpublished report for International Programme for Research on the Interactions Between Population, Development, and the Environment [PRIPODE], Faculty of Forestry, National University of Laos, Vientiane, 2007); and K. Phanvilay, "Impacts of Land-use and Land-cover Transitions on People's Livelihoods in the Uplands of Northern Laos: Case Studies from Boko and Louang Namtha Provinces" (forthcoming PhD dissertation, Department of Geography, University of Hawai'i).

<sup>16</sup> Y. Fujita and K. Phanvilay, "Land and Forest Allocation in Lao People's Democratic Republic: Comparison of Case Studies from Community-based Natural Resource Management Research," *Society and Natural Resources* 21, no. 2 (2008): 120–133.

<sup>17</sup> Fujita et al., "Dynamic Land Use Change."

<sup>18</sup> T. Li, "Local Histories, Global Markets: Cocoa and Class in Upland Sulawesi," *Development and Change* 33, no. 3 (2002): 415–437; J. Fox, D. McMahon, M. Poffenberger, and J. Vogler, *Land for My Grandchildren: Land Use and Tenure Change in Ratanakiri: 1989–2007* (Phnom Penh, Cambodia: Community Forestry International, 2008).

<sup>19</sup> Fujita et al., "Dynamic Land Use Change."

#### About this Publication

The *AsiaPacific Issues* series reports on topics of regional concern.

**Series Editor: Linda Kay Quintana**

The contents of this paper may be reproduced for personal use. Single copies may be downloaded from the Center's website. Copies are also available for \$2.50 plus shipping. For information or to order copies, please contact:

Publication Sales Office

East-West Center

1601 East-West Road

Honolulu, Hawai'i 96848-1601

Tel: 808.944.7145

Fax: 808.944.7376

[EWBooks@EastWestCenter.org](mailto:EWBooks@EastWestCenter.org)

[EastWestCenter.org/asiapacificissues](http://EastWestCenter.org/asiapacificissues)

ISSN: 1522-0966

© 2009 East-West Center

#### Recent AsiaPacific Issues

No. 91 "Forest Communities and REDD Climate Initiatives" by Mark Poffenberger and Kathryn Smith-Hanssen. October 2009.

No. 90 "The New ASEAN Intergovernmental Commission on Human Rights: Toothless Tiger or Tentative First Step?" by Michelle Staggs Kelsall. September 2009.

No. 89 "Why Science Alone Won't Solve the Climate Crisis: Managing Climate Risks in the Pacific" by Melissa L. Finucane. August 2009.

No. 88 "Are the Farmers Always Right? Rethinking Assumptions Guiding Agricultural and Environmental Research in Southeast Asia" by A. Terry Rambo. May 2009.

No. 87 "North Korean Shipping: A Potential for WMD Proliferation?" by Hazel Smith. February 2009.

No. 86 "Multitrack Integration in East Asian Trade: Noodle Bowl or Matrix" by Peter A. Petri. October 2008.

#### About the Author

**Jefferson Fox** is the Coordinator of Environmental Change, Vulnerability, and Governance at the East-West Center. He received his PhD in Development Studies from the University of Wisconsin-Madison in 1983. He studies land-use and land-cover change in Asia and the possible cumulative impact of these changes on the region and the global environment. He has co-edited several books, most recently, *People and the Environment: Approaches for Linking Household and Community Surveys to Remote Sensing and GIS*. He has worked in Bangladesh, Cambodia, China (Yunnan), Indonesia, Laos, Nepal, Thailand, and Vietnam.

He can be reached at:  
[FoxJ@EastWestCenter.org](mailto:FoxJ@EastWestCenter.org)

