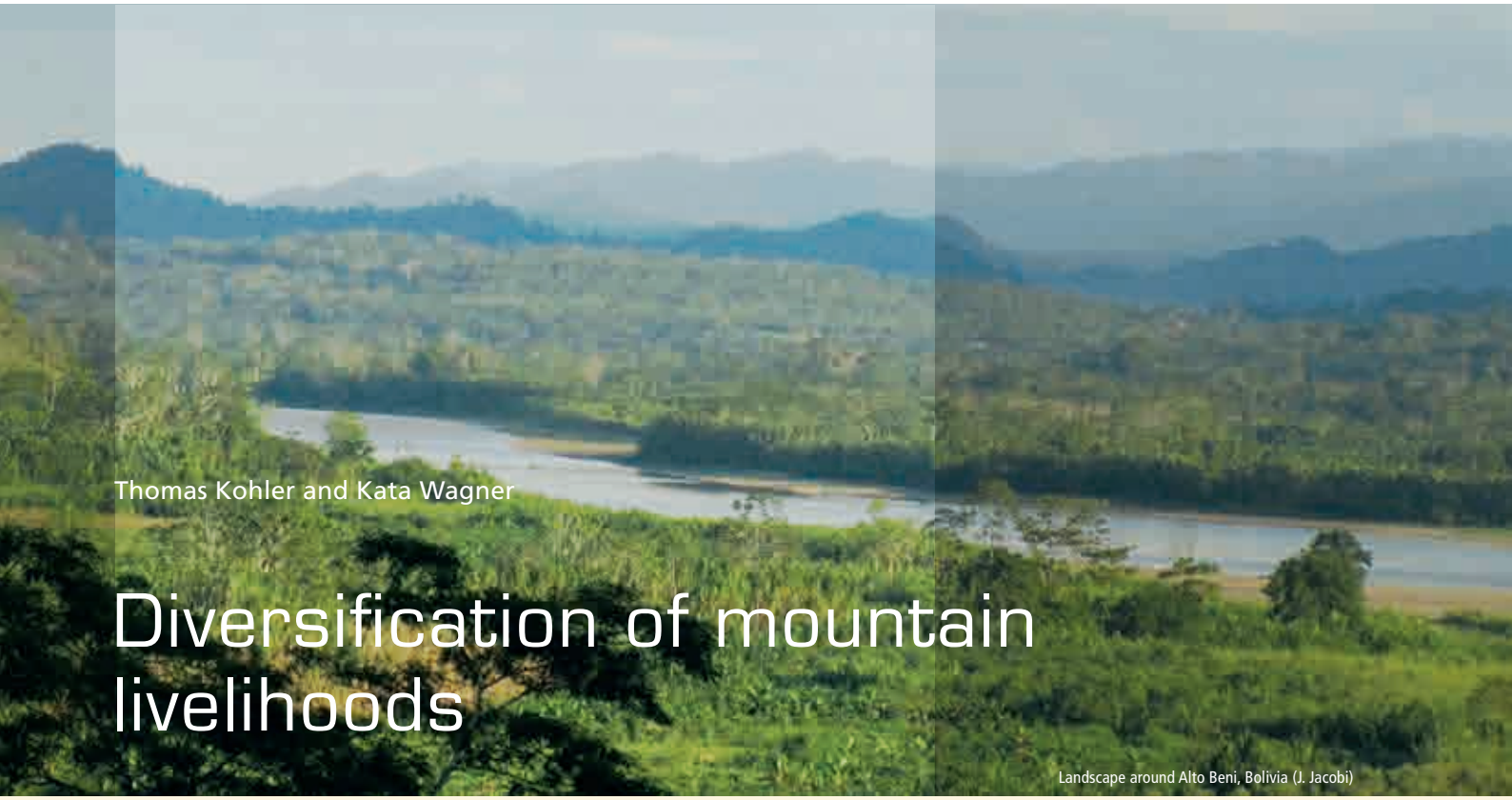

Thomas Kohler and Kata Wagner

Diversification of mountain livelihoods

Landscape around Alto Beni, Bolivia (J. Jacobi)

Family farmers' livelihood strategies are informed by the geography, history and culture of their environment, and by the political and economic frameworks of their countries. Mountain livelihood strategies have always required specific levels of resourcefulness, adaptation and diversification of income opportunities.

Mountain family farmers are exposed to the whims of weather, crop and animal diseases, changes in agricultural input and commodity prices, and shifts in policy and regulatory frameworks. They thus face the same risks as their counterparts in lowlands. But mountain farmers are often additionally burdened with shorter vegetation periods, steeper slopes and more shallow soils, a higher risk of ice, snow and hail, and the occurrence of landslides and avalanches. In response, mountain farmers have adopted risk-averting and risk-spreading strategies that have led to complex and diversified farming systems, using different resources – cropland, pastures and forests – at different altitudes and at different times of the year.

In many regions, farming forms the backbone of mountain farmers' livelihoods. Farmers produce for home consumption but also for the market as a source of income. Even in the most remote places, farmers need cash for health and education expenses, and for purchasing basic items they cannot produce themselves. Mountain farmers seize opportunities for income diversification, both on-farm and off-farm, to stabilize and increase their income and to enhance their livelihoods.

Diversification is often not a choice, but a necessity for farming households in mountain areas that are driven by population pressure, land shortage, natural disasters, hunger and poverty. Globally, only 22% of mountain areas are suitable for crop production. Looking specifically at the mountain areas in developing and transition countries, the percentage of cropland falls even lower, to a mere 7%.

Globally, population density on grazing land at all elevations up to 3,500 m has reached or surpassed the critical point of 25 persons per km^2. And about half of the 300 million people who are food insecure in the world's mountain regions suffer from chronic hunger (1).

Looking at specific aspects of diversification strategies, farmers in the mountains of Badakshan Province, Afghanistan, for example, have a wide array of income-generating activities typical for many mountain communities. The data shown in Figure 1 are based on a survey carried out among 26 remote and 22 non-remote villages, and document the decisive role of remoteness, especially its negative effects on non-farm income opportunities (2). Remote villages depend to a larger extent on farm income, but for both groups, farm incomes are lower than non-farm incomes, which include salaried incomes, self-employment and remittances.

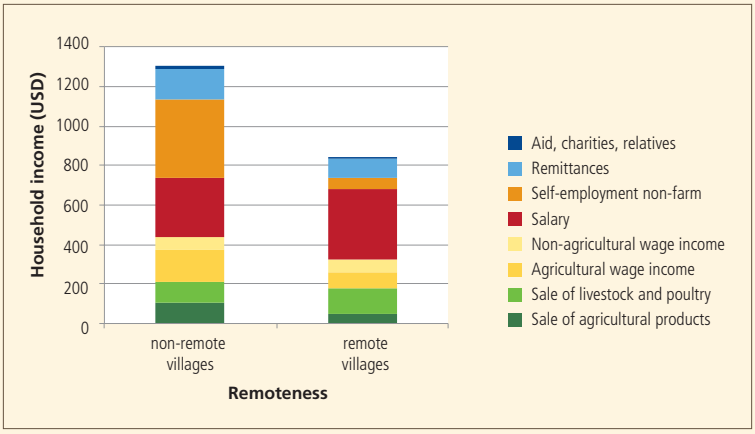

Figure 1: Average annual household incomes (medians) by source of income and remoteness, Badakshan, Afghanistan. Source: (2)

(N = 490 households in 22 non-remote villages, 614 households in 26 remote villages)

In contrast, farmers at Alto Beni, Bolivia, largely rely on farming for their livelihoods. This is possible because they mainly grow cocoa, a cash crop and high-value niche product (Figure 2). Income data gathered in a survey of 30 organic and 22 non-organic farmers reflect the premium price paid to producers of organic cocoa, which results in 40% higher incomes compared with non-organic production (3, 4). The cocoa produced is processed to chocolate to serve the Bolivian market; the chocolate from organic cocoa is also exported.

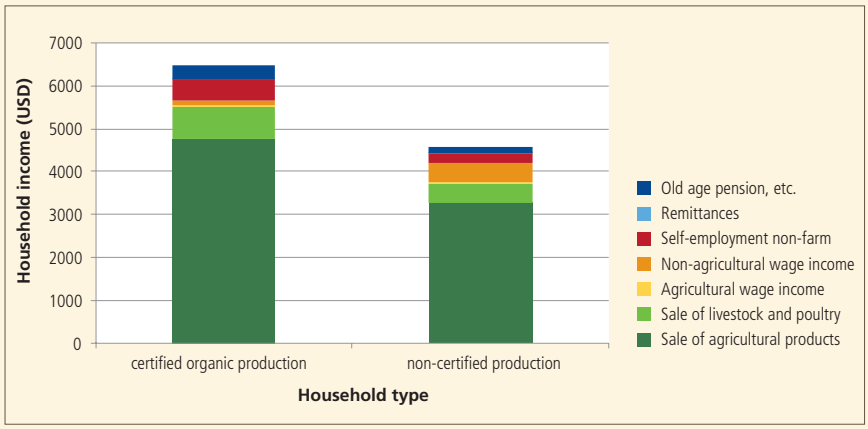

Figure 2: Average annual household incomes (medians) by source of income and mode of production, Alto Beni, Bolivia. Sources: (3, 4)

(N = 30 households with certified organic and 22 households with non-certified production (cocoa))

Coca leave and flower offering to the *Pachamama* (Mother Earth), Pitumarca, Peru (S.-L. Mathez-Stiefel)

Village with gardens, Badakshan, Afghanistan (A. Pain)

In the uplands of Viengkhang District, Lao PDR, household strategies, farming systems and incomes show great variation within the same area (Figure 3). A survey of the livelihoods of farmers in the district identified four household types (5): (a) shifting cultivators, who practise the traditional mode of farming and grow rice for subsistence, (b) households that have moved from shifting cultivation to rotational rice cropping and that also keep large livestock such as cattle and buffalos, (c) diversified producers who have added plantations to their portfolios, mainly rubber and teak for export to China, Thailand and Vietnam, but who retain rice production, and (d) households that focus almost exclusively on rubber and teak plantations, keep livestock, but have given up rice cultivation, a key element of farming and culture in the region. Plantation farming, which appeared in the mid-1990s in the region, increases local incomes and income disparities very significantly, as shown by the income gap between more traditional farm types and farmers with plantations. Focusing on plantations also means less diversity of production and increased dependency on global commodity prices. Questions of sustainability also arise, relating to the effects of plantations on soil erosion, water quantity and quality, biodiversity and household food security.

In addition, remittances from migrated family members make a significant contribution to income in many mountain regions, such as Central America, the Andes and the Hindu Kush Himalaya. Migration also has proven to be a means for reducing dependency on local resources and acquiring new skills. As it is often male family members who outmigrate, women are left as managers of family farms. Tourism offers significant employment and income opportunities in mountain areas, especially in high-income countries but increasingly in the developing world. Mountains' clean air, diverse landscapes, rich biodiversity and unique cultures

Lao farmer harvests cassava, a cash crop (U. Wiesmann)

attract 10–15% of the global tourism market (6). Payment for ecosystem services is also an important element of family farm incomes in many high-income countries such as Switzerland, Japan, Norway and Iceland.

Opportunities to diversify and enhance mountain family farming livelihoods are manifold. However, taking further advantage of these opportunities will require an enabling policy framework in support of sustainable mountain farming – a framework that should include facilitation of payments for key ecosystem services, investment in capacity development for the empowerment of rural populations, in particular of rural women, and development of a network of decentralized small towns to provide markets, employment and vital services to rural mountain communities.

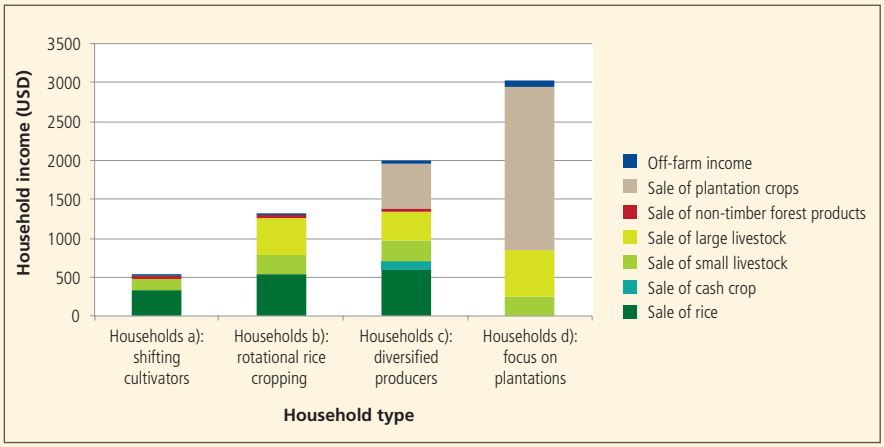

Figure 3: Average annual household incomes by source of income and household type, Viengkhang, Lao PDR. Source: (5)
(N = 504 households in 7 villages)