



# Capitalizing on local livelihood diversity:

Enhancing resilience building of small highland farms

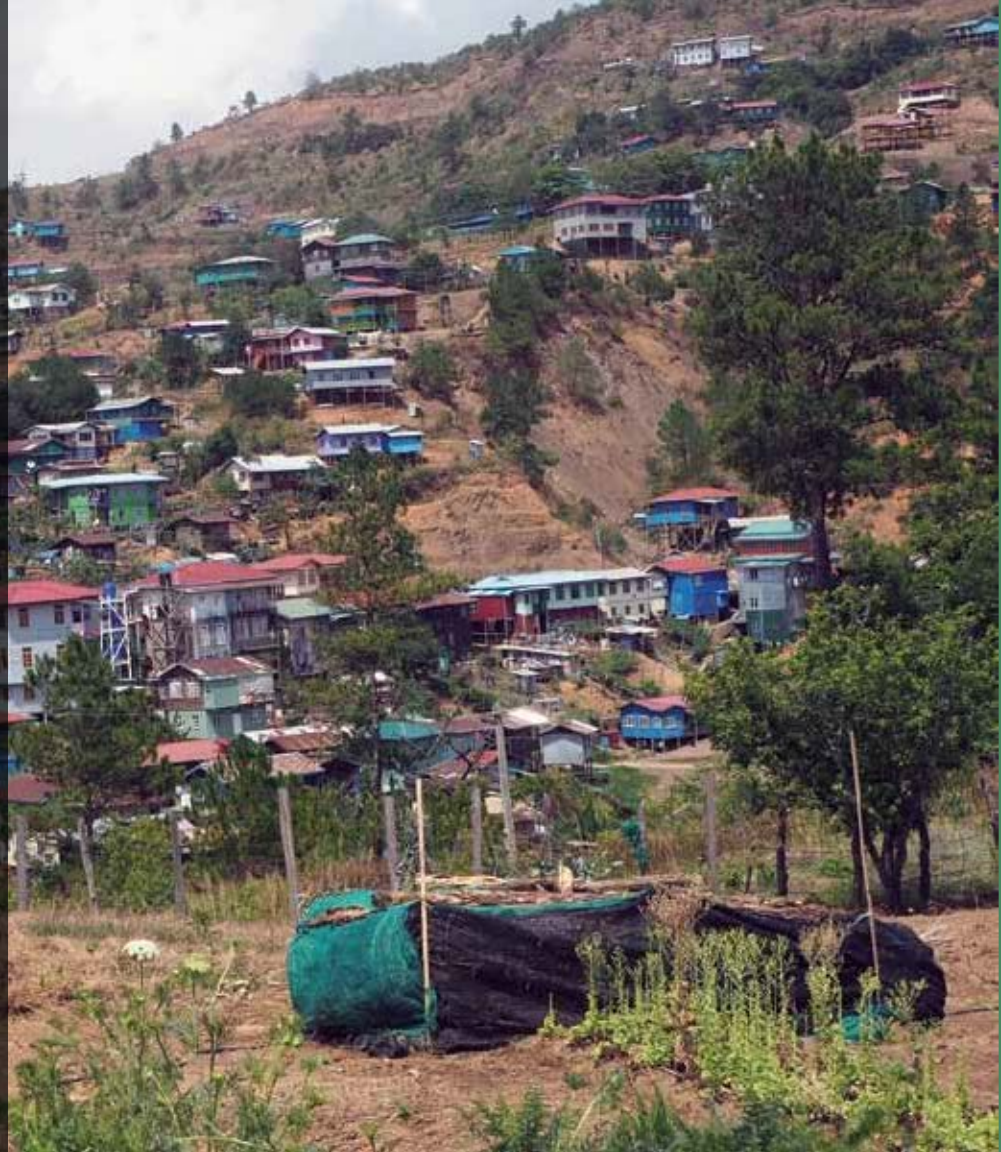
With support from the International Development Research Centre (IDRC) and the CGIAR Research Program on Climate Change, Agriculture, and Food Security (CCAFS), the International Institute of Rural Reconstruction (IIRR) and its local NGO partners are implementing Climate-Smart Villages (CSVs) to demonstrate community-based adaptation in agriculture in different agroecological zones in Myanmar.

This primer is based on IIRR's baseline studies and desk research that IIRR has commissioned to develop profiles of each CSV in the project. The purpose of this primer is to provide background information on the agriculture, livelihoods, nutrition, gender, and climate change context of each CSV.





Hakha is the capital city of Chin State situated in the northeast. It sits on a small highland plateau that is more than 1,800 meters (6,000 feet) above sea level. Although it is a relatively small inland area, it is the largest city in Chin State. Chin is one of the least developed areas in Myanmar, with the highest poverty rate in all of the states and regions in the country.





Most of the agricultural lands in Saktta, a village in Hakha that is a CSV site, are rainfed. Shifting cultivation is widely practiced. Rotation of plots is undertaken in response to lowering yields caused by declining soil fertility and increased weed infestation. Stabilization of farming in these areas can be undertaken through agroforestry.





The main reason for food insecurity in Chin is the reduction of crop yield due to land degradation, reduced soil fertility, and weed infestation. There is no absolute shortage of land area (only 3 percent of land area is used for agriculture). Meanwhile, Chin farmers are doing their best to manage their resources.





One way is by practicing crop rotation, which allows the land to regain its fertility. Rotation periods differ depending on crops grown: upland rice crops are rotated annually; maize growing plots are rotated after five years. Farms appear as mosaics in the landscapes, with some parts in fallow (to allow for fertility restoration) and some farms in active cultivation.





In a few areas, however, the degradation of the uplands is also increasingly noted. Climate change is expected to worsen it as organic matter diminishes under high temperatures. Free grazing in summer further degrades farms. Agriculture is undertaken in sandy (loam) easily erodable soils (under heavy rains).





In recent years, temperature increases are noted. The hot summers are followed by minus zero temperatures during winter. Heavier and erratic rains, stronger winds, and the rising incidence of landslides are observed.





Drier summers and irregular rainfall affects the germination rate of the crops, especially corn and millet. Irregular and unpredictable rainfall is observed during harvest time (November). Unseasonal rains seriously damage the quality of products, affecting selling prices.







Given this unpredictability of rainfall and temperatures, farmers would have to maintain their current diversification of crops (corn, upland rice, beans, and millets) while improving income from trees, livestock, and vegetables.



There is also a role for introducing new varieties from research stations or from other parts of the country (with similar conditions).





In the Saktta CSV, new corn and upland rice varieties (including traditional and modern varieties) from the Aungban Research Station were tested and were found promising.





Simple management practices such as drill sowing at wide spaces (25 to 30 cms) have produced 30 percent higher yields of improved rice varieties.





Corn is an important food crop for humans and small livestock. Short duration corn varieties from Aungban have allowed farmers to grow two crops a year instead of only one. For example, short duration varieties of (in bred) corn varieties allow farmers to grow two crops of corn where only one is currently grown. What's best is that they can save seeds for the next 3-4 croppings.





Improving yields is an important way for farmers to achieve food security using climate-smart varieties that perform well under low external input conditions.





**Polyculture in traditional farming reduces the need for chemical pesticides. It prevents insect build-up and staves off predators and parasites. Vegetation along the boundaries of farms serve as host for beneficial insects. Pest densities are reduced. Reduced external inputs mean smaller carbon footprints.**





Shifting cultivation, in the long run, can be destructive. When combined with free grazing, vegetation is destroyed. Frequent burning also increases the green house gas contributions of farming. Agroforestry is a Climate-Smart Agriculture (CSA) option that can help shifting cultivators to stabilize their farms.





Agroforestry is a very important component of CSA for shifting cultivation communities. *Alnus Nepalensis* is one tree that can be used to stabilize farms. *Alnus* is fast growing and its leaves help fertilize soils. It can also reduce the need to shift or rotate plots.





Chin State farmers value livestock. Grazing land is available. The Mithun bull is used for ceremonial events (weddings). Cattle are used for tillage and pigs are raised as regular income sources. The promotion of small livestock systems (with a reduced reliance on external feeds) is a promising CSA option for women. Because native pig breeds tolerate weather extremes better than exotic breeds, these emerge as a priority for local people.





Livestock is an important asset building approach for small farmers in Myanmar. These are important coping mechanisms in case of crop failure. Pigs and cattle are economic assets, which enhance resilience building and are sold for cash during difficult times (IIRR baseline study) .





Livestock are raised for meat. Most of the meat consumed by households are farm grown (ie. not purchased). Similarly, eggs and poultry, though consumed on a fairly regular basis, are rarely purchased from outside (IIRR baseline study).





Millets (finger millet, fox tail millet, and proso millet) are important crops in Chin State. Millets are known to be nutritionally important. They contain fibre, protein, iron, calcium, and magnesium. They tolerate drought and can be considered a climate-smart crop. Millets also have a cultural value. The Khaunga alcoholic beverage is made from “red” millet grown primarily for that purpose.





Every homestead usually has an area for growing vegetables. It often includes reservoirs of rain water for supplemental irrigation. The potential for domestication of wild food sources in these homestead can also help conserve vanishing food species (yam and beans).





Cereal, grains, oil, fish, and exotic vegetables are purchased from the markets. Overall, farm households surprisingly have a moderate level of dietary diversity. These are good practices that should be conserved. Green leafy vegetables, roots and tubers, and legumes are eaten fairly regularly. These are farm grown or collected from the wild (IIRR baseline studies).





The CSA program should consider distributing diversity kits of planting materials (intra species, varietal diversity of beans, green leafy vegetables, roots and tubers, and millets) as part of an effort to restore or strengthen local agro biodiversity. Planting materials can even be sourced from markets if the purpose is to re-introduce diversity.





An unusual traditional practice is the use of forest ponds to raise fish species. Rohu, a type of carp, is preferred. However, sources of fingerlings are scarce. Here, community support systems in the form of community propagation facilities can help.





Highland farmers have the benefit of cooler climate (assuming these are not extremes) allowing them to grow a wider range of crops with reduced need for external pest control. Mixed farming systems are feasible because land is not very limited (as in other parts of Myanmar). There are many opportunities for CSA based on intensified and diversified systems (crops, trees, livestock).





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