

Indigenous Communities, Conservation, and Climate Change in Cambodia: Securing Livelihood Options for Sustainable REDD+

The Cambodia Rural Development Team

Key Lessons

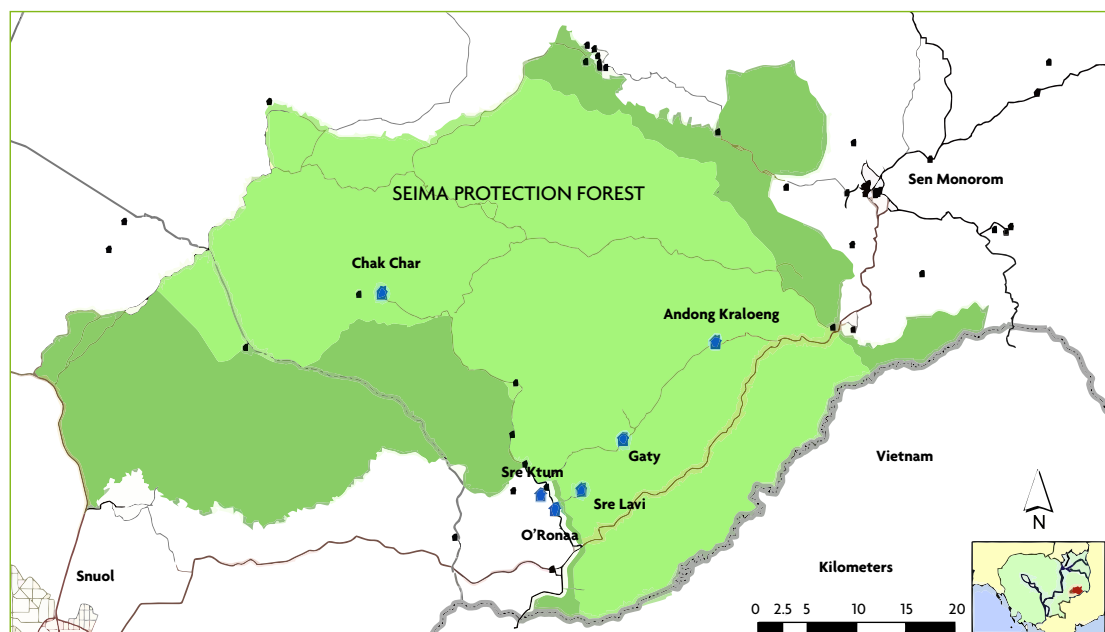
Indigenous communities living in Seima Protection Forest (SPF) in Cambodia are vulnerable to changes in the local environment, such as drought, flooding, and other extreme weather events. Unsustainable land-use patterns, high levels of poverty, lack of basic infrastructure, and low levels of education limit their capacity to respond effectively and adapt to these changes. Despite Seima's protected forest status and the communal indigenous land titling process that is underway, illegal logging and pressures from agro-industrial companies for economic land concessions have persisted. These pressures and land use restrictions have generated insecurity among local people that threatens long-term investment in sustainable forest management. To ensure the success of the REDD+ pilot project in Seima, the following issues need to be addressed:

- The communal indigenous land titling process must continue and be scaled up; the capacities and awareness of indigenous communities must be raised in the context of entitlements and rights.
- Local livelihoods must not be impacted negatively by conservation or forest management activities. Rather, projects such as REDD+ should strive not only to compensate for losses but also to enhance livelihood options. This should come through strategic development of alternative livelihood options and better market access for local products.
- There should be incentives for local communities to protect forests that result in rapid realization of financial and non-financial benefits. This may involve payments for Measuring, Reporting, and Verification (MRV) activities, forest patrolling, and the collection of inventory data.

Timeline

- 2001** Provision for registration and titling of indigenous community lands recognized under the 2001 Land Law.
- 2002** Cambodia's forestry sector experiences reform following suspension of all logging concessions by the Government.
- 2003** The Forest Administration and Wildlife Conservation Society facilitates Participatory Land Use Planning (PLUP) in the SPF.
- 2006** Cooperation initiated among the Forest Administration (FA), Wildlife Conservation Society (WCS), and the Cambodian Rural Development Team (CRDT) for work in the SPF.
A similar agreement is signed by the same parties to launch an alternative livelihood development project.
- 2008** The Seima Protection Forest-REDD+ demonstration site is formally initiated.
- 2009** Market crashes for cassava and cashew nuts negatively affect indigenous communities in the Seima area.
Declaration of Seima's Protected Forest status due to globally important biodiversity.

1. Background



Seima Protection Forest, Mondulkiri Province, Cambodia

Cambodia is rich in forest and wildlife, but reliance on agriculture and susceptibility to flooding make the country highly vulnerable to the impacts of climate change (RGC, 2006). The expansion of unsustainable land-use patterns and significant levels of deforestation (at 0.8% per year from 2002 to 2005 [FA, 2007]) compound this vulnerability. The Government of Cambodia has prioritized sustaining the existing forest cover; owing to its forest management and conservation efforts, Seima was awarded protected forest status in 2002.

Located in Mondulakiri Province of eastern Cambodia, the SPF is one of the most important forest areas remaining in Cambodia. Covering 298,250 hectares, it has extensive evergreen, semi-evergreen, and deciduous tree cover (Evans *et al.*, 2011) and exceptional biodiversity with more than 40 species found in the IUCN Red List (Pearson *et al.*, 2008). The Bunong indigenous peoples have lived in the area for more than 100 years.

Nineteen communities are located within and around the core area of the SPF. This study focuses on three of the villages: Andong Kraloeng village in O'rang District and O'ronaa and Gaty villages in Keo Seima District. These communities comprise 246 families or 1,237 people. The Bunong are the predominate group and historically have been highly dependent on the forest for both subsistence and income (Thuon, 2010).

Livelihoods of the villagers depend on non-timber forest products (NTFPs) from the SPF that provide, among other resources, food, traditional medicines, construction material, and income from resin tapping. Resin tapping alone in Mondulakiri is estimated to generate household incomes of approximately US\$340/year – equal to the cost of purchasing rice for a family of five for a year (Evans *et al.*, 2003). Their heavy dependence on natural resources and reliance on a limited number of cash crops, make the communities highly vulnerable to changes in the environment; in particular climate change impacts that have adverse affects on agriculture, such as drought, flooding, and insect attack.

REDD+ Pilot Project in Seima

In 2008, the FA under the Ministry of Agriculture, Fisheries and Forestry (MAFF) partnered with the WCS to pilot REDD+ activities in the SPF, in cooperation with the CRDT and the Community Legal Education Center. The project aimed to stimulate sustainable cash flows via access to the voluntary carbon market.

Prior to the launch of the REDD+ pilot project in 2008, the FA and WCS began Participatory Land Use Planning (PLUP)¹ activities in the SPF as early as 2003. The PLUP approach has had a pivotal role in raising awareness of community rights and served as an important instrument for introducing REDD+.

Before the onset of the REDD+ pilot project, the FA, WCS, and CRDT initiated alternative livelihood development activities in 2006. First piloted in the village of Andong Kraloeng, this included training on improved agricultural techniques and small-scale agricultural production for sale in local markets. These activities were intended to reduce pressure on forests in addition to improving local livelihoods. In 2008 the project was scaled up to include the villages of O'ronaa, Sre Lavi, and Gaty. CRDT data indicate that as a result, household incomes have risen by an average of US\$30-70/year, a 10-15% increase, and time spent on collecting forest products has decreased from 8.7 days to 3.8 days a month (CRDT, 2009).

The REDD+ pilot project is currently in its third phase in the process of obtaining consent (Table 1). During the first two phases, largely focused on discussion and raising awareness, local communities and authorities were fully supportive. However, as the REDD+ pilot project advances and trade-offs with respect to livelihoods become apparent, maintaining support and buy-in among all stakeholders has become increasingly challenging, although still considered feasible.

¹ In the context of this study, PLUP is synonymous with what is commonly known as community forestry.

Table 1: REDD+ awareness raising and FPIC in the SPF

<p>Phase I: Awareness Raising on Climate Change and REDD+</p>	<p>The WCS and CRDT conducted focus group discussions and mini-workshops with forest communities on climate change and REDD+. Topics included:</p> <ul style="list-style-type: none"> ▪ Causes of climate change; ▪ Greenhouse gas emission reductions; ▪ The role of forests in reducing emissions; ▪ Generating REDD+ carbon credits; ▪ Livelihood development.
<p>Phase II: REDD+ and Community Engagement</p>	<p>The WCS and CRDT facilitated:</p> <ul style="list-style-type: none"> ▪ Multi-stakeholder focus groups on REDD+ rights, roles, responsibilities, and possible benefits; ▪ Community-level focus groups on REDD+ design and concerns; ▪ Workshops to raise community awareness of national community forestry law and relevance to REDD+ pilot project agreement; and ▪ Free, Prior, and Informed Consent (FPIC) focus groups to determine consent to the REDD+ pilot project.
<p>Phase III: Processing FPIC Results</p>	<p>The WCS and CRDT is continuing FPIC discussions:</p> <ul style="list-style-type: none"> ▪ Reviewing REDD+ pilot project implementation agreement, and ▪ Collecting further consent of community members for involvement in the REDD+ pilot project.

Today, the SPF is one of two pilot REDD+ sites in Cambodia, along with the pilot site in Oddar Meanchey Province. The Oddar Meanchey REDD+ project is now selling carbon credits, while the SPF is working towards verification with the Voluntary Carbon Standard (VCS) and the Climate, Community and Biodiversity Standard (CCBS).

2. Climate Change Impacts in Cambodia and Seima

Climate change impacts are already being experienced throughout Cambodia. Temperatures have risen steadily over the last 50 years with the average temperature increasing by 0.8°C since 1960 (McSweeney *et al.*, 2008); rainfall patterns have also become irregular (MoE, 2010; Eastham *et al.*, 2009).

Participatory rural appraisal exercises reported a number of changes in the local environment. Andong Kraloeng, O'ronaa, and Gaty communities all indicated that the weather is becoming more extreme with greater heat and aridity in the dry seasons. They also noted rising storm and flooding frequency and intensity, with Cambodia's worst flood in recent history occurring in 2000 (UNDP, 2011).

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Variability in Rainfall Patterns

The Bunong define drought as a delay of the wet season by two months. Since 1997, the villagers have observed increasing delay in the arrival of the wet season – formerly it arrived at the end of April but this has changed to the beginning of June. The extended dry period puts stress on water resources; recently, some villagers resorted to purchasing water through micro-finance loans in order to meet domestic and livestock needs. Villagers have witnessed increased variability in rainfall intensity and, since the 1990s, severe soil erosion and flood events that damage agricultural crops (McAndrew and Il, 2008).

Flooding used to be rare in the Seima uplands, but SPF communities have experienced severe flooding four times in the past two decades. Heavy storms result in flash floods that inundate areas for two to three days. Apart from the negative effects of soil erosion and destroyed crops, water-borne diseases are on the rise and there is a growing risk of insufficient potable water in villages.

Windstorms

Communities in Andong Kraloeng, O'ronaa, and Gaty claimed that the strongest windstorms in 30 years had occurred in 2011; they asserted that the frequency and intensity of these events was increasing. Fortunately, damage to houses was not extensive and most homes have remained intact. However, crop damage and soil erosion are major concerns.

Declining Yields

Interviews with villagers pointed to declines in upland rice yields of between 20 and 50% since 2005, which they associate at least in part with extreme weather patterns. Overall, agricultural production in the three villages was reported to have dropped by approximately 10 to 15% during the same period. Similarly, traditional forest-based sources of food and livelihoods have been steadily declining; wild vegetables and fruits, honey, wildlife, and fish are reported to have diminished by an estimated 30 to 40% over the past six years. While difficult to link directly to climate change it underscores the importance of activities to conserve and sustainably manage the forest as well as the need for livelihood development.

3. Assessing Adaptive Capacity and Resilience

While the three villages appeared to enjoy a relatively strong natural resource base and improved land tenure, the predominance of market middle men and limited direct access to information and education, as well as to markets, present significant challenges to sustainable management of the SPF and to the overall resilience of the communities.

Table 2: Community Assets in Andong Kraloeng, O'ronaa, and Gaty Villages

Type	Assets	Effects on Adaptive Capacity
Natural Assets	<ul style="list-style-type: none">▪ Fuel and (restricted) timber▪ Wild animals and fish▪ Forest vegetables and fruit▪ Bamboo, rattan, and resin▪ Fodder for livestock▪ Water from streams, wells	<ul style="list-style-type: none">▪ Abundant natural resources are strong assets for Seima communities. Reliance on them, however, leaves villagers vulnerable to environmental changes.

Type	Assets	Effects on Adaptive Capacity
Physical Assets	<ul style="list-style-type: none"> ▪ Road and track access of varying quality ▪ Availability of housing (though vulnerable to natural disasters) ▪ Primary schools ▪ Posts for healthcare, health education and awareness, and mid-wife and birthing services 	<ul style="list-style-type: none"> ▪ Such infrastructure, though limited, is a critical asset during natural disasters and extreme weather events.
Financial Assets	<ul style="list-style-type: none"> ▪ Saving groups offering micro-credit ▪ Access to markets through middlemen ▪ Contract farming investors provide low-interest agriculture input loans (5-8% monthly) ▪ Commune Investment Fund – Government program for local development activities 	<ul style="list-style-type: none"> ▪ While financial and borrowing options exist, the predominance of middlemen and limited direct access to markets seriously curtail the communities' capacity to generate income and invest in adaptive strategies.
Social Assets	<ul style="list-style-type: none"> ▪ Indigenous community land titling ▪ Community-based organizations engaged in marketing support for small-scale production initiatives ▪ PLUP processes ▪ Development service providers support capacity development 	<ul style="list-style-type: none"> ▪ Communities benefit from a range of development services. However, it remains unclear to what degree programming and capacity development is sustained.
Human Assets	<ul style="list-style-type: none"> ▪ Effective community councils, with able members ▪ Village elders with a wealth of indigenous knowledge, cultural practices, and experience in community decision-making ▪ Multiple service providers, including traditional healers, Government service providers e.g. teachers, veterinarians 	<ul style="list-style-type: none"> ▪ Vibrant indigenous knowledge systems in place. However, educational levels and access to information remain a critical constraint to adaptive capacity.

Adaptive Capacities

Indigenous Community Land Titles

Under indigenous land titling, the provision for which was established in the 2001 Land Law, a group of indigenous people is able to acquire collective ownership rights over forest land -private- or state-owned. The provision also stipulates that the indigenous community or individuals within the community cannot sell the land.

As the indigenous communities of Seima were perceived to be highly vulnerable to loss of their land, they became one of the first pilot communities to be involved in the communal land titling process. The applications for titles are ongoing for most of the communities but Andong Kraloeng was awarded a title in March 2012 (WCS, 2012).

Traditions of Sustainable Resource Management

The communities involved in this study highly value the forest ecosystem and view it as a critical backdrop to their lives and culture. The Bunong are animists and believe that the stability of their lives depends on the proper conduct of ceremonies related to nature. Every part of the

forest is believed to house the spirits of their ancestors and requires permission before any disturbance or harvesting. They believe that sacred lands within the forest, where the dead are buried, provide spring water throughout the year, that shifting cultivation ensures soil quality, and that fish populations are preserved by forest spirits. These cultural links to the forest result in village management of the surrounding natural environment for specific purposes intended to ensure sustainability and prosperity.

Strong Social Fabric

Despite many changes over the past decade, the Bunong's cultural practices and strong community relationships have remained largely intact. People customarily share food with their neighbors, especially when one family successfully kills a wild animal, such as a wild pig or deer. Such practices provide a social safety net for the poorest people in the villages. While the increased influence of the market economy is having an impact, strong social and cultural solidarity continues.

Geographic Buffers

Due to the geographic characteristics of Seima, the villages have experienced less severe drought, flooding, and other extreme weather events than their counterparts in other parts of the country (UNDP, 2011). Despite being relatively buffered, the communities report that natural disasters have increased over the past decade, disrupting traditional livelihood practices and threatening human health and well-being.

4. Vulnerabilities

Poverty

A 2010 Millennium Development Goal gap analysis (MoP, 2010) identified Mondolkiri as one of three key provinces that are behind the national agenda for poverty and hunger reduction. At 59%, poverty is much higher than the national average of 36% (McKenney *et al.*, 2004; CSD, 2001) and poverty rates are even higher for the indigenous populations, such as those in Seima (NSDP, 2010; AAH, 2003). The United Nations Development Programme (UNDP) highlights the importance of poverty indicators as they are closely associated with climate change vulnerability (UNDP, 2011).

Food Insecurity

The Andong Kraloeng, O'ronaa, and Gaty communities endure chronic food insecurity (CRDT, 2011). Sufficient agricultural productivity remains a significant challenge, particularly in the face of ecological and climate changes. The Bunong depend on upland rice farming, which yields approximately 800 kg/hectare in comparison to the 1,000 to 3,000 kg/hectare for lowland wet paddy farmers (AAH, 2003). Typically the rice harvest is sufficient to meet the needs of the Bunong for an average of only four to six months per year.

Recently, some families have become involved in commercial cassava and cashew farming. This has had mixed results. While diversifying income sources, potentially there are increased vulnerabilities via impacts on the local ecology and deepening dependence on middlemen and markets. These cash crop markets can be highly volatile and, in 2009, many cassava and cashew farmers suffered when the market crashed.

Water Scarcity

Food security is closely linked to water availability, which is claimed to be increasingly insufficient for agriculture, livestock, and household use in the villages. Extended dry seasons and deforestation have affected the water supply. Farmers now need to carry water from sources one to three kilometres away, further exacerbating the burden of food production.

Unsustainable Resource Use

Pressure on NTFPs has increased considerably as the local population grows and agricultural lands expand. The communities and project proponents need to develop strategies for sustainable NTFP management, harvesting, and promoting practices that add value.

Limited Education

Community members and leaders have low levels of education; primary school is the highest educational level of most villagers. More than 50% of the population is illiterate, so development service providers spend considerable time disseminating relevant legislative or policy information, keeping records, and raising awareness on various issues.

Remoteness and Market Access

The Bunong are disadvantaged by their isolated upland location, low educational levels, limited infrastructure, and service delivery compared to lowland Khmer communities. As the communities move from subsistence to market-based livelihoods, these disadvantages are emerging as significant hurdles. While livelihood development activities have supported the production of perishable vegetables and other produce, due to challenges in accessing the market, some value has been lost, compromising interest in small-scale agricultural production initiatives in particular.

5. Responses to Environmental Changes and Development Needs

The Bunong have engaged a number of adaptive strategies to cope with losses presented by ecological and climate changes (UNDP, 2011), although with limited success to date. Efforts to respond to changes have led to immediate coping strategies, while development service interventions are increasingly seeking to foster long-term planned adaptation.

Exploitation of NTFPs and Other Forest Resources

In times of crisis Bunong communities rely more heavily on the forests to meet basic needs. During extended dry periods, crop and livestock production declines and villagers compensate for lost food sources and income through increased hunting and the extraction of NTFPs, such as manioc tubers, resin, wild potato, wild banana, and other forest fruits.

Mixed Responses to Forest Protection

Over the past few years, powerful economic incentives, in the form of high prices for particular cash crops and steep price rises for hardwood timber, have been major hurdles to the

sustainable management of Seima's natural resources. To some degree, this has been balanced by growing awareness and security of land rights, which, along with traditional conservation practices, is motivating investment in the land and protection of forest resources.

Seeking External Support

Although SPF communities seek support from Government emergency services and relief organizations, such as the Cambodian Red Cross, many families are still forced to take loans to compensate for losses incurred in rice harvests. Some families have also turned to wage labor on plantations in order to generate income.

In response to rising health threats, which may be linked to climate change, such as malaria, dengue fever, diarrhea, and cholera (ADB 2009), Bunong communities have shifted from traditional medicinal practices to modern medical assistance.

Alternative Livelihood Development

The livelihoods project supported by the CRDT, WCS, and the FA includes a range of interventions intended to support adaptation and resilience. It has provided villagers with fast-growing upland rice seed which has helped compensate for reduced yields caused by erratic weather patterns. The project has also introduced multiple-cropping systems in order to minimize yield losses. Investments in home garden development and fruit trees, along with training in small-scale animal husbandry, have simultaneously supported livelihood diversification as well as forest enhancement.

Improved Water Collection and Distribution Systems

Development service providers have supported the installation of rainwater collectors and a water distribution system connected to nearby springs to improve water access during the dry season.

6. Adaptation, Mitigation, and Community Forestry Linkages

The REDD+ pilot project in the SPF has contributed to advancing communal land title claims and as such is supporting the safeguarding and strengthening of indigenous and local community rights. While the communal land titling process has offered significant opportunities for local-level engagement in boundary demarcation and project implementation, it remains unclear whether these communal land titles will allow for community ownership over forest carbon (Evans *et al.*, 2011).

Climate change adaptation is a national priority (RGC, 2006). Investing in community forestry structures has strong potential to support livelihood assets that will strengthen adaptive capacity. The forest and forest-based activities provide a critical safety net for the Bunong. However, without addressing their vulnerabilities, in particular the need for secure livelihood options, sustainable forest management is at risk.

There is evidence that over the long term the SPF REDD+ pilot project will strengthen rather than undermine access to important natural resources and land tenure (Evans *et al.*, 2011). However it is essential that incentives reach communities in the short term to ensure their continued support. Project proponents' promotion of alternative livelihood development has gone some

way to achieving this; but gaps remain, particularly in direct market access, which need to be addressed. Without clear and immediate incentives to offset opportunity costs, there is the real threat of escalation in illegal logging and incursion of agro-industrial plantations.

In addition to the non-financial benefits the REDD+ pilot project is generating, such as improved tenure security, participatory processes, and livelihood development, the project also plans to generate direct financial benefits from the sale of Verified Emission Reduction credits. However, given uncertainties over the development of a compliance market and voluntary carbon market prices, project proponents have been prudent in focusing more on the non-financial benefits generated.

