



S5-P1

ADB

## *Strategic Program for Climate Resilience*

### *Mainstreaming Climate Resilience into Development Planning (TA 8179)*

*(September 2013-April 2019)*



### *Knowledge Sharing Event: Cambodia's Response to Climate Change*

#### **Overview of Adaptation Practices Submissions**

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**Knowledge Management and Communication Specialist**

**TA8179/ SPCR**

**November 30, 2016**



# Selection Process

- Call issued to all interested applicants from government, universities, NGOs, civil society, and private sector
- A review committee with members from the Department of Climate Change, Strategic Program for Climate Resilience, Cambodia Climate Change Alliance, and Plan International was formed.
- The committee selected the most appropriate adaptation practices to be displayed at the Conference and displayed on X-stand posters.
- All adaptation practices selected for display at the conference will be further developed into a short case study for publication (with credit) in a compendium of adaptation practices.

# Selection Criteria

## 1. Indigenous Practices

- Structures, techniques or practices which have been used by local people for at least one generation to design or manage their buildings, natural resources or livelihoods, or to protect these from extreme events (floods, droughts, storms).
- Can be measures that local people have started to develop themselves in response to increasing temperatures or changes in rainfall patterns.
- Suggested topics include (but not limited to) agriculture, water resources, health, urban development and transport sectors.

## 2. Practices that promote climate resilience and empowerment of women, children and youth

- Local climate change adaptation practices that specifically enhance livelihoods of women, children and/or youth, or reduce their vulnerability to climate change.
- Examples of practices that can be used or developed further for increasing women, youth, and children's resilience to climate change and extreme events.

# Selection Criteria

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- Presentation
  - well written, with graphics, clearly described
- Relevance
  - Aligned with the themes, addresses climate change adaptation, appropriate for local communities
- Content
  - Innovation, replicable, gender and vulnerable group dimensions addressed



# Result of short-listing

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- 20 total submissions received
- 11 selected and 1 sample for display at the conference
  - 6 for indigenous and traditional adaptation practices
  - 6 on climate resilience and empowering women, children and youth
- 5 places were allocated for the authors of the best submissions to make a presentation.



# Cases short-listing

1. Conserving bamboo forest and thatch meadows for indigenous people to adapt to climate change

2. Rainwater harvesting formulization in rural Cambodia

3. Local chicken farming technique to adapt to climate change

4. Sustainable hygienic and resource efficient solar dryers for CHANHOAN fishery community in Kampot province

5. Transferring agro-ecology skills to young women and men in North West Cambodia

6. Regeneration of mangroves as an adaptation measure benefitting women and youth in Trapeang Sengae fisheries community

7. Utilization of upland water springs for dry season rice farming by Charay minority ethnic group in DAL VEAL VENG village of Ratanakiri

8. Growing animal forage to adapt to climate change in Punleak village, Tboung Khmum

9. Adopting shorter season rice varieties to adapt to climate change

10. Mainstreaming climate change into university curriculum and student practicums in the community

11. Multi-crop farming systems using biomass waste in the Prey Thom village, Kampot



# Posters:

National Council for Sustainable Development

### LOCAL CHICKEN FARMING TECHNIQUE TO ADAPT TO CLIMATE CHANGE


**• A local chicken farming technique adopted by the communities on Koulean mountain, Koulean commune, Svay Leu District, Siem Reap Province has become the third most important source of income for villagers after rice and cashew nut farming.**

**• Almost 60% of households who joined the project earned additional income from the local chicken farming practice. Each household can collect their chicken for sale at 3-4 times per year at average income of 62.75US\$ per time. There is a good market for local chicken, middle men come to buy at village at 3-3.5US\$/kg for supplying to markets in Siem Reap town.**


**• Under this technique, chickens are grown and fed in cages. The cages for keeping chickens are 2x3m. In addition, a closed in area for chickens to walk and feed is built with a minimum size of 10x10m. Cages are placed in an appropriate area such as the backyard or under trees. Cages are made from small pieces of wood from the community forest with a height of 1.5-2.0m.**

**• With this technique, chickens grow faster being ready for sale after 3-4 months only, depending on the care given (such as vaccinating) and giving the right amount of food and water.**

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Forest protected community on Koulean mountain in Koulean commune, Svay Leu District, Siem Reap Province.



**• 60% of families as project beneficiaries practice this adaptation with technique with support from a project.**

**• Changing of rainfall, higher temperatures, and drought associated with climate change has reduced production from conventional local cropping and livestock, including conventional local chicken-raising.**

**• Chicken diseases normally happen during the hot months of March and April and at the start of the rainy months in late May and June.**

**• Based on projected climate change trends, raising local chicken in open spaces will become increasingly risky especially during March to June when disease incidence is higher.**

**• Raising local chickens using techniques that reduce risks from heat and disease:**

- Placing in cages in shaded areas
- Using proper vaccination
- Ensuring regular feeding and access to water

**• The technique is also dependent on good forest and tree conservation to provide shade for the chicken pens.**

**• Chicken farming has become a good alternative source of income for villagers to supplement rice and taro that are highly vulnerable to dry conditions.**



**• The average annual income per household from selling chicken is 225-300US\$.**

**• This technique requires some extraction of small trees from the community forest. A study on sustainable levels of extraction of these small trees is needed to mitigate this risk of over-exploitation.**

**• This practice needs support from agriculture specialists and local authorities to ensure villagers understand the importance of keeping the chickens in pens, using proper feed, and other techniques to reduce disease risk.**

**• The average expense for this local chicken farming technique is about 100US\$.**

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### SUSTAINABLE, HYGIENIC, AND RESOURCE EFFICIENT SOLAR DRYERS FOR CHANHOAN FISHERY COMMUNITY IN KAMPOT PROVINCE

**• Fisheries and agriculture are two industries known to contribute the most to the Gross Domestic Product and balance of trade.**

**• One of the oldest techniques employed for processing dried agricultural and fish products is open sun drying.**

**• However, it is considered the least efficient in terms of processing time and weight loss of the end product, and the least safe as the products are exposed to various contaminants.**

**• ASSIST seek to improve the practice of drying agricultural produce and fish products by the installation of a pilot solar dryer in Chanhoan Fishery Community, Kampot province.**

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Chanhoan Fishery Community is located in Kampot province. It is composed of around 10 families.



**• ASSIST ASIA. Phone: +855 (0) 10 690 498. Email: Mathus@assistasia.org**

**• Chanhoan Fishery Community is led by a woman, Ms Chey Sopha. She is managing the Solar Dryer by herself with the help of her family. She provides a service to other families to dry shrimps and fishes. Around 10 families from the neighborhood are using this technology.**

**• She has been using this drier since 2013. Such driers are rare in Cambodia - only 4 other solar dryers have been found in the whole country.**

**• Climate change has affected both fishing and farming activities, essential to Chanhoan Fishery Community as they are mostly drying shrimps and fishes.**

**• Frequent heavy rain and storms but also long drought periods in recent years have led to difficulties using the ancient technique of open sun drying.**

**• Thanks to the Solar Dryer, the community can tackle Climate Change issues, increase product's quality and limit post-harvest losses.**

**• The pilot solar drier improves performance of drying and the quality of the product by drying more quickly and in more hygienic conditions than conventional open sun drying.**

**• Successful implementation of this project encourages the installation of solar dryers for SMEs at the community level. This practice also aims at empowering women as the community is led by women.**

**• By improving the process and preventing post-harvest loss, this initiative helps the community to reduce costs, generate more earnings, and eventually grow their businesses.**

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**• It enhances the quality and global marketability of the dried products, providing the local industry great opportunities for export. In the long-term, this kind of practice could create more jobs and help uplift the lives of people in the community.**

**• It creates a venue for collaboration and women empowerment, within the community and between the small investors and cooperatives, moving towards more sustainable growth.**

**• To extend these benefits to other communities, Chanhoan Fishery Community could act as an ambassador to demonstrate to other communities that the solar drier is efficient both environmentally and economically.**

**• Initial financial investment is the main limitation of such a solar drier.**

**• Chanhoan Fishery Community was equipped with their solar drier as part of a funded project, a Public-Private Partnership between the German Government and Bayer, a Global enterprise with core competencies in the fields of health care, nutrition and high-tech materials. This project was implemented by the capacity building organization, ASSIST.**

**• Higher than 10,000 US\$**

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### CONSERVING BAMBOO FOREST AND THATCH MEADOWS FOR INDIGENOUS PEOPLE (BUNONG) TO ADAPT TO CLIMATE CHANGE

**• The Bunong are an aboriginal Cambodian minority ethnic group, living primarily in Mondulkiri province. They are the largest indigenous highland ethnic group in Cambodia with their own language called Phnong.**

**• Bunong people traditionally build turtle shell-shaped house made with a bamboo structure and thatch roofing although there is plenty of hardwood available.**

**• Often, the settlements are on upper slopes far from their farming areas and gardens which are on the lowest slopes of the hills and close to streams. For convenience of watering crops and animals, Traditionally, they also build a farm-house which is made of a stronger wood structure, completely different from village turtle shell-shaped house.**

**• Bunong are traditionally mobile people due to their farming practices, and bamboo and thatch are ideal materials for house building because they are of light construction and with easy access of bamboo and thatch they can rebuild in fast way.**

**• Traditionally most of the Bunong villages are located near to bamboo forests.**

**• Their wooden farm houses on lower slopes near water-stream, are often swept away by flash-floods, and this experience of disasters has led to the traditional practice it is more adaptive to build a light-structure house.**

**• The use of bamboo and thatch is an adaptation to the local environment giving them greater resilience to climate change and disaster risk reduction.**

**• Bamboo forest and thatch meadow are important for Bunong people and they traditionally see the value and the need to manage the resource sustainably and protect it.**

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Mondulkiri province

**• Name: Kat Bun Heng. Sex: Male. Phone: 012 974228. Email: kat.bunheng@gmail.com**

**• The conservation of bamboo forest and meadows has never been formal but has relied on traditional practice from ancient times.**

**• The Bunong people understand how to extract bamboo stalks and bamboo shoots in a sustainable way and thatch is harvested at certain times of the year.**

**• The sustainable use involves the whole community. Elderly people would have a say on how and how much bamboo stalks can be harvested while women know what is the best time to harvest thatch for roofing their houses.**

**• Currently, bamboo forest conservation may be part of Community Forests or CPA for protected forest under the law, but because of its importance to indigenous peoples, the conservation of bamboo forest and meadows should be reflected as a separate ecosystem at the formal and legal level.**

**• So far, there is no formal research or study on how meadows or fallow hill land benefits indigenous people or their ecosystem. Meadows play a vital role in the context of climate change, and local indigenous knowledge shows that meadows (long thatch) can protect slopes from erosion and land slides.**

**• Bamboo forest and meadows are one of the traditional resources for indigenous people to adapt to their environment and the increased risks of disaster due to climate change.**

**• Indigenous people in Mondulkiri choose their farm where bamboo forest can be a natural fence protecting their crops from storm or strong wind.**

**• The knowledge of sustainable management of bamboo forest and meadow protection is in decline due to expansion of commercial farming, even among indigenous people.**

**• The degradation of bamboo forests and meadows will eventually lead to more frequent disasters such as soil erosion and land slides in the future.**

**• Formal conservation measures will allow bamboo forest and meadows to regenerate naturally.**

**• This can provide indigenous people with bamboo and thatch for housing and other daily use. These are critical resources for them to adapt to climate change.**

**• Loss of bamboo and thatch resources dramatically reduces their capacity to adapt to climate change.**


**• Formal conservation of bamboo forest and thatch meadows can assist indigenous people including women to be able to adapt to climate change and disaster.**

**• Bamboo shoots are also collected from the forest as a food-source for indigenous people.**

**• There are no legally designated bamboo forest areas or protected meadows and meadows areas.**

**• 1001 to 10,000 US\$**

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### ADAPTATION OF TRADITIONAL RAISING OF GREEN MUSSELS IN COASTAL COMMUNITIES IN KOH KONG PROVINCE

**• Green mussel (Perna viridis) farming in Koh Kong Province has emerged as a sustainable income alternative after the collapse of shrimp farming.**

**• About 80% of households in the commune raise green mussels in the rich mangrove area due to its high potential for this activity.**

**• This activity alone accounts for almost 80% of the fishing household's annual income**

**• Production area: 0.5-1 ha of the mangrove areas salty creeks. Fishers plant trees throughout the areas with a spacing of about 5m between pillars.**

**• Cultivation period: 12 months. Yields around 10-15 tons/ha.**

**• Market: Thailand. Price: 2,000 Riel (about 0.5US\$) per kg.**

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Peam Krasop - a coastal commune in Koh Kong Province, comprising 3 villages.



**• 330 households in Peam Krasop that depend mainly on fishing with some farming, animal raising, small trade and working as labourers.**

**• In the last few years, fishermen have noticed a dramatic decrease in green mussels harvesting compared with earlier years.**

**• Some problems in production during the rainy season from June to August but increasingly in the last few years, green mussels started to die in November, when there is no rain.**

**• Reason for this fall in production is not known but, some fishermen reported that monsoon rains in recent years have been longer than normal, accompanied by higher temperatures.**

**• Innovative ways fishers coped with climate variability, and seasonal changes in temperature and rainfall, started to grow green mussel in deeper areas so the cultivars can be protected from high temperatures and freshwater intrusion.**

**• Some local producers have been trying to find places with 10-15 meters depth to raise green mussels, in order to reduce risk associated with any environmental variability.**

**• Allows fishermen to earn more income: annual income from green mussel raising for fishermen with one hectare of mussel pillars is about 6-8,000 US\$ a year.**

**• Provides alternatives to fishing and farming**

**• Based on local knowledge and so adaptation can be easily made by those in the local area.**

**• Most of fishermen do not have ownership rights over the areas where they are growing mussels.**

**• Increased population and development in the area is likely to increase competition for creek areas.**

**• Solution: local and provincial government need to work with local community to ensure continued access to this livelihood activity.**

**• 1001 to 10,000 US\$**

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# Top 5 selection

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## Indigenous/Traditional Practices

1. Conserving bamboo forest and thatch meadows for indigenous people to adapt to climate change
2. Rainwater harvesting formulization in rural Cambodia
3. Local chicken farming technique to adapt to climate change
4. Utilization of upland water springs for dry season rice farming by Charay minority ethnic group in DAL VEAL VENG village of Ratanakiri Province

## Practices that Promote Climate Resilience and Empowerment of Women or Children/Youth

5. Sustainable hygienic and resource efficient solar dryers for CHANHOAN fishery community in Kampot Province



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# Thank you!



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