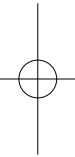


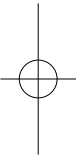


Foreword

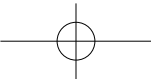
The International Partnership for the Satoyama Initiative (IPSI) Secretariat and Fukui Prefectural Government organise a two-day poster session during the Fourth Global Conference for IPSI (IPSI-4), parallel to the Assembly and Public Forum (13-14 September 2013).



The poster session provides an opportunity for interaction among IPSI members, practitioners and researchers. It also lets members present and demonstrates their experiences, as well as other new applications, innovative approaches and/or novel work-in-progress, while also receiving valuable feedback.



Taking the opportunity to facilitate this session, this booklet has been compiled by the staff of the United Nations University Institute of Advanced Studies as the Secretariat of the IPSI in close consultation with the authors of posters.



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1

The Collaborative Efforts of Aichi Prefecture Aiming at “Coexistence between People and Nature”

Aichi Prefectural Government

In March 2013, Aichi Prefecture revised the biodiversity strategy and named it the ‘Aichi Biodiversity Strategy 2020’ towards achieving the CBD’s Aichi Biodiversity Targets.

In this strategy, we set the goal of ‘realizing coexistence between people and nature’. The most important thing is the creation of ecological networks through collaboration with various stakeholders such as local administration, companies, universities and NPOs.

Aichi Prefecture is characterized by a variety of social environments, including those involving ecosystems, culture, and history.

Therefore, we are promoting the establishment of ecological networks within our nine sub-regions.

When we collaborate with various stakeholders, we share goals using potential maps. These are the first such maps in Japan and show the potential of wildlife habitats.

In each area, we recruit people who agree on the establishment of an ecological networks council. Subsequent to that, the members of the council adopt a slogan and promote the creation of ecological networks.

For example, there is a 100 meter wide and 10 km long greenbelt in the coastal area. Through collaboration with 11 companies, we are encouraging the remodeling of the greenbelt and surroundings to allow it to become a suitable habitat. Students participate in this effort and disseminate information via free magazines. They collect material and edit the magazine on their own.

Moreover, using a development project, we are calling on developers to take mitigation actions. Basically, the impact on the natural environment should be avoided, minimized, or compensated by developers in the development area. However, when developers cannot take the compensatory actions within the development area, they can use other land that is provided for free, in collaboration with others, to create ecological networks.

We feel that considering native ecosystems results in the rediscovery of local culture and history, along with enhanced attachment to the places in which people live. In other words, it is the restoration of community.

2

The Role of The Business Sector for The CONSERVATION AND WISE USE OF NATURE RESOURCES

Aleph Inc.

Three natural rice paddy methods: Aleph Inc. serves 6,000 tons of rice per year at its restaurants, and has implemented three rice-farming projects that enable sustainable procurement.

Reducing agrochemical use: Aleph's unique project, called "Less Agrochemical Rice" (*Shou-nou-yaku-mai*) has set up since 1996, which is about private-label rice produced with only one application of herbicide and no other chemicals. In line with Aleph's specifications, farmers are encouraged to use organic fertilizer around 80% of the time. Since 2006, Aleph has been able to serve this rice in all "*Bikkuri Donkey*" restaurants.

Activities of "Fuyumizu-tambo" (winter-flooded rice paddies) project:

The demonstration paddy in Eniwa City / Hokkaido project with farmers:

Aleph has established 1,000 square meters of winter-flooded rice paddies in Hokkaido. This method keeps paddies flooded and left as wetlands until the spring rather than letting them dry out in the post-harvest season. Winter flooding acts as a substitute fertilizer, and controls weeds and pests through increasing the number of sludge worms and other species. Aleph's employees and local people have participated in monitoring farm activities like seeding, transplanting and harvesting.

With the collaboration of some farmers, we have examined whether this method is really possible in Hokkaido, the northernmost area of Japan. Drawing on these experiences, we have gained results, for example, the effects of biotope at the water entrance, raising the water temperature by 1 degree Celsius and helping the growth process.

The "Living-Things-Friendly Rice Paddies" project with contracted farmers:

In 2009, we launched this project, which was derived from two other projects. The key guidelines are to ensure "production with environmental concerns about rice paddies and living things: such as irrigation in winter, biotopes, passages for fish", "the monitoring of living things" and "production without agrochemicals and chemical fertilizers".

In 2011, the farming area was expanded to 100 hectares (10% of our current procurement volume) and has begun serving its rice in 400 million dishes at 22 "*Bikkuri Donkey*" restaurants in 2012. Naturally these activities are for the preservation of biodiversity by secondary nature also becoming fundamental in maintaining the scenic countryside environment of the rice fields. Therefore, these efforts help to conserve socio-ecological production landscapes.

3

Local community initiatives in biodiversity conservation by the management and conservation of a sacred forest in Kathmandu Valley, Nepal

Amrit Campus, Institute of Science & Technology, Tribhuvan University

In Nepal, sacred landscapes represent an important long-held tradition of conserving specific land areas and have received considerable attention in conserving biodiversity from a sociological, cultural and religious perspective. As shown in many parts of the world, the fate of Nepalese biodiversity is also believed to depend on the conservation practices performed in forest remnants in human-made landscapes. The deeply rooted religious and cultural beliefs, related to Hindu and Buddhist religions in Nepal, have encouraged people to establish and protect small patches of forest, dedicated to god, around the temple. This practice has begun the conservation and management of sacred forest and ultimately leads towards the conservation of biodiversity. One of these good conservation practices is demonstrated by Bajrabarahi Sacred forest, which has been managed and conserved by the local community. The sacred forest belongs to Bajrabarahi Temple located 12km south of the valley, in Lalitpur District, and has 160 plant species and 48 bird species in a small area of 18.29ha. Although sacred forests have proved to be important for biodiversity conservation in Nepal, the landscape that surrounds them has a vital influence on biodiversity within them. Despite being close to settlements and surrounded by agricultural fields, the local communities have successfully conserved and managed the forest with the help of a local organization belonging to the same Newar community. The sacred forest has provided a success story of conserving local biodiversity and is benefitting the local community by providing a number of ecosystem services such as: Cultural services - providing spiritual values attached to this sacred grove and the aesthetic beauty of landscape; Regulating services - regulation of local climate, removal of pollutants; Provisioning services - permanent sources of water; Supporting services - indirect benefit to people but essential to the functioning of ecosystems and therefore indirectly responsible for all other services, for example the formation of soils and processes of plant growth.

4

Promoting conservation of Satoyama Landscapes through innovative mechanisms in the Sahyadri-Konkan Corridor, North Western Ghats, India

Applied Environmental Research Foundation (AERF), India

The **Sahyadri-Konkan Corridor** (SKC) is one of the five major corridors within the Western Ghats, a global biodiversity hotspot. The SKC is the most fragmented of the five major corridors, and has a sparse protected area network. Though the landscapes within SKC boast of rich biodiversity on account of wide presence of community managed sacred groves and vast tracts of private forests, they face ever growing threats through proposed environmentally insensitive development projects and deforestation. There are important similarities in features, aspects and threats between the **Satoyama Landscapes** and mosaic landscapes from the project region from the SKC. In order to address these challenges and for effective conservation of Satoyama Landscapes, the proposed project aims to develop and test different models and mechanisms for participatory management of habitats outside protected areas. These models use incentive based mechanisms and market based approaches whereby local communities commit to implement conservation measures in exchange for development or social benefits and for creating a conducive environment for private sector investment for biodiversity conservation. Since a majority of the habitats fall outside the existing PA network, the project focuses on using the Conservation Agreement Model and concept of private reserves to enhance the connectivity of habitat bordering and outside the Sahyadri Tiger Reserve and Amboli Reserve Forest. The project activities focus on a) testing opportunities for leveraging financial support for conservation, community and private reserves from public and private sector sources, b) promoting financial incentives for local communities to manage natural ecosystems sustainably; c) developing value chains for naturally sourced products, to expand the economic value of forests for local communities and connect them with green economies. The project wishes to exploit vast untapped potential of nature based solutions in providing opportunities for inclusive growth by using the following innovative mechanisms and approaches: a) scaling up the successful incentive based conservation approach; b) promoting sustainable collection of selected medicinal plants using the protocol of certification schemes such as FAIRWILD; c) pilot testing the establishment of private reserves to showcase a model of conservation approved by the local community; d) pilot testing innovative financial mechanisms through establishment of a conservation trust fund for ensuring financial sustainability of conservation initiatives.

5

Traditional Knowledge and Transformative Learning on socio-ecological production landscapes in the Andes

Association for Nature and Sustainable Development (ANDES)

South-South exchanges offer innovative frameworks for advancing cooperative learning and discovery about socio-ecological production landscapes and seascapes for the benefit of biodiversity and human well-being. Such frameworks are vehicles of capacity enhancement aimed at transferring knowledge to and between practitioners and researchers, and leveraging social capital for sustainable development with indigenous knowledge, and ICTs.

The purpose of this poster is to present Asociación ANDES' work in the Peruvian Andes in fostering a creative South-South exchange program with the following objectives: (i) to adapt, integrate and scale-up best practices and lessons learned from the Potato Park experience into socio-ecological production landscape practices and policies being implemented by other indigenous and local communities around the world; (ii) to establish indigenous knowledge and cooperative learning partnerships to strengthen South-South dialogue and technical cooperation, as well as dialogue with scientists, academics and policy makers from the global north; and (iii) to promote the bridging of traditional knowledge systems and modern scientific knowledge using ICT's which are supportive of alternative literacies and traditional knowledge transmission.

This poster presentation envisions the use of expressions of traditional Andean indigenous culture, such as textiles and pre-Hispanic iconography, and representations of ANDES' experiences, innovative approaches and work-in-progress. The intent is to offer IPSI members, practitioners and researchers attending the IPSI-4 Poster Session a cultural setting that can stimulate discussion on how traditional knowledge is used to maintain traditional Andean socio-ecological landscapes and how the bridging of diverse knowledge systems through South-South cooperation results in the creation of new knowledge, exploration of solutions to local and global problems, and development of networks for social change.

6

Community wetland conservation at Lake Bosumtwi, Ghana.*A Rocha Ghana*

Lake Bosumtwi is Ghana's only natural lake and one of the six major meteoric lakes in the world. The lake, which is circular in shape with a rim diameter of 10.5 km, has no outlet but is drained by four major streams and is believed to be 1.7 million years old. The lake basin has a unique flora and fauna biodiversity with a combination of a forest and a wetland ecosystem. With 11 known fish species, the area is of high national and global biodiversity significance with a high degree of endemism among the cichlids (e.g. *Hemichromis frempongi* and *Tilapia busunama*). The effects of climate change and anthropogenic activities such as farming, fishing and infrastructural development in the catchment area are contributing to the drastic reduction in the water level of the lake, habitat destruction and increased pollution in the Lake Basin with ripple effects on biodiversity and food security.

As part of efforts to curb these threats, improve biodiversity conservation as well as enhance the livelihood of local communities fringing the lake, A Rocha Ghana with funding from UNESCO undertook a project on "achieving conservation and improving livelihoods through sustainable management of Lake Bosomtwe basin resources" as part of biosphere creation around the lake basin. The project trained 954 local communities in four conservation based alternative livelihood ventures namely: bee keeping, grass cutter, snail farming and mushroom farming. This was interspersed with conservation education and awareness creation.

The outcome of the project saw 200 beneficiaries receiving start up materials to establish small scale enterprises in these four ventures. Two demonstration centres have also been built to provide technical support to beneficiaries for sustainability of the project. A revolving fund scheme has also been initiated to enable beneficiaries to access more capital resources to either establish or expand their businesses. A Rocha Ghana is also using its experience and market based networks to provide avenues where products can be traded at moderate but profitable rates. The impact of the project is an increased awareness of anthropogenic threats to the lake basin and its resources, improved livelihood for rural communities and community led conservation actions such as reduced pollution.

7

How Can Paper Contribute to Society?

Chuetsu Pulp & Paper Co.,Ltd.

The spread of abandoned bamboo forests is becoming a major environmental issue in Japan. To help solve this problem, it is important to create a larger consumption of bamboo.

Chuetsu Pulp & Paper is the only company manufacturing “Takegami” paper in Japan, which is made from 100% domestic bamboo.

Utilizing bamboo in Japan will protect the Satoyama forests or woodlands, especially ones nearby residential areas, and conserve biodiversity as well as revitalize the local economy.

Through the core business of paper making, Chuetsu Pulp & Paper helps to solve challenging social problems.

8

Influence of Temporal / Spatial Variability on Agricultural biodiversity of Jhelum Potwar Region-Punjab-Pakistan

Centre for Integrated Mountain Research (CIMR), University of the Punjab, Lahore

Jhelum District extends over 3587 km² of Piedmont Plains, River Plains, Loess Plains and Weathered Rock Plains. The area receives moisture from tube-wells, precipitation and seasonal flooding of Jhelum River. The climate of the area ranges from semi-arid to sub-humid sub-tropical and sub-mountainous with hot summers and severe winters. The rains are erratic and fall in two seasons. Soil and Land Use maps of 1967 and 2011 were used to identify the past and present soil and agricultural biodiversity while satellite images were used for change detection in vegetation cover. Keeping in view the area ecosystem and the maintenance of biodiversity in future, the area is divided in five zones. The 1st Zone comprises Old river terrace, Sub-recent and Recent floodplains irrigated by tube-wells. It is moderately deep, well drained with silty and loamy soils. The 2nd Zone mainly is constituted of Piedmont Plains, Loess Plains and Weathered Rock Plains. The soils are moderately to well drained, silty, loamy and clayey. The 3rd Zone covers Active floodplains along Jhelum River. A salt affected area covers severely saline soils, which are mainly uncultivated. However, low levels of patchy vegetation grown on these soils are used for very poor grazing. Natural vegetation of the area has been decreased due to climate change or has been cleared over most of the level parts of the area to make place for arable cultivation. The uncultivable low-quality soil material supports remnants of the original natural vegetation of the area. Uncontrolled grazing and cutting has considerably deteriorated the density and quality of vegetation. Some of these areas are partly protected. The main species in this area are *Olea cuspidate*, *Zizyphus Jujuba*, *Acacia Arabica*, *Acaci fornesiaria*, *Acacia modesta*, *Salvadora cleoides*, *Capparis aphylla*, *Phoenix dactylitera*, *Ficus glonerate*, *Dalbergia sisso*. Shrubs and forbs *Zizyphus nummularia*, *Gymnosporia rogleana*, *Perganum harmala*, *Malva sylvestris*, *odalties corniculata*, *Ceranium*, *Dodonea viscose*, *Sophora mollies*, *Asphodelus tenuifolius*, *Carthamus oxyacantha*, *Calotropis, procera*, *Plectranthus rugosus*, *Bocrhacia diffusa*, *Capparis aphylla*, *Saccarum munja*. *Cynodon dactylon*, *Eleusine flagllifera*, *Eragrostis cynosuroides*, *Cyperus eleusinoides*, *Cymbopogon Jawaraneousa*, *Aristida depressa*, *Cenchrus ciliaris*, *Dincanthium annulatum*.

Investigations have revealed that most of the area has a very low potential for agricultural development on account of a lack of moisture. A great variation has also

been observed in soil properties and vegetation cover due to variable environmental conditions. The precise magnitude of the problem needs to be determined and its effects on the economy, community as well as environment have to be identified and quantified.

9

Actions being taken towards conservation of sustainable human-influenced natural environments in Nagoya*City of Nagoya*

In the city of Nagoya, Japan, since about 1965, natural environments such as green spaces have been lost due to rapid urbanization, and the remaining green spaces have been still decreasing. However, considering the fact that nearly 6,000 species of plants and animals are still found in the city area, Nagoya believes it is still important to conserve, restore (where possible) and sustainably use the remaining human-influenced natural environments such as reservoirs, rice paddies, parks and groves at shrines and temples.

In Nagoya, spurred by hosting COP10 (Tenth meeting of the Conference of the Parties to the Convention on Biological Diversity) in October 2010, there has been a growth in activities by citizens and community groups to conserve local natural environments.

To continue and develop these activities in cooperation with citizens and pass down inventory of local biodiversity to the next generations, the Nagoya Biodiversity Center was founded in September 2011. Since then, as a hub to promote local actions towards conservation of natural environments, researches on local flora and fauna, and conservation activities have been carried out in collaboration with local citizens.




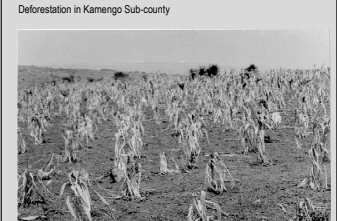

Referring to the center's operation system, while the center's Advisory Board provides advice on its operations and activities, the Nagoya Biodiversity Conservation Activity Council, consisting of citizen groups, individuals and the City of Nagoya, carries out surveys on local plants and animals, and conservation activities, in corporation with the center. Thus, the operation system is arranged in order to effectively advance local actions to conserve the city's human-influenced natural environments, and it is functioning through collaboration among citizens, experts and the city government.

Surveys and conservation activities being carried out at the center include a variety of activities such as surveys at Atsuta Jingu Shrine, measures against invasive alien species, draining of reservoirs, and citywide surveys of animals. In addition, the center is also working hard to provide citizens with information and knowledge about local plants and animals acquired over the course of its surveys and conservation activities, by means of newsletters, Red List / Red Data Book, events and briefing sessions.

10

A Community Based Project to Protect and Restore Katabalalu Forest in Mpigi District

Civil Society Organizations' Network for sustainable agriculture and Environment in East Africa (CISONET)

<p>BACKGROUND</p> <p>CISONET intends to contribute to forestry restorations in parts of central Uganda which have undergone severe deforestation. Most forests in Mpigi for example Katabalalu forest provides a unique sanctuary for a remarkable diversity of endemic plants, birds and insects. Katabalalu forest reserve also provides a habitat for many species of plants and animals whose economic importance is unknown, which would then be lost with complete destruction of the forest. It is an important watershed for rivers that flow into Lake Victoria. The forest is also invaluable to the people living around it, many of whom depend on it for timber, fuel wood, herbal medicines, building materials and food. The Katabalalu Forest is also important to the local community for a number of ceremonies and religious practices. Unfortunately, this valuable and unique forest is highly threatened due to encroachment for new land for agriculture and settlement and over-harvesting of forest resources. Most of the forest has been lost over the past 50 years. One of the districts which have experienced deforestation is Mpigi district in central Uganda. The forests reserves like Katabalalu are threatened by illegal activities notably pit sawing, charcoal burning and firewood cutting that has caused deforestation. Clearing for small scale agriculture has threatened the few existing tree stands in forest reserves has greatly declined over the last few years. The current overall national rate of deforestation is estimated at 2% however, Mpigi stands at 32.6% loss and is among the districts with the highest deforestation rates in the country. At the current rates of deforestation, if no action is taken to address the situation, it is anticipated that the forest cover will be completely depleted by the year 2035. There is likely to be shortages of fuel wood and drying up of water sources in the future. Clearing these forests and wetlands will have far reaching impacts on water availability thus increasing the susceptibility of communities to the impacts of climate change. Furthermore, the district revenues from forestry are likely to decline greatly with the decreasing forest cover. Although the government has put in place good legal and policy initiatives to halt deforestation such as National Forest Authority (NFA) and National Environment Management Authority (NEMA) they have not been sufficient to halt destruction to forest due to poor implementation and poor inadequate community involvement. Thus there is need for new sustainable Community Based Agroforestry approaches.</p>	 <p>A tree cover damaged in Muduma</p>	 <p>Deforestation in Kamengo Sub-county</p>
	 <p>A Large Expanse of Cleared Forest in Muduma Subcounty</p>	 <p>Effects of Climate Change on a Maize Garden in Mpigi</p>
	 <p>Deforestation effects on river drying in Mpigi district</p>	<p>PROJECT GOAL</p> <p>To contribute to reduction in deforestation of Katabalalu Forest through integrated Community Based Agroforestry Approaches</p>

<p>PROJECT OBJECTIVES</p> <ul style="list-style-type: none"> To build awareness among the local community and school children living in the immediate catchment area of Katabalalu Forests about the importance of the forest biodiversity, its conservation, consequences of its destruction and alternative activities that could reduce pressure on the forest through community-driven environmental and conservation education To promote alternatives to forest-derived fuel wood and fodder, fuel wood energy-saving technologies for the local communities and encourage on-farm forestry To promote alternative non-forest derived income-generating activities for the local communities for women and youth groups. To improve on existing resource management of the forest through inventory and monitoring of selected taxa, land use /land cover trends, reforestation and enhancement of forest protection. To promote integration of improved Agroforestry practices in traditional farming systems in the Katabalalu forest catchment area To adopt proven sustainable agricultural practices that reduces greenhouse gas (GHG) emissions and enhances the effect of natural carbon sinks. To conduct further research and innovation that are essential to invent the necessary adaptation and mitigation solutions 	<p>PRELIMINARY WORK DONE</p> <ul style="list-style-type: none"> Mapping of local partners Conducting meetings with stakeholders Mobilization of the farming community <p>EXPECTED OUTCOMES</p> <ul style="list-style-type: none"> Empowered 5000 rural poor smallholder farmers, women and youth groups to sustainably manage the Natural Resource Decreased land degradation through sustainable Land use management Increased forest cover through the number of trees planted in Katabalalu forest Increased Agroforestry best practices through tree planting campaigns Increased household incomes through best farming techniques Gender mainstreaming through equal participation between men and women Increased availability of other energy source alternatives Reduced negative effects of climate change Effective project of monitoring & Evaluation
<p>PROJECT ACTIVITIES</p> <ul style="list-style-type: none"> Conducting of participatory evaluation meetings Production of monitoring and evaluation reports Conducting of trainings on good Agroforestry practices Establishing of tree and coffee nurseries for accessing seedlings in the farming communities Conducting of trainings on Sustainable Land Use management Training farmers in locally-relevant agricultural practices and technologies which significantly increase carbon sequestration reduce GHG emissions and improve agricultural productivity. Training farmers on how to reduce livestock-related emissions through improved efficiency of grazing systems, manure management, methane capture for biogas production and enhanced feeds and feed additives. To conduct further research and engage in partnership and through participation in various workshops and conferences at all levels 	<p>CONTACT INFORMATION</p> <p>Bukenya Isah Abubakar Plot No 27, Nakasero Road, Kampala P O Box 29578, Kampala Tel: +256-414 234550/+256-706 585605 Fax: +256-414 230740 Email: info@cisonet.org /bukerisa@yahoo.co.uk Website: www.cisonet.org</p>

11

Conflictive Interactions between Forestry Traditional Knowledge of Dong Minority and Modern Policy Interventions in Shangxiang Village: an Actor-oriented Perspective

*Centre of Forestry, Environmental and Resource Policy Study (CFNRPS),
Renmin University of China*

Enormous changes have occurred over the last 60 years in the interrelations of people, communities and forests, for many socio-economic and political reforms have been launched in rural regions since 1949. This poster attempts to demonstrate interactions between forestry traditional knowledge and forest-related policy interventions with actor-oriented approaches using two cases in a Dong minority village called Shangxiang village (SV), a remote mountain village in Hunan Province (湖南省), South China.

SV has abundant forest resources and for hundreds of years has formed traditional knowledge for managing the resources. Villagers depends on live on forests and rice, live in fir wood houses as well as believe in trees and “Fengshui (風水)”. Under industrialization and marketization, national forest-related policies and the traditional forest-related knowledge intertwine in the village.

This poster demonstrates two stories of SV, which are the “protection of Houlong mountain” and the “rebuilding of wood houses following the fire-disaster”, to reveal the interface of differences between modern policy interventions and traditional knowledge for managing and using forest resources and to show the conflicts and compromises among various actors in the processes of interactions between the two kinds of knowledge. When several “forestland tenure reforms” came into force in the village, leaders, general villagers and governmental officials took the measures separately according to their own “project”, “knowledge” and “situation” (power, social network and so on), reaching agreements and compromises which did not entirely match either the national reforms or the customs rules. Similarly, when the county government interfered in the village after a grave fire disaster in March 2012, leaders of the villagers, fire victims, general villagers, active members, governmental officials and external workers employed by the local government had discussions as well as some conflicts regarding the home rebuild project, but finally they offered a higher current cost of timber and house-building (compared with the traditional way) and followed the modern policy arrangement.

This poster summarizes that, under the background of industrialization and marketization, the meanings of trees and mountains for villagers have changed from objects of belief to resources mobilized by politics and then to goods priced by money, so the knowledge for managing forests have also changed. The changes to the customary laws and traditional organizations for forest governance were the result of conflicts and compromises among related actors with various knowledge and goals impacted by the changing meanings of trees and mountains. Modern policy interventions may have conflicts with and squeeze traditional knowledge in community practices. With the increased influence of industrialization and marketization, the forests and mountains may be faced with more powerful interventions that squeeze tradition.

Study on Hani Terraced Field Complex Ecosystem and its Mechanism in Climate Change Adaptation in China

College of Life and Environmental Science, Minzu University

Climate change is one of the greatest challenges with widest scale, most extensive, far-reaching influence humanity confronting with so far. Developing countries with their relatively less advanced capacity building in terms of climate adaptation are tend to be more vulnerable in dealing with negative effects posed by climate change; among which, agricultural ecosystem in minority areas is destined to be the most unstable sector as it is least accessible to modern farming technologies.

Nevertheless, Hani terraced paddy fields agro-ecosystem which have been preserved and managed by local peoples on the basis of traditional agricultural practices and ethnic customary laws have successfully withstood the severest drought of the past 60 years in southwest part of China in 2010, while most part of the regions' agricultural production was devastated by this once-in-a-century severe drought. Hani terraced paddy fields agro-ecosystem stands out as an outstanding example in coping with dramatic climatic disturbances, as it continuously sustained sufficient amount of water storage that guaranteed relatively stable level of production only with slightly decline compare with corresponding periods when environmental conditions were much more favorable.

We conducted an investigation in Yuan Yang County which located in Honghe Prefecture, Yunnan province shortly after the severe drought. The results indicate that the underlying reasons contributed to Hani terraced fields' successfully coping with extreme drought lies in its integrated balanced ecosystem, which is composed by four elemental sub-ecosystems, namely, forests sub-ecosystem, villages sub-ecosystem, terraces sub-ecosystem and rivers sub-ecosystem. The interactions among four sub-ecosystems and their dynamic balanced integration as ecological complexes enable Hani terraces to provide ecological as well as social functions to local peoples.

Our findings also suggest that it is difficult to overemphasize the importance of traditional knowledge and community-based approaches to climatic extremities preparedness and response; the importance to capitalize on, develop, expand and mainstream traditional adaptation measures into formal adaptation strategies; meanwhile, traditional knowledge should be further studied, supported and integrated into future policy making, so as to help to reduce the vulnerability of local society to changes and variations in the climate system.

13

Development of tool for gauging positive activities for and economic valuation of biodiversity / ecosystem services

Conservation International, Institute for Global Environmental Strategies, and CEPA Japan

Biodiversity is largely economic externalities, and development activities consider it only tangentially. However, biodiversity, the renewable natural capital, forms the basis of social development. The idea that environmental concerns can be subordinated to economic growth disregards this fact. To realize sustainable development that harmonizes development and environment, a tool is necessary to visualize the importance, value and state of biodiversity and indicates positive actions for conservation so that every member of society can understand the change in the state of biodiversity and what needs to be done.

We present in the poster the development of the Land Health Index (LHI). The LHI builds on the approach of the Ocean Health Index (OHI; Halpern et al., 2012), in which ideal sustainable states for multiple public goals are defined and models that allow for quantitative evaluation of the current states are provided. We adopt the OHI approach and modify it to fit with terrestrial environments and the scale appropriate for within-country evaluation. The index will be improved iteratively by testing in pilot areas for feasibility of computation and responsiveness to change in key parameters.

The pilot sites will be selected from the list of Key Biodiversity Areas (KBAs) for their strong natural and cultural characteristics to calibrate the evaluation model and to understand the behavior of the model with different levels of data quality. Preliminary results from one of the pilot sites, Yakushima, will be presented.

This is a trans-disciplinary indicator research project. The study focuses on key biodiversity areas or the biodiversity priority areas, but the results will be presented in the unit of municipality to facilitate easier assimilation of the research results into public planning. It is of relevance to the Satoyama Initiative as it will be a measure of the state of sustainable landscapes, not only natural but also production landscapes, and can be used as a tool to induce positive actions towards sustainability.

World Atlas of Mangroves

International Tropical Timber Organization (ITTO)

This Atlas provides the first truly global assessment of the state of the world's mangroves. Written by Dr. Mark Spalding, a leading expert on mangroves with support from more than 100 top international mangrove researchers and organizations, this full colour Atlas contains 60 full-page maps showing locations of all the world's mangroves, hundreds of photographs and illustrations and comprehensive country-by-country assessments of mangroves. The detailed maps and new mangrove area statistics are derived from recent satellite imagery, comprising, the most comprehensive study ever undertaken of these important ecosystems. In addition, these maps also highlight the socio-ecological production areas uniquely established on the transitional border between landscapes and seascapes.

Mangroves are considered both ecologically and from a human perspective. Initial chapters provide a global view, with information on distribution, biogeography, productivity and wider ecology, as well as on human uses, economic values, threats, and approaches for mangrove management. These themes are revisited throughout the regional chapters, where the maps provide a spatial context or starting point for further exploration. The book also presents a wealth of statistics on biodiversity, habitat area, loss and economic value which provide a unique record of mangroves against which future threats and changes can be evaluated. Case studies, written by regional experts provide insights into regional mangrove issues, including ecology, primary and potential productivity, biodiversity, sustainable management and information on present and The World Atlas of Mangroves is the result of a project implemented since 2005 as a joint initiative of the International Tropical Timber Organization (ITTO), the International Society of Mangrove Ecosystems (ISME), the Food and Agriculture Organization of the United Nations (FAO), UNEP-World Conservation Monitoring Centre (UNEP-WCMC), UNESCO-Man and the Biosphere (UNESCO-MAB), UNU-Institute for Water Environment and Health (UNU-INWEH) and The Nature Conservancy (TNC) to revise the World Mangrove Atlas published in 1997 from ITTO and ISME in collaboration with WCMC. The majority of funding was provided by ITTO through a Japanese Government project grant and the project was implemented by ISME.

‘The importance of mangroves is well-known, but never has there been such a comprehensive review of these critical ecosystems. This book should change the way we view, and manage, mangroves for the benefit of coastal peoples and biodiversity world-wide.’

Achim Steiner, Executive Director, United Nations Environment Programme (UNEP)

‘I am pleased that ITTO, ISME, and the other members of this excellent partnership have produced such a magnificent reference book. The World Atlas of Mangroves details an incredible variety of useful information that will be of considerable value to forest researchers, practitioners, and students to learn more about mangrove ecosystems.’

Professor Don K. Lee, President, International Union of Forest Research Organizations (IUFRO)

‘an invaluable sourcebook for any national or international institution concerned or charged with the sustained use and protection of mangroves.’

Professor Eberhard F. Bruenig, International Forestry Review

‘a classic masterpiece. ...a must-have publication for every mangrove ecologist, conservation biologist or policy-maker working within or adjacent to mangrove ecosystems.’

Dr. Farid Dahdouh-Guebas, Human Ecology

15

ITTO/IUCN guidelines for the conservation and sustainable use of biodiversity in tropical timber production forests

International Tropical Timber Organization (ITTO)

The world's ecosystems provide environmental services we simply cannot live without. As an integral part of nature, our fate is tightly linked with biological diversity, i.e. the huge variety of animals, plants and microorganisms that live in mountains, forests, oceans, wetlands and other ecosystems. We rely on this diversity of life to provide us with essentials such as water, food, fuel and medicine. Yet each day an estimated 150 species disappear, many due to human activities. The rate of loss is as much as 1000 times higher than the pre-human, or background, extinction rate. Forests are particularly rich in biodiversity. They harbor an estimated two-thirds of all terrestrial species, as well as a fascinating array of ecological processes. Tropical forests, in particular, are among the most biologically diverse ecosystems on earth.

ITTO has an important role in negotiating 'normative' guidelines that establish best practice in different domains of forestry. In 1993, a set of Guidelines for the Conservation of Biodiversity in Tropical Production Forests was published. These began to be informally reviewed in-depth by ITTO and its partner the International Union for Conservation of Nature - IUCN in 2004 and finally launched in 2008, after being subject to field testing in forest harvesting operations in Indonesia, Cameroon and Brazil.

The Guidelines argue powerfully that small changes to management of production forests could provide a very cost-effective way of meeting biodiversity conservation goals. The message was picked up in the CBD Programme of Work on Forest Biodiversity as a priority. So now it is time to take a look at what has already been achieved and what additional measures are needed to ensure the wider application of the Guidelines. An initial examination of the evidence is encouraging. Although we do not have examples of companies who have followed the Guidelines to the letter there are many examples of their having influenced national policies and industrial practices. The Guidelines emphasize the reality that what you do for biodiversity in a given forest will depend very much upon local circumstances.

The biggest challenge facing tropical developing countries is to maintain their forests

for their global values whilst allowing their use for local development. All of the ITTO Guidelines are excellent sources of information on how this can be achieved and the Biodiversity Guidelines are especially pertinent. This publication, a complete revision and updating of ITTO's original Biodiversity Guidelines published in 1993, sets out the specific actions that policymakers, forest managers and other stakeholders should take to improve biodiversity conservation in tropical production forests.

16

Designing a capacity building programme in *Cuchillas del Toa* Biosphere Reserve, Cuba

Institute for Fundamental Research on Tropical Agriculture (INIFAT)

To understand the development and conservation dynamics of a protected area landscapes is necessary to have human communities linked to this area better prepare for using all the resources presented there. To increase knowledge, participation and collaboration of the multiple actors that get involved there, in one or another way, is very important for the maintenance of the protected area and also that will be useful for the future generations. With the purpose of design a capacity building program in the Cuban Biosphere Reserve *Cuchillas del Toa* that allows to maintain the conservation of the socio-ecological production landscapes with all their key elements, from the point of view of the biodiversity, the production of healthy foods in a sustainable way and the improvement of the livelihood of the residents. Farmers were interviewed, and also authorities of the Cuban governments, some ministries and farmers's ONG at local, provincial and national levels. The main training necessities or topics were identified in the communities linked to this protected area and they were: 1. Soil conservation, 2. Plant protection, 3. Maintenance of forest plantations, 4. Organic fertilizer production, 5. Seed production and conservation, 6. Management practices in mountainous areas, 7. Nurseries development, 8. Foods conservation, 9. Agroecotourism and 10. Certification of local products. The organizations that should be linked to the development of the program are the NGOs: the National Association of Small Farmers (ANAP), National Association of Agricultural and Forest Technicians (ACTAF); national researches centers as Institute of Soils (IS), Agro-forestry Research Institute (IIAAF), the Plant Protection Institute (INISAV) and the National Program of Urban and Suburban Agriculture (PNAU/ASU), between others. This design will be elaborated and implemented as part of the Project UNEP/GEF "Agrobiodiversity Conservation and Man and the Biosphere Reserves in Cuba: Bridging Managed Natural and Landscapes" beginning in Cuba in 2013.

17

Experiences and Knowledge from Implementing Program on Promoting Sustainable Use of Natural Resources through Restoring and Conserving Satoyama in Cambodia

Institute of Environment Rehabilitation and Conservation (ERECON)

The Institute of Environment Rehabilitation and Conservation (ERECON), with financial support from the MITSUI & Co., Ltd. Environment Fund, has been conducting the Program on Promoting Sustainable Use of Natural Resources through Restoring and Conserving Satoyama in Cambodia from October 2010 to September 2013. The program has been collaborated with the Ministry of Environment (MOE), Cambodia, the Royal University of Agriculture (RUA), Cambodia and the United Nations University Institute of Advanced Studies (UNU-IAS). This program aims to restore and conserve Satoyama landscapes for promoting sustainable use and management of natural resources in three regions of Cambodia.

During the program period, workshops and seminars on the Satoyama concept were conducted at six villages and six elementary schools of Kampong Cham, Battambang and Mondulhiri provinces. Moreover, training on surveying natural resources at community level and tree nursery management was conducted. In 2011, natural resources surveys were conducted in three regions to investigate the existing natural resources as well as the degree of its degradation and the natural resource utilization and management of local communities. According to the results of the survey, it was concluded that reforestation needs to be promoted to increase biodiversity in local communities. Thus, materials and knowledge for making tree nurseries were provided to communities in the program areas. Trees from local nurseries were used to restore the degraded natural forest as well as enhance their well being through reforestation activities in three regions. In the last stage of the program, an International Satoyama Symposium will be held in Phnom Penh, Cambodia.

The program helped the villagers in the program areas deepen their awareness of the importance of restoring and conserving Satoyama landscapes through the workshops and seminars. Moreover, the villagers gained more knowledge about seed propagation and nursery management through the training. Reforestation activities in the villages and the elementary schools have succeeded in increasing the number of trees and biodiversity in the areas. Experiences and knowledge from this program are disseminated to raise awareness about natural resources conservation among local people in other areas.

However, more activities should be implemented to restore and conserve Satoyama landscapes. Especially in Mondulhiri, agro-forestry should be introduced to prevent soil erosion as well as decrease the intensity of slash and burn farming practices. In Battambang, low-input agricultural systems should be promoted to decrease the effects of agro-chemicals on the soil and water environment. Additionally in Kampong Cham, effective utilization of natural resources should be promoted, especially focusing on the cyclic use of farm residues.

18

COMMUNITY BASED SUSTAINABLE MANAGAMENT OF PASTORAL ECOSYSTEMS OF MONGOLIA

Case study on the outcomes of research activities and good practices

Environment and Development Association (JASIL)

The introduction part of the poster will highlight JASIL's experience and definitions of pastoral socio-ecological landscapes and ecosystem management approaches, focusing on herders and nomadic livelihood practices, which are a way of life for Mongolians based on traditional common pasture use arrangements.

Part I will illustrate pressures on socio-ecological production landscapes (SEPLs) in pastoral agriculture of Mongolia, such as climatic patterns, human-made commercial pressures, extinction of species, and policy changes concerning pasture land.

Part II will illustrate specifics of study sites and the socio-ecological and economic structure of pastoral communities, outlining traditional movements between seasonal camps, with traditional land use rights for sustainable management of pasture land. Two study sites will be highlighted: *Ikhbulag* community of *Khotont sum*, representing the steppe-forest ecosystem and diverse ecosystem components - forest, mineral water, and wildlife, and *Karatau* community of *Deluin sum* representing the mountain and steppe dry ecosystem, where more degradation of grassland in winter and spring pasture. The profile of socio-ecological production landscapes in selected communities will be described along with analysis of the key components of landscapes by using traditional knowledge, which are objectives of a new proposal for additional study.

The results of community-based pasture management arrangements, where communities define their physical boundaries for pasture by seasons of the year, and by the features of valleys, mountains, and rivers will analyze how socio-ecological boundaries exist within and between communities. In terms of social aspects, important issues include participation, which requires information, decision-making and how equal participation of men and women is needed on pasture ecosystem management.

Part III addresses the collaborative learning activities and assessments of ecosystem changes with pasture monitoring experiments. Results will also be shared of our research work to introduce a novel system of localized weather forecast data delivery

on the specific seasonal locations to community members for improved pasture management and livelihoods.

To achieve sustainable ecosystem management, integrated natural resource management should combine both local participatory evaluations and scientific measurements and data. In the poster, it will be illustrated which methods are used for this purpose.

The last part will describe participatory identified criteria and indicators of resilience of Mongolian pastoral agricultural ecosystems, and outline the period of study, involved institutions and budget.

In the poster presentation policy briefs, procedures, manuals, as well as video records, and hard copies of latest articles will be distributed.

In our Poster, in addition to its abstract, we will assess two Mongolian pasture ecosystems in the context of the five perspectives of the *Satoyama* Initiative. By the Perspective one we will evaluate how herders use pasture land within its carrying capacity, we have on that participatory evaluations and methods of seasonal pasture shifting and rotation.

Perspective two will consider pastoral herders use of animal manure for their cooking, and how they make and use pressed animal fodder by grasses, which is not eatable by animals. Using solar energy also may be included.

By perspective 3, we will evaluate traditional pasture use system by the seasons, and locations and types of animals. Land tenure system will be assessed in this section.

Perspective 4, which we are testing largely with co-management of pasture by involving all primary stakeholders will be evaluated. Here we will assess *hot ail*, *sakhalt ail*, and *neg nutgiinkhan* approaches in nomadic pastoral agriculture, as Mongolian versions of *Satoyama*. But Mongolian versions of “*Satoyama*” will be proposed in our full poster during the meeting.

Perspective 5 will address the meat, wool, cashmere and daily production and participation and gender difference in the pastoral communities in Mongolia.

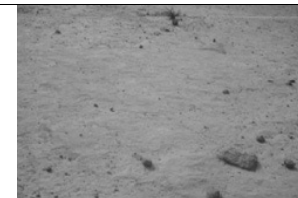
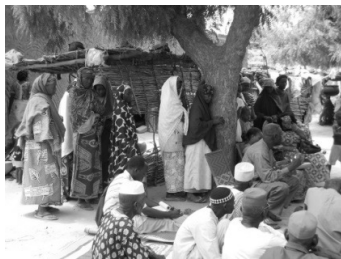
We will also modify more on these perspectives of SI until the Meeting in Japan.

19

The resilience of socio economic landscapes is restored in order to provide food security to the local communities and to enable them to coop with the changing climate in Niger.

Executive Secretariat of National Environmental Council for Sustainable Development (SE/CNEDD)

Land restoration program



Arid Land!!!



ARID LANDS BEING RESTORED AND ABLE TO SUSTAIN AND IMPROVE THE LIVELIHOODS OF THE LOCAL COMMUNITIES

Niger is a landlocked country, with an area of about 1,267,000 sq km; ¾ covered by the Sahara desert; Mean rainfall 300 to 800 mm/year; Temperature ranges between 0°C – 17°C in the Sahara desert while it ranges between 16°C – 45°C in the rest of the country. Due to climate change, the rainfall is sparsely distributed in time and space scale. These situations lead to loss of forest resources, farmlands and grasslands. Lands degradation has weakened the capacity of the local populations to coop with the changing climate. In order to face this situation, Niger republic developed a land restoration program. The aim of this program is to help the local communities develop locally adapted resilience methods in order to resist to harsh climatic conditions.

The approach is participatory and leads the following results:

- ✓ reduction of water run-off on the soils,
- ✓ increase water infiltration
- ✓ increase the production of biomass from 0 to 70%.
- ✓ improve in the farms yields (from 400kg/ha to about 1000 to 1200kg/ha).

Land area restored	Number of working days	socio-economic Impacts
4550 ha	26640	- Increase in the production of grasses for the livestock; - Increase in lands productivity: more food production; - Increase in the revenue of the households

20

Distribution and Conservation of Satoyama Landscapes in Fukui

Fukui Prefectural Government

Seasonal changes in climate forms Fukui Prefecture's landscape as a mosaic of water sources, broad leaf forests, a complex network of waterways, and carefully maintained rice paddies and fields. This also creates a various inhabited by an array of unique flora and fauna and biodiversity.

In order to conserve and utilize the Satoyama of Fukui Prefecture, the Fukui Prefectural Government is working in cooperation with local researchers to examine all parts of the prefecture inhabited by important flora and fauna, especially endangered species inhabit Satoyama landscapes.

Furthermore, in addition to promoting the value of these Satoyama landscapes throughout the prefecture, Fukui has encouraged local to take a leading part in conservation. At present, conservation and revitalization efforts in these areas and all other Satoyama in the region are being undertaken cooperatively and led by local governments, residents, non-profit organizations (NPOs), universities, industry, and other organizations.

Ahupua'a: A Traditional Hawaiian Approach to Satoyama Practices

Hawaii State Department of Agriculture

A poster of Hawaii Department of Agriculture is aimed at being an educational tool providing information on the traditional land management practice known in Hawaii as *ahupua'a*. Similar to the satoyama/satoumi concept, native Hawaiian peoples realized there was a strong connection between people and the land that they were living on. *Ahupua'a* is a land division that stretches from the mountaintop down to the ocean to include the near-shore environment and into the ocean. These *ahupua'a* segments were further broken down into various biological resource zones. These zones were the inland forest zone, the agricultural zone, the coastal zone, and the ocean. These areas in Hawaiian were called *wao nahele*, *wao kanaka*, *kaha kai*, and *kai* respectively. Also, dependent on the location of the *ahupua'a*, there could be the freshwater ecosystem (*kaha wai*) comprised of rivers and ponds. The native Hawaiian people understood that each of these systems was interconnected and that changes in any one of these zones could reverberate and cause changes in surrounding zones. While this traditional and cultural approach to land management existed in the past, it is something that people in Hawaii are beginning to rediscover.

The term *ahupua'a*, and more importantly the concept of sustainable land management that takes into account an integrated land system from the mountain to the sea, is being used in planning documents and public policy documents that are the basis for discussions on potential land use and future development, evidence of the shift towards greater sustainability in terms of responsible land management practices. One such document is the Hawaii 2050 Sustainability Plan, a comprehensive policy document involving extensive input from the community in Hawaii providing a road map for a more sustainable future; incorporating the values and philosophy of the *ahupua'a* system was identified as a goal in providing greater protection for air, land, fresh water, and ocean habitats. It is our hope that through international partnerships like the Satoyama Initiative, we can continue to increase the awareness of the importance of sustainable land management practices as well as increase Hawaii's knowledge through exposure to the successful endeavors of other countries around the world.

Our poster would provide a visual breakdown of the various zones that were recognized through the *ahupua'a* management system as well as explanations of the various zones and the common human practices that occurred in these zones.

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Conservation and Proper Management of Water Resources for Life Sustainability and Abatement of Water problems through Baseline Studies

Hydrology for the Environment, Life and Policy (HELP) Davao Network-1

We are surrounded by the vastness of a splendid creation where all were put together—an immense water resource, breathtaking, lushy, snowcapped and undulating landscapes, and the fresh air that makes us all alive. In a place beautifully crafted and with all that is enough for survival, inhabited with people of different cultural, intellectual and environmental background, what is there to be done?

As we enter the third decade of Integrated Water Resources Management (IWRM) in Davao City, the challenge is how to consolidate the strengths of the sectoral initiatives and harmonize efforts in order to reach greater and long-term goals. These issues have become the focus of Hydrology on Environment, Life and Policy (HELP) Davao, Network to ensure that stakeholders particularly those related to water, connect with science as a proactive tool to protecting our water resources and to ensure its management for all. IWRM has come up with specific guidelines that are useful to people not only in urban areas but also those in rural areas, to properly manage water resources. It seeks to distill new lessons on the use of science in decision-making at policy and programming levels. This is being achieved by enabling dialogue on existing processes, systems and services for water management while governments, academe, corporate, civil society and communities are brought together to work as one. This has been founded not merely to protect the water resources but to mitigate serious problems, being experienced by mankind. These IWRM guidelines are one of the solutions to the frequent flooding problems of Davao during heavy rains that might be caused by improper drainage of water, including where the water should flow and get discharged. In line with this, an intern from Rotterdam University proposed a study on this issue. The creation of a Hydrologic Model as Science Based Decision Tool for Davao City was the objective of the proposal. The study was used as a basis for prioritization of improvements to the damaged and contaminated storm water drainage system or designing short term water retention areas. Mr. Sean Ligvoet, also of Rotterdam University introduced the Vertical Helophyte Filter System Design to meet the need of the waste-water problem which was causing overflows along the roads all over the city due to poor maintenance. The said filter was piloted at the Department of Science and Technology XI laboratory.

The activities successfully carried out using methods that are nature-loving because meeting these needs, we are also protecting the areas that might be the primary thing to be sustained.

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Development and implementation of community-based Water Safety Plans (WSP) for two peri-urban indigenous people (IP) communities in Mindanao, Philippines

Hydrology for Environment Life and Policy, (HELP) Davao Network-2

Water Safety Plan (WSP) is an internationally recognized approach for consistent delivery of safe drinking water, based on Hazard Analysis Critical Control Point (HACCP) principles, and characterized by the development and implementation of control measures to minimize and exclude hazards in water supply systems. Widespread adoption of WSPs by water suppliers, if and when integrated into existing health and environment programs in communities in the context of sustainable development, will contribute to improved public health, poverty reduction and attainment of the Millennium Development Goals (MDGs).

The project (WSP4IP) is a multi-stakeholder partnership between the government, the academe and non-governmental organization.. It entails the development and implementation of community-based WSPs for two indigenous people (IP) communities – one of the *Matigsalug* tribe and the other a composite of the *Manobo*, *Bisaya*, *Ilongo* and other minor peoples in the periphery of *Davao* and *Kidapawan* Cities in *Mindanao*, Philippines. The two participant communities are situated within the *Davao* River Watershed and the *Mt. Apo* Protected Area. They exemplify the marginalized poor with income levels below the annual per capita poverty threshold of the two areas, low literacy rates, and high incidence of water-borne and water-washed diseases.

The two communities have formulated and promulgated general community-based policies for the protection of watersheds and water resources; instituted the Water Safety Teams in *Sitio Upian* and *Barangay Bongolanon*;; and implemented watershed management activities as livelihood (tree planting and parenting, weeding, nursery, maintenance, etc.).

The WSP4IP project builds on and strengthens measures being employed, especially in the community level, to protect existing watersheds and water resources, and ensure the continuous supply of potable water to target communities. A series of trainings, in the local languages of the communities were conducted to enhance local people's capacity to sustain these endeavors and ensure that proper water resources management and sanitation measures are understood and implemented. In addition, the project has developed and implemented a continuing education program on water

safety, sanitation, personal hygiene and watershed management.

Crucial to the success of the project is the multi-stakeholder commitment and support at all levels of the implementation of the project. The project has been successfully implemented and has contributed to the decrease in the rate of waterborne diseases in the community, collection of a minimal amount per household for the operation and maintenance of the source, reservoir and community tap stands has been institutionalized and primarily our watersheds has been protected to ensure water resources security and sustainability for today and tomorrow.

24

Governance Enhancement for Biodiversity Conservation of Himalayan Lakes/Wetlands

International Lake Environment Committee Foundation (ILEC)

Himalayan lakes and wetlands in Nepal, including a number of biodiversity hotspots, are in critical condition and are most severely affected by accelerating climate change. Yet, there is not robust lake/wetland basin governance functioning in this country. To cope with this situation, the International Lake Environment Committee Foundation (ILEC) promotes the Integrated Lake Basin Management (ILBM) to assist local stakeholders in achieving sustainable management of lakes/wetlands and their basins. Good basin management of a lake (and other inland water bodies) can be realized only through ILBM, or continuous improvement of lake basin governance, that integrates Institution, Policy, Participation, Science, Technology and Finance as represented in so-called the Six Pillars of ILBM.

ILEC has two main ILBM focal points in Nepal; one is the National Lake Conservation Development Committee (NLCDC), or a national government organization established in 2006 within the Ministry of Culture, Tourism and Civil Aviation of Nepal, the other is a non-governmental organization, the Conservation Development Foundation (CODEFUND) represented by Dr. Shailendra Pokharel, who also serves for NLCDCS as Program Coordinator. In the last several years, NLCDC, in collaboration with ILEC, has developed conservation management frameworks for the following major Himalayan lakes in Nepal: Lake Phew, Rupa, and Begnas, and prepared Lake Briefs, or a collective action report, for these lakes. They are currently preparing a draft proposal for the Nepal National Lake Strategic Plan, focusing on biodiversity in the Himalayan alpine lakes.

In addition to the above mentioned political/diplomatic support for Nepal, ILEC is also aware of the local needs for environmental education/capacity building, which in turn will contribute to improvement of Himalayan lakes/wetlands conservation in Nepal as a bottom-up initiative. To start with, ILEC is currently proposing a three year project to provide intellectual and technical support for the Wetlands Academy, an environmental education center for lakes and wetlands to be established by CODEFUND by the end of 2013 at the shore of Lake Rupa in Pokhara, Nepal, as well as implementing ILBM in Lake Dipang, which receives much less attention compared to other major Himalayan lakes in Nepal in terms of conservation and governance intervention, despite its impending environmental deterioration and loss of harmonized livelihoods.

In the second and third years of the project, preparation for a Lake Brief of Dipang and national/international ILBM symposium in Kathmandu are also planned to advance the lake basin governance of Nepal, which eventually will grow into an international conservation initiative for Himalayan lakes in the neighboring countries, including those belonging to the South Asian Association for Regional Cooperation (SAARC).

25

Rotational Farming as Sustainable Management of Ecosystem of the Karens in Northern Thailand

Indigenous Knowledge and Peoples Foundation (IKAP)

1.

Thailand comprises of 77 provinces and it has a total population of 62,418,054 people. Indigenous Peoples in Thailand are referred as “hill tribes” and sometimes they are also known as “highland people/communities”. Their population is about 925,825 and they spread across 21 provinces in the north and west. The ten ethnic groups officially recognized as “hill people” living in the north and west of the country are: the Akha, Hmong, H'tin, Karen, Khmu, Lahu, Lisu, Lua, Mien and Mlabri. The Karens are the biggest group with a population of around 411,670.

The production systems of the Karens and many other indigenous communities of South and South East Asia have traditionally been shifting or rotational cultivation and it is still strongly embedded in their collective rights to their ancestral lands and territories and dependence on their traditional knowledge systems which have been meticulously accumulated through centuries of interaction with nature. The philosophy on management of land and forests (territories) of Karen people comes from their elders' wisdom: **Live with the water care for the river, live with the land care for the forest.** It is a production system that physically and culturally integrates forest and agriculture. It provides them with food security and maintains the fertility of the soil through various sustainable cultivation practices that are based on the abundant biodiversity of their landscapes and the self-regulating mechanisms of ecosystem services. It incorporates the continuous adaptation required by the ecosystem. The fields are continuously rotated. For example, rice and other food crops are planted for just one year. However, lands are kept fallow for 6-7 years to allow the regeneration of the soil and land and to bring a balance between land, water and forests. After 6-7 years, the fallow land begins another cycle of farming and thus providing a continuing system of agriculture. The cycle also aids the regeneration of fauna, flora and consequent biodiversity and the conservation of both animals and plants.

Indigenous communities are therefore been able to make use of more than 200 plant species due to the 6 to 10 years of fallow (Anan et al, 2004). The season in which these plants can be harvested differs, so there is always something available right from the beginning of the year to the end. Rotational farming is a secure source of food, to all

family members and at all times. It also gives the communities access to sufficient safe and nutritious food to meet their dietary needs for an active and healthy life.

But misunderstood and criticized as cause of deforestation, and climate change, this continuing prejudice against rotational farming by some academics and authorities/governments has created a negative image of rotational among the public. Furthermore, these understandings and feelings derive from a lack of accurate and/or rational information. They come from repetition of the stereotype until people consider this to be the truth. And government policies on rotational farming create from this prejudice.

2. Annual Cycle of Rotational Agriculture of the Karens

The annual rotational-farming calendar of the Karens begins in early February and it is also the time of their New Year with all its rituals and celebrations. On the day after the New Year ceremony, people go out to search and select a rotational-farming field for their families. They don't just wander around randomly; they have to choose a place that the families had cleared before, perhaps six or seven years earlier by which time the forest would have recovered, so that it can be slashed and cleared once again. While selecting the field, local communities have many prohibitions and practices to observe. The families exchange labour to help each other in land clearing process. Their ancestors have taught them not to cut at the base of trees or bamboo, but to leave tall stumps that will sprout. They do not cut down very big trees with many branches and abundant leaves, even though they would deprive the crops of sunlight. Instead, they prune them, leaving three or four branches at the top of the tree 'as a perch for the scarlet minivet bird'.

The slashed fields are then set on fire around the beginning of April. The whole village turns out to help to prepare the fire breaks, to prevent the fire from spreading beyond the field and into the surrounding fallowed forest. Men carefully clear the fire line and women and children sweep it clean. It is imperative that the whole village help one another and when they burn the fields, everyone has to do it together.

When the April moon dies and the May moon rises, it is time to sow the rice. Before they begin, there is a ritual to be followed. A young man is asked to take a dibbling pole and make some holes in the field. A young woman then drops rice seeds into the holes and cover them, and an adult thereafter recites a prayer. Then, young men and fathers pick up their dibbling poles and begin striking holes in the topsoil. Young women, housewives and children pour the seeds into bamboo cylinders, cups and shoulder bags – a little for each person – and they follow the men, dropping seeds into the holes

and covering them with a sweep of a foot. While they strike holes and sow the seeds, the young men and women chat, tease, flirt and generally have a good time.

At every stage of work in the fields, the women are more closely connected and tied to the work than the men. The working of the soil, looking after and protecting the field, watching closely to see that the food plants germinate and grow well; collecting and saving seeds, planting, and selecting places to plant – all of these things fall within the role of women. They also exchange seeds of food plants between families, between villages and between communities. When people visit other villages and communities, they always wrap up some seeds to take along.

3. Rotational Farming as Mother of Seeds and Plants and as Natural Seeds Bank for Biodiversity.

Rotational farming *enhances* biodiversity in the forests. it is a mother of diverse seeds and plants, therefore, rotational farming has created biodiversity of seeds and plants through the in-situ process. RF does not destroy the forest, but generally improves it. For this reason, unrestricted (by governments and so on) RF is an excellent human survival system.

Rotational Farming produce self-reliance based on yearly consumption of rice and food security in vegetables for the whole year's consumption for local people because in different seasons different types of vegetables and other plant foods are available from RF (and animals are available by traditional traps and so on). Most importantly, we have found that the food produced from this system is valuable for the health. It is extremely healthy food, clean and natural, and better than the 'organic' food and so on that some people search for in the supermarkets.

RF is an agro-biodiversity because a diversity of plants and seeds come from this system. We have found around 207 species in the RF (Ganjanapan et.al, 2004). It is also possible to define this as ancestor heritage of seeds and plants. If we are forced to stop this system, it will also stop the continuity of the diverse ancestor heritage of seeds and plants in the world. Surely this is going in the wrong direction from the maintenance of agro-biodiversity that we require in order to adapt to climate change.

Rotational farming is not only a human food security space, but also a space of food security for animals, both wildlife and domestic animals. It is also not only a food security space, but also the fallow areas are places for revival of numbers of diverse

wildlife during the time when the fallow is regenerating by natural processes. We have found that in some areas in Thailand when the system of rotational farming has disappeared because of the banning of RF by national policy, the number of diverse types of wildlife also decreases.

4. Contribution of Rotational Farming

Rotational Farming/Shifting Cultivation (RF/SC) is a cultural and physical integration of forest and agriculture; it is indigenous agriculture. It is one type of agro-forestry which stresses the connection between the agricultural system and the ecosystem. RF incorporates the dynamics of management and continuous adaptation required by the ecosystem. Therefore, rotational Farming connects between agricultural production and the overall ecosystem and creates the balance of land, water and forest.

The fields become fallow, allowing for the regeneration of the soil and land. The fallow land then begins another cycle of farming, the fallow period promoting rich nutrients and balancing the land, water and forest to provide for a continuing system of agriculture. The cycle aids the regeneration of fauna, flora and consequent biodiversity, conserving both animals and plants. Thus, Indigenous communities in Thailand are able to make use of more than 200 plant species due to the 6 to 10 years of fallow (Anan et al, 2004). Moreover, RF is not a stand-alone system, but is integrated with other systems in the community, such as terraced paddy fields, kitchen gardens, animal husbandry, hunting and gathering, and so on.

Rotational Farming is a major component of the sustainable management of natural resources and is based on self-sufficient production. The products of rotational farming are internally for the main local consumption of the community members. This means this system enhance food sovereignty, sustainable use of local resources, and local biodiversity. Last but not least, rotational farming does not cause of climate change but maintain the balance of the ecosystem, and reduce greenhouse gas (GHG) emissions.

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Indigenous Socio-Ecological Production Landscapes and Climate Change: IPCCCA Local Assessments in Action

Indigenous Peoples' Biocultural Climate Change Assessment Initiative (IPCCCA)

The Indigenous Peoples' Biocultural Climate Change Assessment Initiative (IPCCCA) is an indigenous led initiative that has emerged as an innovative response to climate change adaptation and mitigation challenges in indigenous landscapes and environments. It brings together indigenous knowledge and science in a process that links biocultural realities with complex global processes. The IPCCCA uses biocultural methods and tools to involve communities from around the world in the assessment of climate change, local well-being, and the development of evidence-based responses for climate change adaptation. IPCCCA believes that indigenous adaptation processes must continue nurturing biocultural diversity in order to build resilience and better respond and adapt to the changes we face.

To this effect, the IPCCCA helps indigenous communities living in varied ecosystems around the world by: (i) providing support to indigenous peoples to carry out indigenous knowledge-led ground-level enquiries of conditions and trends, and to develop adaptation strategies, (ii) improving the resilience of communities by increasing their adaptive capacity and reducing vulnerability to the adverse effects of climate change risks; and; (iii) providing peoples-led policy lessons and mainstream local responses within national and international processes.

The poster will present and demonstrate how communities implement the Local Assessments, encourage biocultural diversity, and how through this process **Indigenous Socio-Ecological Production Landscapes are given a new life.** Examples of Assessments that have been implemented in forest, mountains, tundra, savanna, agricultural, island, and other ecosystems will be presented and will highlight how these have created a range of resilience and adaptation strategies that revitalize biodiversity and strengthens local adaptive capacities.

JICA's contribution to the Satoyama Initiative

Japan International Cooperation Agency (JICA)

With the aim of establishing a sustainable society in which human activities co-exist in harmony with the natural ecosystem, the Japan International Cooperation Agency (JICA) is developing protected area management plans in cooperation with governments and citizens in developing countries, setting up survey and monitoring and management systems, providing technical assistance for improving the capabilities of decision makers, administrative officers and researchers, introducing and promoting eco-tourism, and developing and disseminating agricultural technologies that can help strike a balance between the improved productivity and ecosystem conservation. In particular, JICA is prioritizing activities for the conservation of important regions such as Ramsar Convention registered wetlands, national parks and biodiversity hotspots.

JICA is supporting the efforts of developing countries to contribute to achieving the world's goals for conserving biodiversity. These goals were set by the Aichi Biodiversity Targets that were adopted at the tenth meeting of the Conference of the Parties to the Convention on Biological Diversity (COP 10) held in Nagoya, Japan in October 2010.

JICA has been supporting the Satoyama Initiative through implementing technical training in Japan, which is called "Promotion of The Satoyama Initiative: Biodiversity conservation and Community Promotion through the sustainable management of natural resources". Learning from case examples of biodiversity conservation and sustainable use of natural resources with broad participation of stakeholders in satoyama in Japan, the course supports participants to utilize the course for rural development in their own countries from the viewpoint of the reconciliation of nature conservation and livelihood promotion. The course contributes to cluster 1: knowledge facilitation and cluster 4: capacity building.

JICA has also been contributing to the Satoyama Initiative through a technical cooperation project with the Chinese government, which supports breeding and protecting Crested Ibis in both Shaanxi and Henan provinces, as well as restoring paddy fields and supporting organic agriculture. The project also includes an environmental education program for elementary school students in order to foster an understanding of the Crested Ibis. The project also has been promoting technical exchange and knowledge sharing between Japan and China based on similar efforts undertaken in each country. The project is in line with IPSI's cluster 4: capacity building and cluster 5: on-the-ground activities.

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Non Profit Cultural Portal Life Beyond Tourism and its Heritage Community – *Where regions discover and present themselves*

Fondazione Romualdo Del Bianco® - Life Beyond Tourism®

What it is : A cultural portal drawing on the vision fostered by the Romualdo Del Bianco Foundation® - Life Beyond Tourism®, of tourism as a strategic opportunity for intercultural dialogue. The initiative is targeted directly at the potential visitors to a place, as an instrument of knowledge. The basic assumption is that the ‘culture’ of an area is the result of the relationship between cultural heritage and historical shifts.

Goal : The portal aims to communicate and provide evidence of the specific characteristics of various areas across shifts in time, and the emphasis is on how a place can make the most of its own tangible and intangible heritage, from a human and an environmental point of view.

Members of the portal : The key element of the portal is institutions that, having grown up around their heritage, bear witness to the enduring nature of the attentions and the interests of the area, in the face of historical changes. Of most relevance is the presence of institutions that, while significant, do not have the necessary visibility to add to the general knowledge of a place.

An indivisible whole : The portal provides for the inclusion of both business enterprises and institutions, showing the whole constituted by both of them, both expressing the culture of the area where their activities are rooted. A welcoming culture is the best path for presenting the character of an area to the outside world.

Information conveyed : The cultural institutions and business enterprises present their origins and activities in a concise, communicative form. In particular, it is essential that the texts focus on their origins, as well as on the interest that they offer today, to allow the nature of each institution or business enterprise to stand out as an expression of the area.

Self-knowledge : Self-knowledge is an essential part of the portal’s objectives. For business enterprises, and for citizens in general, it is a question of getting to better know the cultural institutions that live beside them. For less well-known cultural institutions, it is a question of presenting, in a simple, clear way, the heritage on which their own existence is based and their deep link with the society they belong to.

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Logical Landscapes – finding balance in socio-ecological production landscapes

Live & Learn Environmental Education (LLEE)

Live & Learn have activities in many sites of cultural and natural significance, the outstanding universal value of some has seen them nominated as World Heritage. Live & Learn is currently conducting activities across three World Heritage sites each with significance as socio-ecological production landscapes: Kuk Early Agriculture, Papua New Guinea; East Rennell, Solomon Islands, and our largest activity at Angkor, Cambodia through the Angkor Participatory Natural Resource Management & Livelihoods programme conducted with Cambodia's APSARA Authority and New Zealand Ministry of Foreign Affairs and Trade.

Covering over four hundred square kilometres, and with over 100,000 residents, the Angkor site has been termed a heritage or cultural landscapes and can also be considered a socio-ecological production landscape of historical and current significance with a mosaic of rice paddies, ancient water management, temples and forested areas.

Its value in socio-ecological production and biodiversity conservation has not been fully realized, but there are very complimentary links between the historical and cultural human and biodiversity interactions of this site to learn from. Historically, some research has identified that the Khmer Empire was built on the natural resources, and its fall may have been contributed to because of a combination of political and climatic changes impacting the balance in this socio-ecological production landscape.

At Angkor we are seeking to develop a community-based approach to promote management of cultural and natural heritage by enhancing heritage livelihood opportunities to strengthen heritage management. We have noted that for effective natural resource management the wider landscape including the upstream and downstream also needs further management.

With many of our activities directly and indirectly linked to water, natural resources and production, a landscape level approach can be very strategic. We are now looking at how three protected areas, Phnom Kulen National Park, Angkor World Heritage

Site and Tonle Sap Lake Biosphere Reserve may be united through corridors and strategically managed as a larger socio-ecological production landscape.

The more we learn from these socio-ecological production landscapes the more we understand that ultimately they are more sustainable and logical as they seek to balance the social and ecological needs in a system. It is within this context that Live & Learn became one of the founding members of the International Partnership for the Satoyama Initiative, and we are looking forward to supporting further understanding in finding the balance in socio-ecological production landscapes through positive actions.

Analysis of The Rainfall and Temperature Trends in Malawi (1960 – 2010) and Its Implication on the Natural Resource Base

*Ministry of Environment and Climate Change Management,
Department of Forestry, Malawi*

This poster presents the results of the analyses of the mean monthly, seasonal and annual rainfall and surface air temperature dataset spanning approximately 50 years from six meteorological stations in Malawi with the aim of identifying trends. In the study, Sen's slope and Mann-Kendall rank tests are used to demonstrate any existence of possible monotonic increasing and decreasing stochastic climatic trends in Malawi. Spearman's Rank Correlation was used to determine the association between flood frequency and rainfall mean. For this study, a five-percent level of significance was selected to indicate the presence of statistically significant trends. The study revealed that climate change has impacted on the natural resources. However, most of the natural resource degradation is as a result of un-regulated human influence. Therefore, there is need to mainstream Satoyama initiatives if the forests are to benefit the communities for better management.

The analysis indicates that the mean annual temperature records in Malawi have shown a significant warming trend over the period 1960 to 2010 except for Nkhatabay station. Additionally, the temperature changes in the high-altitudes are more pronounced than in the low-altitudes. For example, the annual temperature in Nkhatabay station at an altitude of 500m was increasing at a rate of $0.019\text{ }^{\circ}\text{C yr}^{-1}$. On the other hand, those at Mzuzu (1254m), Chitedze (1149m) and Chileka (767m) were increasing by $0.061\text{ }^{\circ}\text{C yr}^{-1}$, $0.05\text{ }^{\circ}\text{C yr}^{-1}$ and $0.045\text{ }^{\circ}\text{C yr}^{-1}$ respectively. These trends are statistically significant at a 95% ($\alpha = 0.05$) confidence level except for Nkhatabay station. The significant warming trend in minimum temperature was also revealed during warm wet and cool dry seasons. None of the annual precipitation series except for Mzuzu show significant trends. A significant decreasing trend at the rate of 0.018mm yr^{-1} ($n = 51$, $p = 0.0536$) between 1960 and 2010 was revealed in Mzuzu annual rainfall. Though no definite trends could be found in both monthly and annual precipitation records, clear decreasing trends were revealed by Sen's slope estimates for all stations in the Northern region and Chitedze on the Central region. On the other hand, increasing trends in all sampled stations in the Southern region and Nkhotakota on the Central

region of Malawi were revealed. Generally, whilst precipitation is decreasing annually, the flooding frequency has been on the increase. Results from the Spearman's rank correlation analysis show a highly statistically significant positive correlation between the flood incidences and the mean annual rainfall between 1970 and 2008 ($R = 0.5997$, $P = 0.01$, $n = 26$). However, only 28% of the flood incidences ($R^2 = 0.28$) are expressed by mean annual rainfall, suggesting other factors behind increasing flood incidences in Malawi. Though not statistically tested, forest cover loss due to land use change is suggested as one of the factors behind increased flooding incidences. As such, Satoyama Initiatives could be the best way to reduce the negative anthropogenic influence on the Natural resource base in Malawi.

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Building Community Resilience in Micronesia: Lessons from the Micronesia Challenge and the Adapting to a Changing Climate Toolkit

Micronesia Conservation Trust

Formally established in 2002, the Micronesia Conservation Trust (MCT) (<http://www.ourmicronesia.org/>) is a charitable and irrevocable corporation organized to provide sustainable financing and capacity building/training support for biodiversity conservation, climate change adaptation and related sustainable development programs. In 2006, the five Micronesia Challenge (MC) jurisdictions (FSM, Palau, Marshall Islands, Guam and CNMI) selected MCT as the financial mechanism for the Micronesia Challenge Initiative. MCT is Micronesia's only conservation trust fund, and works closely with local resource owners, traditional leaders, conservation and other NGOs and local governments to develop and fund project proposals that focus on improving management and addressing key threats to high-priority ecological sites designated through science-based and collaborative planning processes, such as National Biodiversity Strategy and Action Plans.

Under the umbrella of the Micronesia Challenge, partners have developed many innovative community-based approaches to conservation and building resilience to climate change. Through this poster we will share an example that could have applications in other island communities around the world.

MCT and its partners developed the Adapting to a Changing Climate Toolkit to address key challenges faced by communities carrying out adaptation activities. It communicates climate change concepts and science in a manner accessible to community members, with a focus on ensuring community leaders have the information, understanding, and tools to lead adaptation planning. Large flipchart illustrations and other materials inform community members in adaptation decision-making. This toolkit received international recognition for filling a gap between scientific knowledge and local community understanding.

Through this poster, MCT will share success stories using the toolkit and also share plans for expansion of the toolkit based on needs identified for the community. We will also show how the tool has been adapted for use in the rest of the Western Pacific region.

We will combine lessons learned from this effort to present a comprehensive approach to engaging communities in climate change adaptation, followed by a facilitated dialog with participants on how it can be replicated in island/coastal communities throughout the world. Overall we would like to create greater awareness of the work the Micronesia Challenge and the Adapting to a Changing Climate Toolkit are achieving success.

Recognizing Farmers for their efforts in conservation of landscapes and landraces - Cases from The Western Ghats, India

Community Agrobiodiversity Centre of M S Swaminathan Research Foundation

Lowland valleys of the Western Ghats region of India have traditionally been used for paddy cultivation. Kerala State of India is a high rainfall area and most of the water from the hilly terrains of the Ghats reaches the intervening valleys. After saturation in the valleys, water is released to the lowlands, helping to maintain water tables and enrich water bodies. Cultivation of Paddy rice, the water loving plant is regarded as the only sustainable agricultural land use in the valleys. As an agroecosystem, the paddy field provides a range of tangible and intangible services including food and fodder, water, microorganisms essential for soil health, genetic diversity etc. (N. Anil Kumar *et al.*, 2010). The rural and tribal farmers of Kerala used to cultivate several indigenous rice varieties which satisfy their dietary, economic, cultural and other requirements. Most of these varieties have either disappeared or are on the verge of disappearance because of poor profitability, lack of quality seeds, low yields, paucity of pragmatic research and extension support. With most of the farmers exploiting the resources for immediate benefits only, the sanctity of the agricultural tradition has been in great trouble. But there are some people who would like to follow different practices, and it is worthwhile to give concern to their wisdom which contributed to the conservation of paddy field, a socially and ecologically productive landscape.

The cases to be reported are the results of research conducted among the community and the constant capacity building program facilitated by M S Swaminathan Research Foundation (MSSRF) at Wayanad District of Kerala, India. In 2010, a group of farmers of *Kurichya* and *Kuruma* communities of the District were distinguished with the **Plant Genome Savior Community Recognition Award** conferred by the Protection of Plant Varieties and Farmers' Rights Authority of Government of India. These communities have been conserving twenty indigenous rice landraces with a variety of specialities including tolerance to drought and flood, medicinal and aromatic properties. The application for the award was initiated by *Wayanad District Tribal Development Action Council* under the aegis of MSSRF. Subsequently in 2013, *SEEDCARE*, another umbrella organization of the traditional crop conservators of Malabar region has come up with Six (6) Farmers' Varieties registered under the Protection of Plant Varieties and Farmers' Rights Act, 2001 (PPV & FR Act). This act, which was enacted in India, is meant for providing the establishment of an effective system for protection of plant varieties, the rights of farmers and plant breeders and to encourage the development of new varieties of plants.

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Collaborative Planning and Management of Socio-Ecological Production Landscapes: Two Initiatives in Eastern Rural Taiwan

National Dong-Hwa University

Two projects in eastern rural Taiwan will be introduced in the poster. **The first project- Collaborative planning for a Rice Paddy Cultural Landscape Conservation in the indigenous Fengnan Village:** In 2005, the idea of landscape/seascape conservation was introduced into the amended Cultural Heritage Preservation Law as a new legal subject entitled 'Cultural Landscape' in Taiwan. Unlike traditional strict protected areas, namely the IUCN protected area category I-IV, the Cultural Landscape is a new concept to Taiwan which emphasizes the interaction of local people and the land. In order to help stakeholders of governmental authorities and local communities to apply this new instrument, the researcher employs a community-based participatory approach to enhancing partnership among them. The research has especially learnt from the operational guidelines of IUCN protected area category V (the protected landscapes/seascapes) as well as the Satoyama Initiative. A pilot study area of a rice paddy production landscape in the indigenous Fengnan village, Hualien County was selected as a potential Cultural Landscape site. Participatory action research was conducted by the research team of National Dong Hwa University in light of the collaborative planning theory and methods to enhance partnership among the villagers, the local authorities officers and experts. Various formal and informal forums were conducted in the local village from 2011 to 2013 to achieve consensus on the codes of conduct as well as the management plans. Through intense communication on the forums, stakeholders jointly designated the site as a legal Cultural Landscape, developed a mid-term Cultural Landscape Conservation Plan and set up a local committee for implementation of the Plan. The case study shows that a landscape approach based on the idea of the Satoyama Initiative can be more welcomed by local people and create a new style of 'living' protected landscape into Taiwan's national protected area system.

The second project- Revitalization of a Fallow Farmland for a New 'Common' in the rural Fuxing Village: In Taiwan, due to both the usage of chemical fertilizers and pesticides as well as the decreasing and aging rural population problem, many Satochi-Satoyama-like landscapes are no longer being maintained as they once were. To deal with the issue, National Dong-Hwa University since 2011 has been

working with the Fuxing rural village on ecotourism development and fallow land revitalization. Action research has been conducted to design and implement various forms of the 'community-university-authority partnership platform' such as workshops, communication forums, ecotourism activities, training courses and working holidays in the light of the theory of collaborative planning and the guidelines of the Satoyama Initiative. An experimental Eco-farm was established on a previous fallow land in October 2012. The goal is to promote organic farming and ecological restoration practices to live in harmony with nature. Twenty local indigenous farmers voluntarily joined the Eco-farm membership to cultivate relevant crops in their own 'private' plots of farmland and worked with working holiday visitors on the ecological restoration of the 'public' farmland.

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Application of the *Kikigaki* method to the world– the cases of Japan’s “Kikigaki Koshien” and other activities for high school students

Network for Coexistence with Nature (NPO Kyouzon-no-mori Network), Japan

We have organized the Kikigaki Koshien, in which high school students all over Japan visit and interview veteran experts in occupations connected with the natural environment of forests, the ocean and rivers. (*Kikigaki* literally means listening and documenting.) Through these one-on-one interview activities, the students record the knowledge, philosophies and skills of these experts. 100 high school students participate in this program every year and most of them are brought up in urban areas. Listening to the stories of these experts who live in rural areas, the students get to know the lives and values of these experts. They also begin to re-appreciate the traditional lives which are formed from interaction with the distinctive local landscape and its natural features and to think about their own identities.

In recent years, the Kikigaki Koshien, which started in 2002, has been widely recognized beyond Japan, especially in some Asian countries. Since these countries have been trying to achieve rapid economic development, there are growing concerns about the deteriorating forest resources, the environmental destruction and the disappearing local and indigenous cultures. In order to raise awareness of the understanding experiences and know-how of Kikigaki to people outside of Japan, English Kikigaki textbooks were published in cooperation with IPSI Secretariat, United Nations University Institute of Advanced Studies (UNU-IAS) and the Ministry of the Environment of Japan in 2012. At present, the first project has been conducted in Indonesia.

In addition, commissioned by Ishikawa Prefectural Government, also a member of IPSI, we started the kikigaki program in Noto’s Satoyama-Satoumi in Noto Peninsula last year, which was designated as a Globally Important Agricultural Heritage Systems (GIAHS) site. Local high school students visit and interview veteran experts who work in the region.

The students applied the kikigaki method to interview people engaged in traditional primary industries, craftsmen with traditional techniques as well as successors of ancient rituals and festivals and assume the role of sharing the lives and values of these experts with people in other areas.

In the poster, we will introduce the details of our kikigaki programs both in Japan and Indonesia.

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Introduction of Ink Cartridge Recycling “Satogaeri Project”

Satogaeri Project, (Brother Sales Ltd., Canon Inc., DELL Japan Ink., Hewlett-Packard Japan, Ltd., Lexmark International K.K., and Seiko Epson Corporation)

An “Ink Cartridge Satogaeri Project” has been jointly promoted by six printer manufacturers (Brother, Canon, Dell, Epson, HP, Lexmark) in Japan through the collection and recycling of used ink cartridges.

‘Satogaeri’ means return to the villages, or back to one’s hometown. This is a reference to how the used ink cartridges are returned to each manufacturer’s recycling site while also implying how this project recycles ink cartridges back into the environment sustainably. The project aims to offer an important step in helping customers make more environmentally-friendly choices in their daily lives and ultimately contribute to a recycling-oriented society.

The “Satogaeri Project” collection boxes have been installed in more than 3,600 post offices and at 2,100 places within 199 affiliated local governments since April 2008. The collected cartridges will be sent, using the existing Japan Post Group network, to a sorting facility where they will be separated according to brand.

From there, the cartridges will be delivered to their respective manufacturers, who will take responsibility for carrying out the recycling process.

There have been a whole variety of positive benefits arising from this project.

Two different examples are as follows.

The first is the project’s contribution to provide working opportunities for physically challenged people. A Mizube branch was established to sort the collected ink cartridges; it employs physically challenged individuals to undertake the sorting process. This supports the community while providing job opportunities and reinforcing the employees’ capacities.

A second example deals with the project’s environmental contribution.

Among other things, it has made a contribution to UNEP’s core environmental activities in the fields of climate change, hazardous wastes, environmental emergency response, environmental information, assessment and research, fresh water, technology transfer and support to developing countries.

Due to similarities in vision and objectives, the Satogaeri project has started cooperation with IPSI including IPSI activities since 2011. By providing a financial contribution corresponding with the number of cartridges collected, the project hopes to support IPSI's ongoing work and activities.

The organisation of poster session, printing and awards has been covered by the financial support from the Satogaeri Project. We hope this session will provide an opportunity for interaction among IPSI members, practitioners and researchers including local citizens. It also lets members present and demonstrates their experiences, as well as other new applications, innovative approaches and/or novel work-in-progress, while also receiving valuable feedback.

Activity of Social Forestry

Sumitomo Forestry Co., Ltd.

In terms of our work in Indonesia, in 2010, we started a reforestation project in Bromo Tengger Semeru National Park East Java and another project focused on Supiturang Village at the foot of Mount Semeru in the Lumajang Regency. When conducting reforestation, we do not simply supply the seedlings – Sumitomo Forestry provides instruction on basic planting techniques, such as the appropriate timing and methods for planting, the space required to be maintained between seedlings, and cultivation work, thereby ensuring that planted trees survive and grow.

The trees planted at the national park are not meant for harvesting, but to contribute to society. Therefore working wages alone are not the only incentive for the local residents engaged in planting and cultivation.

However, the situation is different for residents engaged in forestation around the Lumajang Regency, where the aim of the regional cooperation-based industrial reforestation project is harvesting.

In this project, Sumitomo Forestry supplies seedlings to local residents, who plant and cultivate the distributed seedlings in fallow fields or on the edges of their farmlands. Sumitomo Forestry also guarantees that it will purchase trees which have grown to a suitable harvesting size.

Furthermore, a portion of the profits obtained from harvesting and processing mature trees will be distributed to improve the living standards of the local people, as well as to cover the costs of reforestation and cultivation.

We also provide instructions regarding the appropriate planting density for this project. This is not only in consideration of the length of the branches of the Falcata (*Albizia falcataria*) tree – the major tree species used for this planting (known locally as “sengon”) – but also based on the assumption that farming work will be conducted between the sites where trees are planted.

The farmers participating in this project improve their living standards and income levels as they engage in agro-forestry, growing mostly cassava, corn, and cash crops such as coffee and chili peppers.

The Falcata is a leguminous plant with nitrogen-fixing root nodule bacteria growing symbiotically on its roots. This nitrogen fixation helps the growth of surrounding crops, providing yet another benefit to agro-forestry farmers.

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Recognizing the value of human-shaped natural environment in Timor-Leste for food security

*Secretariat of State for the Environment, Ministry of Economy and Development,
Timor-Leste*

Timor-Leste is the youngest nation in South-East Asia. The country covers a total area of 14,874 km² with slopes ranging up to 2,963 m (Mt Ramelau). It is part of the Wallacea region, which has been recognized by Conservation International as one of the 25 biodiversity hotspots worldwide. Available evidence suggests a high level of endemism. However, the country's natural environment is being transformed into a predominantly rural agricultural landscape of low productivity and degraded range lands due to the human exploitation of forest, marine and agricultural resources and the unsustainable land management practices. Less than 6% of the country contains primary vegetation. Subsistence farming using rice, maize, cassava, coconut, potato and cabbage is the major source of livelihood. Limited agricultural productivity related to water shortages, weeds and pest infestations as well as low soil fertility does not meet the demands of the growing population. The current farming system does not provide food security, and is largely unsustainable due to the common practice of "slash and burn" and subsequent problems associated with heavy rainfalls especially in upland areas (>2000 mm/year), highly erodible soils distributed on steep slopes, and ultimately the poor growth of crops and low yields. Conversion of forests to obtain new areas for cultivating crops has extremely negative consequences including increase in loss of forests species and ecosystems, surface runoff, soil erosion and frequent landslides, increasing sedimentation and flooding in lower areas, and loss of water resources. Thus, protecting the country's natural environment is directly linked to the need to improve food security through advancing the farming system, and introducing appropriate technologies to increase yields of crops. For example, attempts are being undertaken to intercrop maize with mucuna, where mucuna continues to grow after maize harvesting, to introduce alley cropping (agroforestry), and to use high yielding varieties. There are also high expectations for the implementation of the National Biodiversity Strategy and Action Plan (NBSAP 2011-2020) which is *inter alia* designed to provide a framework for combating low agricultural production, and assists in building climate-resilient ecosystems. Timor-Leste greatly appreciates training opportunities such as those provided by this conference to exchange experience and knowledge for the further development of the human-influenced natural environment on its territory.

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Challenges and solutions to enhance the resilience of the Datça - Bozburun Peninsula's socio-ecological production landscape and seascape

*United Nations Development Programme (UNDP),
COMDEKS Turkey, GEF SGP*

The Datça-Bozburun Peninsula, a key biodiversity area in the Muğla province of Southwest Turkey, was identified as the target area for the COMDEKS Project in Turkey. Turkey is a participating country in the first phase of the 'Community Development and Knowledge Management for the Satoyama Initiative Project' (COMDEKS), a unique global project implemented by UNDP, in partnership with the Ministry of Environment of Japan, the Secretariat of the Convention on Biological Diversity, and the United Nations University Institute of Advanced Studies as the flagship of the International Partnership for the Satoyama Initiative (IPSI). Working through the Global Environmental Facility Small Grants Programme, implemented by UNDP, the COMDEKS Project provides small grants directly to local community organizations, empowering communities to implement participatory landscape planning and develop integrated solutions to enhance the resilience of socio-ecological production landscapes and seascapes (SEPLS).

A consultative baseline assessment of the target peninsula, aimed at assessing the current status of the landscape and developing a strategy to enhance resilience and sustainability of the target area, engaged more than 70 stakeholders including community members, officers of forest and agricultural management, individual farmers, and local and national NGOs. The proposed poster, with information on landscape elements as well as COMDEKS funded activities in Turkey, was developed through a participatory mapping exercise that took place in Turkey during a workshop of the baseline assessment. The left hand side of the poster simulates the interactive mapping exercise wherein community members were asked to mark important assets, including key biodiversity and local products, as well as threats and challenges in the area by sticking notes and photos on a map of the proposed landscape. The composed map not only provides valuable information on the key characteristics of the area, but also underlines the sensitive areas of interest, problems, opportunities and threats including sea pollution, overfishing, ghost nets, etc. Below the annotated map, eight messages developed by the landscape stakeholders welcome visitors to the

area in both Turkish and English and present ways to respect the landscape's natural features such avoiding disturbing animal habitats, supporting sustainable fishing, and empowering local cooperatives to ensure conservation of the Datça Almond and other local products.

The right outlines nine community-based projects currently supported by COMDEKS, which focus on both land and seascapes of the Datça-Bozburun peninsula. Three projects in the waters surrounding the peninsula aim to support sustainable, responsible fishing to reverse the effects of overfishing, raise awareness and reduce the number of ghost nets, and promote the presence and significance of fisherwomen in fisheries. Inland, two village driven projects intend to prevent erosion while encouraging afforestation and biodiverse plant wealth, as well as promote conservation and production of the local Datça Almond. These projects intend to improve the competitiveness of local goods (including, almond, native medicinal herbs and aromatic plants) and initiate ecotourism. Two projects address the peninsula's plant and animal species by implementing "species conservation action plans" to protect mammalian species, and determining priority sites for application of conservation measures to protect Mediterranean forest ecosystems. The final two projects focus on information dissemination. The first brings together local stakeholders to discuss the community's impact on the land and sea. Another project will produce a documentary depicting the experiences of NGOs working in the peninsula.

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Satoyama Regeneration Initiatives - A Case Study in Noto Peninsula, Ishikawa Prefecture, Japan

United Nations University, Institute of Advanced Studies, OUIK

This study documents and analyzes the local initiatives aiming at strengthening resilience of local communities through creating new commons with multiple stakeholders engaged to restore satoyama landscapes and developing regional multi-industrial system approaches by creating new business models to produce value-added products. Noto Peninsula, which was recognized as a Globally Important Agricultural Heritage System (GIAHS) site in June 2011, was selected as the study site. The overall goal of this research is to identify appropriate policies and experiences at the local level regarding how to motivate a wide range of stakeholders to participate in community-level resilience strengthening strategies.

(1) Enhance resiliency

- Strengthen ecosystem functions and services

Conserve cultivated lands and restore abandoned farmland to secure ecosystem services for human well-being at satoyama production landscape level.

- Integrate traditional and scientific knowledge

Integrating the scientific knowledge of agricultural infrastructure improvement technologies and the customary management system of irrigation ponds has greatly contributed to combating climate change and extreme climate events.

- Create Green Economy to secure livelihoods

Maintenance of diverse local varieties of crops which have been cultivated and well adapted to the local environment is useful as green economy creation to secure local livelihoods.

(2) Establish new commons

Consensus-building meetings/social learning activities have been used to identify the future scenarios of Noto Satoyama-Satoumi Landscapes and potential to strengthen ecosystem functions and services.

- Inherit /revitalize traditional culture

Recently, college students and urbanites are also participating in these local festivals and helping to sustain the festivals, inherit and revitalize the traditional cultures.

- Bring together diverse stakeholders from local as well as urban areas

A satoyama conservation strategy involving multiple stakeholders of the “new commons” is studied by using a case study of abandoned land restoration.

(3) Create New Business Models

- Branded local products

A recent initiative for branding rice produced in terraced paddy fields in Noto Peninsula was jointly launched by four Japan Agricultural Cooperatives (JA) in Okunoto.

- Add value to agriculture through a regional multi-industrial system approach

A “regional multi-industrial system” initiative for creating new high value-added business is being studied, using the case of directly transporting specific local agricultural products to the urban market.

- Promote agro-tourism and alternative livelihoods

Challenges and potential to diversify rural income through developing rural tourism are being studied.

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Biodiversity Issues and Concerns in the Forests of Satoyama-like Landscapes in the Philippines

University of the Philippines Open University (UPOU)

Satoyama-like landscapes in the Philippines are mosaics of patches composed of villages, farmlands, grasslands and forests resembling the satoyama structure in Japanese landscapes. Many of these unique and dynamic patches are found in the rural countryside far from urbanization. In this study, woody species along altitudinal zones were identified in four bio-culturally significant satoyama forests of Mount Pulag, Mount Akiki, Mount Mayon and Mount Makiling in Luzon Island using standard field techniques. Results showed lower elevation species encroaching in higher altitudes displacing other species. Biodiversity loss, habitat fragmentation and degradation, deforestation and bio-invasion were evident. Concerns for environmental rehabilitation and ecological restoration through appropriate sustainable management practices were elucidated. Regional collaboration and interdisciplinary and trans-disciplinary discussions are necessary.

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Long-term dynamics analysis of the *agras* cultural landscapes in Northern Spain

University of Vigo (UVIGO)

In this research we present some results of using an integrative approach for the analysis of long term dynamics of *agras* cultural landscapes. Our approach involved the integration in a GIS of historical records, with geodatasets of place names, orthoimages and local knowledge.

The three case studies were chosen from historical maps of the 18th century, with toponymy referring to *agras* and explicitly depicting this field system. The first historical map shows a highly detailed representation of the *Agra de Balai*. It has kept its original shape and boundaries though its agricultural use has mostly been abandoned. In 1957, this *agra* was still used as cropland, while the 2008 orthoimage shows the conversion to afforested land and to scrubland in more than half of its extent. The second map shows roughly the location and extension of the *agras* or *Villares de Bosende & Pradieiro*, as well as other landscape features, such as landmarks and wetlands. Here, we were able to identify the terrain and study the *agras* at plot level since the toponymy was kept in current land property records. We also learned about the farming system and recent dynamics by interviewing a local farmer. As in the previous case, we observed that part of the *agras* are being reforested, though cropland still occupies more than 70% of their extent. Tree hedgerows marking the outer border of the *agras* have been preserved, as well as the access paths leading to the plots inside the *agras*. To some extent, traditional cereal rotations are also still in use.

In the third case, the historical map displays the location and extent of the *Agra do Canaleiro*, *Agra de Mesoiro* and *Agra de Currelos*. The loss of toponymy, as well as the intense landscape transformation since 1957 from cropland to industrial uses, makes it only possible to approximate the location of these past landscape features.

As a conclusion, we observe that despite agricultural modernization some features of the traditional *agras* landscapes are still kept as long as the agricultural use is maintained. Moreover, availability and quality of data seem to be key factors for identifying cultural landscape features in the field and therefore, for analyzing their dynamics.

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Incorporating ecosystem resilience into vulnerability impact assessment: experience from EBA in mountain ecosystems programme in Nepal

Wildlife Watch Group (WWG)

Panchase Protected Forest lies in nine Village Development Committee (VDCs) of Kaski, Parbat and Syangja districts of the Western development region. 'Panchase' meaning 'Five Seats', is the meeting place of five peaks. The region has great biological, cultural and aesthetic values. It represents an important ecological zone which is less addressed amongst the country's protected areas and is the only corridor linkage between the Lowland (Chitwan–Nawalparasi) and Annapurna Himalaya ranges. It was recorded in 2012 as having area of 57.76 sq kilometers and characterized by sub-tropical and temperate vegetation varying from 1450 to 2517 meter.

There are more than 589 flowering plant species recorded; 107 species of medicinal plants, 8 species of fiber yielding plants, 23 species of natural dye yielding plants, 18 wild species potential for floriculture, 56 species of wild mushroom, and 98 species of ferns. Wild animals found include the Asian Black Bear (*Selenarcto thibetanus*), Barking Deer (*Muntiacus muntjak*), Leopard (*Panthera pardus*), Jungle Cat (*Felis chaus*), Fox (*Vulpus vulpus*), Jackal (*Canis aerus*), Wolf (*Canis lupus*), and Monkey (*Macaca mulata*).

The major issues for the Panchase region are extensive use of forest leading to degradation; open grazing of livestock round the year, decline in orchid species, threats to wildlife due to poaching and soil erosion.

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A survey of vegetation types adjacent to walking routes around Satoyama areas border suburban residential area

Yokohama National University

[BACKGROUND] Green spaces in residential areas are effective at encouraging healthy physical activity. In particular, walking is an easy and safe aerobic activity. Plants in green spaces are beneficial to walkers not only because they supply clean air, but also because their aromas provide a relaxing effect. However, there are no studies that have investigated the kinds of vegetation that grow along walking routes.

[OBJECTIVES] The research aims to examine the typical types of vegetation around Satoyama areas growing along roads where people regularly walk as well as their adjacent areas by computing which areas suburban residents choose for their walking habit.

[METHODS] The research area is a suburban area of Yokohama City in Kanagawa Prefecture, Japan. This area offers many kinds of green spaces, as well as residential areas. We used geographic information systems to overlay maps of vegetation (18 categories by ecosystem), roads, and walking routes collected via questionnaires among suburban residents who are walking enthusiasts. We computed the ratio of the area adjacent to chosen walking routes with selected roads as network distance buffer of each participant's walking length. This is called the preference ratio (PR), and a PR of more than 1 indicates a "preference for selecting a type of vegetation."

[RESULTS AND CONCLUSION] Of the 400 questionnaires distributed, 177 were recovered, accounting for a response rate of 44.3%. We restricted our analysis to responses on 167 routes. Among the respondents, 71 were males (40.1%) and 105 were females (59.3%). Most of the respondents were in their 60s (N = 130 persons, 83.0%). The average length of walking routes was 3,763m. This distance is sufficient for promoting health. Trees in residential areas had the highest PR, followed by secondary broad-leaved deciduous forests in Satoyama area. Thus, walkers chose these vegetation types as their preferred green along walking routes. Among Satoyama forests, the most favoured kind is the Japanese oak. The bark of these trees is the right colour and the leaves let through soft sunlight, giving a light impression. Upon checking some forests and the numbers of walkers on maps, we found that the well-kept secondary broad-leaved deciduous forests by caring of citizens were selected more than another forests. Add to researching about living raccoon-dogs, fireflies and endangered-plants around this forest. So, this forest looks on diversity rich. Consequently Satoyama forests with well-kept and diversity rich is the suitable place for walking to promote human health.

