INDIGENOUS PEOPLES AND CLIMATE CHANGE ADAPTATION IN ASIA

AIPP

AIPP at a glance

The Asia Indigenous Peoples Pact (AIPP) is a regional organization founded in 1988 by indigenous peoples' movements. AIPP is committed to promote, assert and defend indigenous peoples' rights and human rights through articulating issues of relevance to indigenous peoples. At present, AIPP has 46 members from 14 countries in Asia with 11 indigenous peoples' national alliances/networks and 35 local and sub-national organizations. Of this, 16 are ethnic based organizations, 5 are indigenous women's organizations and 4 are indigenous youth organizations.

Our Vision:

Indigenous peoples in Asia are fully exercising their rights, distinct cultures and identities, are living with dignity, and enhancing their sustainable management systems on lands, territories and resources for their own future and development in an environment of peace, justice and equality.

Our Mission:

AIPP strengthens the solidarity, cooperation and capacities of indigenous peoples in Asia to promote and protect their rights, cultures and identities, and their sustainable resource management systems for their development and self-determination.

Our Goals:

- To empower Indigenous peoples in Asia to promote and defend their human rights and fundamental freedoms and claim legal recognition to their identities, collective rights under UNDRIP and other international human rights instruments.
- To build the broadest solidarity and cooperation of indigenous peoples in Asia to strengthen indigenous movements.
- To promote and protect the integrity of the environment and enhance the sustainable resource management systems of indigenous peoples including their traditional knowledge, food security and biodiversity by having full control over their land, territories and resources.
- To attain full and effective participation of indigenous peoples, particularly indigenous women and youth at all levels of decision-making.
- To strengthen solidarity and cooperation with other social movements towards achieving equality, peace, democracy and justice.

AIPP Accreditation:

1. World Intellectual Property Organization (WIPO)
2. United Nations Framework Convention on Climate Change (UNFCCC)

AIPP Programmes:

- Human rights
- Regional Capacity Building
- Environment
- Indigenous Women
- Researchand Communication Development
- Indigenous Youth

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1. Indigenous Peoples and climate change adaptation in Asia

It is estimated that there are 350-400 million indigenous peoples in the world; two-thirds of them live in Asia[1]. However, it is difficult to give an accurate total number of the population of indigenous peoples because many are not recognized and reflected in national censuses in Asia. Indigenous peoples are some of the most impoverished, marginalized and vulnerable peoples in the world and are also the most affected by climate change impacts and its uncertainties.

In general, most of the indigenous peoples inhabit marginal and fragile ecosystems, such as tropical and temperate forest zones, low-lying coastlines, high mountainous areas, flood plains and riverbanks[2]. These areas are some of those most threatened from increased climatic uncertainties and unpredictability of extreme events and slow onset climatic events like cyclones, hailstorms, desertification, sea level rise, floods and prolonged droughts These events are occurring more often and with increasing intensity, severely impacting the lives of indigenous peoples since their livelihood systems are directly dependent on these ecosystems. Further, the economy, social organization, identity, and cultural and spiritual values of the indigenous peoples are closely linked to their biological diversity. Therefore, climatic uncertainties can cause specific effects such as demographic changes, loss of livelihoods and food security; land and natural resource degradation; water shortages, health problems, loss of traditional knowledge, housing, forest and natural resource management; and human rights etc.

Climate change adaptation is any adjustment or action undertaken which:

- Either moderates or reduces the adverse consequences of climate change or
- Exploits beneficial opportunities in response to actual/expected climate-related changes in natural ecosystems and human systems.

As defined by the UNFCCC, adaptation is about finding and implementing ways of adjusting to climate change and responding to climate changes risks and vulnerabilities. Adaptation can be categorized into autonomous or planned and short, medium and long term.

In addition to these direct impacts, many climate change policies and measures relating to mitigation

1 AIPP, IWGIA and EU, 2011. ASEAN's indigenous peoples. P 5

2 AIPP and IWGIA, 2010, REDD+ and indigenous peoples: A briefing paper for policy makers. P 9

and adaptation have serious adverse implications to indigenous peoples. For instance, there are many cases of forced evictions or displacement of indigenous peoples from their homelands as a result of mitigation measures such as construction of large dams, bio-fuel plantations and creation of Protected Areas in their territories without their consent[3].

However, indigenous peoples should not be looked upon as just 'vulnerable people' to climate change. What is being missed out is that Indigenous peoples are *ecosystem peoples* who have sound knowledge and intimate relationship with their environment. Indigenous knowledge is unique to a given culture and environment as they are acquired through generations of empirical experiences to ameliorate the anticipated adverse consequences associated with climate change and from other impacts or consequences related to environmental stresses. These rich knowledge systems and practices can be tapped to provide solution to many mitigation and adaptation measures to climate change. Many indigenous peoples are taking their own initiatives in coping with climate change in the form of identifying the changes that are occurring in climatic patterns and the ensuing challenges. In some cases, indigenous communities have developed specific coping strategies to extreme variations of weather, such as:

- Crop diversification to minimize risk of harvest failures—varieties of crops with different susceptibilities to droughts, floods, pest etc. or varieties adapted to different locations such as river banks, high mountains, and close to primary forest etc.
- Change of hunting and gathering periods to adapt to changing animal migration and fruiting periods.
- Increasing food preservation and improving preservation methods and techniques.
- Introduction of food banking and seed banking along with creation of exchange networks among the communities.
- Changes in food habits—improving forest conservation and reverting to gathering food in the forests during bad harvest.
- Introduction of multi-cropping, double cropping and relay cropping systems as appropriate by many communities.
- Altering land use and settlement patterns.
- Other measures such as conservation of forests and watershed, including restoration of ecosystems.
- Awareness raising and solidarity actions to ensure or to address the concerns of indigenous peoples.

It is therefore essential to recognize both the vulnerability and contributions of indigenous peoples in designing culturally appropriate adaptation and mitigation development plan as defined by the communities.

Adaptation activities can be:

- Technological (such as increased sea defences)
- Policy-based (such as improved risk management)
- Behavioural (such as the sparing use of water in times of drought)
- Managerial (such as improved forest management).

The two important international processes addressing climate change mitigation and adaptation are the UN Framework Conference on Climate Change (UNFCCC) and the Convention on Biological Diversity (CBD). The UNFCCC is the most important international binding agreement and forum on climate change adaptation and mitigation.

This briefing paper highlights the issues and concerns of indigenous peoples in relation to climate change adaptation. It also highlights the importance of policy advocacy and the full and effective engagement of indigenous peoples in processes and mechanisms of existing governing bodies at regional and international levels.

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3 AIPP and IWGIA, 2011. ASEAN, climate change, REDD+ and indigenous peoples: Briefing paper. P 5

2. Indigenous Peoples' issues and concerns relating to climate change adaptation

Climate trends and variability are generally characterized by increasing surface temperature and unpredictable rainfall. Indigenous peoples have been facing these climate variability and trends worldwide. It is a reality for them and the situation will become worse in future.

Although indigenous peoples have contributed least to climate change, they are the first to face its impacts and suffer the most. Additionally, they are one of the least to be heard and included in the discussions and negotiations on climate change adaptation. As mentioned above, they are highly affected by climate change externalities in terms of their livelihood and tangible assets, as well as their culture and traditional knowledge. Conversely, their positive contributions to sustainable management of resources and the abatement of green house gases have not been recognized and compensated by the UNFCCC and other multilateral and bilateral agencies.

> Vulnerability to climate change is not just a function of geography, or dependence on natural resources; it also has social, economic, and political dimensions, which influence how climate change affects different groups (Action Aid, 2005).

Climate change impacts have further challenged activities of the indigenous peoples in terms of their way of life and economic security. Some of the most prominent issues and concerns of indigenous peoples related to climate change adaptations are:

2.1. Livelihood and well-being of Indigenous Peoples

- Erratic rainfall and longer droughts have reduced the productivity of crops in most Asian countries, including indigenous lands and territories.
- Indigenous peoples traditionally followed weather and climatic patterns for their agricultural, forestry and other livelihood activities. But these climatic patterns have become less reliable and more unpredictable because of amplified climatic ambiguity. For instance, the tropics are becoming hotter and the winters in temperate zones are becoming colder. The start of the rainy season

has become erratic, leading to increased droughts, floods, declining soil fertility and ultimately reduction in crop and forest yields, which ultimately threatens the food security.

- Frequent flooding has submerged lands and crops, drowned livestock and also destroyed infrastructures. It has disturbed the socio-cultural activities such as community feasts and rituals in many South East Asian countries like Malaysia, Philippines, Indonesia, Vietnam and Thailand.
- New species of insects are observed in the indigenous territories and this is already causing imbalance in the ecosystems of those areas, for example, after a long drought in Indonesia, a new species of insect emerged that destroyed many crops.
- Climate change impacts in many areas led to long drought periods with increased incidence of water crises resulting in food insecurity and health problems. Further, many indigenous women and youths now travel long distances from their homes to fetch water for daily use.
- The increase in temperatures also creates a very hard situation for agricultural practices due to limited water sources. This has led to crop failures and hardship.
- Worsening food and water insecurity brought with it an increase in water and vector borne diseases throughout Asia.
- Disappearance of native species and appearance of invasive species (e.g. pest & weeds) on the indigenous land.
- Drying up of streams, springs and water holes.

2.2. Indigenous knowledge

- Planting and harvesting seasons and their associated cultural ceremonies and traditions have been changed due to erratic rainy seasons, floods and long prevailing droughts within many indigenous communities. Thus, it poses a challenge to their cultural continuity.
- Increased frequency and intensity of climate change events have challenged the abilities, skills, knowledge and practices of indigenous peoples to cope with and adapt to the changing climate. For example, the Punan indigenous peoples, who are hunter-gatherer communities in East Kalimantan, have for generations followed a lunar calendar for deciding their agricultural, forestry, shifting cultivation and hunting activities. With changes in the timing of migration and fruiting, their dependence on the traditional knowledge for their survival has become less reliable.

- Indigenous peoples are rarely considered in academic, policy and public discourses on climate change, despite the fact that they are greatly impacted by climate changes[4].

2.3. Full and effective engagement in policies, strategies related to climate change adaptation and access to resources

- Indigenous peoples have minimal access to resources to cope with climate change such as the adaptation fund and the green climate fund established by the UNFCCC, among others.
- Support in developing countries for adaptation, culturally appropriate programmes and technology, interventions and capacity building has routinely been overlooked by national governments.
- Many planned adaptation and development projects, such as National Adaptation Programme of

4 A Tyndall Center Publication, 2007. Indigenous peoples and climate change. P 4

Actions (NAPAs) and National Adaptation Plans (NAPs), have also ignored their rights, issues and concerns and are being implemented without their consent. They have not been involved nor have they been consulted in the development of NAPA and NAP. Indigenous peoples are often excluded in decision-making processes at all levels[5].

- Many policies, measures and strategies adopted to deal with climate change undermine indigenous peoples' cultural and social identity, right to self-determination and their livelihood.

NAPA is the mechanism developed by Least Developed Countries (LDCs), which was adopted by the UNFCCC in COP 7. NAPA must be action-oriented and country-driven, which will be flexibly based on national circumstances.

National Adaptation Plans (NAPs) under article 4, paragraphs 4 and 9 of COP 16 agreed on enhancing action for adaptation. NAPs should be undertaken in accordance with the Convention and be gender-sensitive, participatory and fully transparent which takes into consideration vulnerable groups and communities. NAPs should be based on and guided by the best available science and traditional knowledge, using gender-sensitive approaches, with a view to integrate adaptation into relevant social, economic and environmental policies and actions, where appropriate.

Mainstreaming Adaptation in Nepal

Nepal is one of the least developed countries in South Asia. The country is rich in ethnic, cultural and biological diversity with 59 officially recognized ethnic groups/indigenous peoples living in different parts of the country. Out of total national population, 37.2% are indigenous peoples. They mainly depend on agriculture and resources from the forest for their livelihoods. They have been adapting their traditional lifestyles, cultures and identities for generations to continuing modernity, development and unpredictable climate changes.

The climate of Nepal is associated with the Himalayan mountain range and South Asian Monsoon (SAM). The climate (especially temperature and rainfall) varies with the altitude and season in both north south and east west. This is because it has four distinct seasons and three different ecological zones. Nepal is vulnerable to climate-induced disasters such as droughts, floods, landslides, hailstorms, windstorms, cold waves, glacial lake outburst flood (GLOF), forest fires and disease epidemics.

Most of the indigenous communities in the country are highly vulnerable to climate change impacts, since they inhabit remote mountainous areas, marginal and ecologically fragile areas, and landslide prone areas. They are coping with climate change externalities with their traditional knowledge, skills and available local resources as they receive very little support from government and development agencies.

Nepal has developed National Adaptation programmes of Action (NAPA) and Local Adaptation Plan of Action (LAPA) for urgent and immediate needs and priorities to deal with climate change externalities. They are also in the process of developing National Adaptation Plans (NAPs) for medium and long-term needs and priorities. Additionally, Nepal has commenced developing adaptation plans and policies at the local and community level because of diverse climatic and geographical variations. These plans have identified different climatic hazards, vulnerability sectors and geographical areas in terms of climate change risks and impacts. But unfortunately, the needs and priorities of indigenous peoples are not highlighted in any of these plans. In addition, indigenous peoples' traditional knowledge, skills, practices and technologies, which they have been practicing for generations, are not recognized in those adaptation plans.

5 Ministry of Environment (MoE), 2010. National Adaptation Programmes of Action to Climate Change, Government of Nepal, Kathmandu Nepal.

3. Indigenous adaptation practices and measures

Despite the lack of support, indigenous peoples are demonstrating varieties of adaptation and mitigation strategies across Asia. These successful cases are often based on the use of their traditional knowledge, innovations and practices with minimal support from outside. Their strategies may also include:

- Modification of traditional knowledge or blending it with modern technologies.
- Awareness raising and inter-community mobilization.
- Planning and strategy development.
- Improving forest management and management of ecosystem functions to enhance resiliencies.

The success in their adaptation and mitigation strategies is contributing to the survival of their cultural identities, sustainable use and management of natural resources and ecosystem restoration.

Some of the indigenous-led adaptation practices and strategies related to **livelihood and well being of indigenous peoples** are as follows:

- Indigenous peoples have grown different varieties of crops like legumes, cereals and vegetables in the same plot of land for generations in Sabah, Malaysia, as is the case in many part of Asia. This minimizes the risk of extensive crop failure from any weather and climate changes since different crops thrive under different conditions. Some of these varieties like nuts, tubers and pineapples are resilient to drought while some others like gourds and sweet potatoes are resilient to floods and intense rain.
- In the areas prone to flooding, indigenous peoples are creating floating vegetable gardens. For instance, in plain areas of Bangladesh they practice this under the name 'Baira Cultivation'.
- Indigenous peoples shift the calendar of livelihood activities such as planting and crop harvesting and wild plant gathering.
- Rainwater harvesting has been a common adaptation practice in South Asia for centuries, both for household use and agricultural purposes.
- Indigenous peoples on the coastlines of Vietnam are planting windbreaks along the cost to diffuse the tropical storm waves.
- In Bangladesh, indigenous people have increased the height of their houses from the ground in flood prone areas.

- Indigenous peoples are practicing shifting cultivation in new locations, which are less susceptible to climatic condition.
- To counter the disappearance of medicinal plants that is found in the forest areas, some communities have started ex-situ cinversation in their backyards or in community gardens guided by indigenous healers in countries like Nepal, Malaysia and Vietnam, etc. Some of this knowledge are documented and taught in community schools for knowledge transmission.

Some adaptation practices and strategies related to **indigenous knowledge** are as follows:

• Many indigenous communities in Asia have enhanced their food preservation and storage methods such as drying or smoking the food items during food sufficient period.

• Some communities have changed strategies for hunting and gathering fruits and fish to correlate with animal migration and fruiting periods. Further, they have started to cultivate wild foods that are fast disappearing either in shifting cultivation or permanent agricultural areas.

• Some indigenous communities like the Raute in Nepal who heavily depend on wild foods are shifting to bartering traditional artifacts with neighbouring communities in exchange for food.

• Many indigenous communities who have knowledge of local crop varieties that are tolerant to extreme climatic conditions such as *Tilki* rice variety in western Nepal are being shared with other communities. At the same time, some indigenous communities are introducing new species like *Aryan* and *Makawanpure* (rice) that are less dependent on water in Nepal.

An example of **full and effective participation of indigenous peoples** in adaptation practices is as follows:

- Indigenous peoples have many natural resource management systems that are carried out as a communal activity with the participation of all members of the community, including women and youth. For instance, Tingguians[6] cut trees, hunt animals and fish during certain periods of the year as a communal activity. The community imposes penalties to any one violating the customs and rules governing this practice. This is a kind of adaptation practice for sustainable use and management of natural resources, including forest regeneration, which is managed and governed by the community.

Let us look at few **case studies** to know how indigenous communities have successfully used their indigenous knowledge to implement adaptation practices.

Case I: Adaptation practices among the Tangkhul Naga Community in the North Eastern Region of India

This case study is based on the observations and interactions held with key informant and focus group discussion in 15 villages[7] of the Tangkhul Naga community in the North Eastern Region of India on how the community copes or adapts to the climate change impacts.

The Tangkhul Naga inhibits the remote hilly terrain of the Indo-Myanmar Arakan mountain range with varying heights of 913m-3114m (MSL). Based on the physiography of their settlement areas, the land-use system of the Tangkhuls can be broadly categorized into two (i) shifting cultivation belt in the steeper slope areas and (ii) Terrace cultivation belt in the gentle slope or low laying areas.

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6 Tingguians are indigenous peoples living in the province of Arba, Cordillera region, Philippines

7 The villages are: Sorde, Sorbung, Punge, Khambi, Alang, South Tusom, Hundung Godah, Lunghar, Sihai Khullen, Khamasom Phungdhar, Khamasom Wallely, Kuirei, Kalhang and Marem villages.

a. Adapting to clear and un-burnt mode of shifting cultivation

In the areas where terrace fields are predominant in the above villages, the communities are now adapting to clear and un-burnt mode of shifting cultivation. For example, in Lunghar village, the right time for paddy plantation in the rain-fed terrace fields are indicated by the fruiting period of a particular wild fruit (known as the *haisongti/sheepaithei* in the local dialect)—experience has taught them that planting paddy after the fruiting period of haisongti will bear only grainless panicles. But these few years, the villagers have been observing the ripening of this fruit before its usual time. This indicates that there is a need for shifting the paddy plantation to an earlier time of the year. Another factor for paddy plantation is the rain. However, they also observed that the rain pattern has become erratic due to climate change. Often, during the plantation period, paddy fields are dry without water preventing them from their plantation activities. As a result they are abandoning the rain-fed terrace paddy fields and opting for un-burnt shifting cultivation. This shifting cultivation practice usually takes place in shrub land where the biomass is buried by digging a furrow of about 10-15cm depth, depending on the thickness of the biomass, and they are laid down horizontally and covered completely with soil.

Changes observed by community in their environment:

- Frost that use to be there in the month of October has disappeared
- Disappearance of some species of bird and appearance of new species of bird
- Crops that used to grow well in their villages are no longer good and crops that did not grow before are growing well now (shifting to higher altitude)
- Appearance of more pest and new weeds
- Two types of rain patterns that they used to received in the month of October has not been seen in these last few years
- Springs and water holes are drying up
- Only few hillock gibbons found in their forest now
- Particular type of mushroom which use to be there in their forest is not seen any more

This type of shifting cultivation is not new to the community, but earlier the practice was sporadic and not as widely spread at the community level as it is today. Traditionally tilling/hollowing the land is carried out in between the month of November till the beginning of January followed by seed sowing. But now with the changing rain pattern, they are experiencing extended dry period from November to April. So they have shifted the sowing calendar as an adaption to the extreme dry months. Surveying and cutting is carried out usually in the month of September. This is followed by tilling/hollowing the land and burying the biomass except for the big logs. Crops are planted immediately, in September end or in the beginning of October, for quick rooting while the soil still retains the moisture. It is then harvested in the month of January or February.

In the month of May, the process of tilling/hollowing and burying is repeated for second cropping and the cultivation period continues for 2-3 years rather than the usual one-year multi-cropping practice. Then they let the plot remain fallow for 4-6 years until the next cycle. Besides planting traditional crops, they plant hybrid varieties of pea, beans and cabbage or potato and other leafy vegetables in this type of shifting cultivation.

The reason for opting for un-burnt shifting cultivation is that:

- There is more choice of crops and flexibility in the plantation time in shifting cultivation.
- The risk of mass crop failure is very less in shifting cultivation because they grow varieties of crops for household consumption and cash income as well which allows them to buy rice.
- Turning the soil upside down and covering the biomass completely delayed the weed outgrowth.

b. Adaptation practices in shifting cultivation belt

The community in this belt manages their fallow forest viably for livelihood support and their land is

well covered with forest. Diverse livelihood activities are practiced at the community or household level as adaptation to climate change in this area. The role of the village council has become more challenging with the impact of climate change in regulating seasonal resource management activities, equitable resource allocation and their annual planning.

Multiple cropping system with one year cultivation period has been the practice ever since in shifting cultivation. In other words, they integrate in-situ gene conservation practice of varieties of crops to choose from as per their requirement or as per the climatic variability. This practice contributes in developing the genetic varieties of breeds with a wider natural range of resistance to climatic and ecological variability. Based on their judgment of the climatic trend, the community decides their major crop, which they called it as the *mother crop.* This crop is usually drought/moisture stress resistant, wind or pest resistant varieties, while also retaining the other crops varieties in the shifting cultivation fields. They also depend a lot on resources from the fallow forest for food security as shown in the table below:

Produces in shifting cultivation		**Fallow land resources**	
Name	**No. of Varieties**	**Name**	**No. of Varieties**
Rice	12	Wild Vegetables	27
Maize	3	Larvae	9
Chilly	5	Mushroom	16
Tuber	5	Bamboo shoots	3
Onion	4	Wild animals	27
Gourd	5	Wild birds	47
Rice bean	3	Honey bee	6
Soya bean	2	Wasp	7
Total	**39**	**Total**	**142**

With the experience of higher frequency and intensity of environmental stresses due to climate change, the communities are gradually shifting their reliance for food security on shifting cultivation. They are improving their management plans, practices and enforcement of rules for regulation of shifting cultivation along with the introduction of new measures such as village grain banks.

Major portion of the village territories are set aside for shifting cultivation and the Village Council attempt to maintain the shifting cycle of about 15-16 years to ensure proper rejuvenation of the soil. The Council strictly ensures the equitable distribution of shifting cultivation plots and management of the same to prevent mismanagement, which otherwise can cause rippling effects to the whole village from any undesirable alteration of the shifting cultivation.

Due to high level of dependency on fallow forest resources for their livelihoods, strict code of conduct is enforced. The code of conduct includes regulated activities such as seasonal hunting, providing sanctuary for animals, collection of fodders and grazing etc. As part of the management plan, strict zoning of forestland and maintaining of green belt surrounding the settlement area and along the waterways are strictly observed. In many villages, communities are also reserving their best plot of shifting cultivation land as a fallback to cope with adverse climatic situations.

Case II: Traditional Adaptation Practices of Pidlisan-Kankanaeys of Sagada, Mountain Province and Ikalahan-Kalanguya of Caraballo Mountains, Cagayan Valley of the Philippines

For many indigenous peoples, they do not dichotomize between the effects of onslaughts of climate change and the onslaughts of human development. A storm upsurge has as much the same effect as large-scale open pit mining: massive soil erosions and community displacement. A drought has as much the same effect as large-scale logging: destruction of forests, drying of rivers

and loss of source of food, among others. Indigenous people's adaptations to these forces have the same objectives–to effectively defend life. Fortunately, indigenous peoples' knowledge and traditional adaptation practices have much to contribute for mankind. Forests, plains and coastal areas, claimed as ancestral domains, which forms the remaining frontiers of the earth's biodiversity provide safety from the onslaught of weather elements and human development to the society. These frontiers are inextricably woven into the fabric of indigenous peoples' lives so that lifestyles, work, land uses and movement around these territories ensure that all things in the domain that pulsates with life survive.

Indigenous peoples' daily interaction with their environment is all about adaptation practices. The following cases attempt to show precisely that. First, the traditional adaptation practice of water distribution system of the Pidlisan-Kankanaeys, an ethnic community located in Sagada, Mountain Province in the Cordillera Region of North-Western Luzon, and watershed and soil protection adaptation practice by the Ikalahan-Kalanguya or "people of the oak forests" in the Caraballo Mountains of North-Eastern Luzon, Philippines. In both cases, traditional adaptation practices evolved out of sheer survival instincts to stop, if not prevent, the harm brought about by life-threatening elements, both natural and man-made.

I. The Lampisa[8] water distribution practice of the Pidlisan tribe

The Pidlisan tribe consists of four villages: Fidelisan, Bangaan, Pide and Aguid. Their territory consists of high sedimentary mountains with elevations ranging from 1,000 meters above the mean sea level. It is steeply sloped and heavily ridged with housing settlements surrounded by flights of rice terraces. Similar to their neighboring tribes of Tubo in the nearby province of Abra, the Pidlisan people exercise control over the largest pine and mossy forests in the Northern part of the Cordillera. This territory is where most of the watershed within the municipality of Sagada is located. Members of the community tightly guard the watershed because it is a fundamental need of the rice plant and therefore, the protection and control, development and management of the watershed has direct bearing to rice production.

The tribe is organized into smaller wards known as *Dap-ays*. A *Dap-ays* is a socio-political institution, which exercises control over a defined geographical territory. As an institution, it has a body of customary law, a code of conduct, sanctions and traditional ceremonies and rituals. It is headed by *amam-a* or elders. In the late 1990s, the Pidlisan tribe's water resource base became an ingredient to a dispute that erupted into full scale armed hostility. The Dap-ay elders decided to engage the tribe in a war to protect their Lampisa system that has been a part of their being for a long time.

8 The term Lampisa means "one who maintains or repairs a road".

The Lampisa water distribution system is said to have adopted in the early 1930s and became popular ever since among the Pidlisan tribe as a solution to water disputes. The system encompasses two aspects crucial in the whole rice production cycle, maintenance and operation of irrigation and water distribution.

To start the whole process, traditional cooperative labors called *Ob-obbo* are employed. Streams and creeks in the vicinity are tapped to irrigate every square meter of arable land. Irrigation channels, spanning several kilometers each, are installed by digging ditches into the mountainside tunneling through.

With such irrigation system, people were able to build more terraces and increase rice production. However, over a period of time, the expanding rice fields exceeded the carrying capacity of the existing irrigation systems. In order to meet the increasing requirements, the Dap-ay elders instituted a maintenance and management system called *Chetchet*. This innovative system requires every person to participate in *Ob-obbo* for rehabilitation work. This is usually done at the start of the dry season in December. Prior to this, the elders perform a ritual at the main irrigation source to ask the spirit dwellers there for continuous supply of water. Each person is required to conduct regular inspections to ensure that water flow along irrigation systems are maintained and all rice fields serviced by the system receive a fair share of the water.

In light of effects of climate change, particularly when drought occurs, the members of the ob-obbo must work 24 hours to guarantee that every rice field gets an equal share of irrigation even if the water discharge is very low. There are the rules and policies were adopted by the Dap-ay elders:

- All *lampisas* are given absolute control over water regulation. Anyone interfering with the duties of a lampisa without due cause will be reprimanded and fined;
- A *Lampisa* who is found guilty of negligence shall pay a fine to the affected rice-field owner commensurate to the crop damage. Every rice field owner has the right to sue a lampisa for negligence and collect damages. But an accuser must present strong evidence, or be fined in turn if the lampisa is proved innocent of the accusations;
- A *lampisa* who is found guilty of favoritism shall be penalized. He shall pay dearly given his delicate position;
- A *lampisa* shall receive 5% of the total harvest of each farmer beneficiary as payment for his services.

These rules have not since changed. Although irrigation systems are rehabilitated, thereby reducing the workload of a *lampisa*, the rate of dues remains. *Palay* remains the medium of payment. On an average, each *lampisa* receives 400 to 450 bundles of palay for 45 to 60 days of work.

II. Ikalahan forest protection and soil erosion control practices

The Ikalahan-Kalanguya has a proud history of fighting off lowland land grabbers and cultural exploitation for decades. The tribe is nestled in the vast Caraballo mountains, 250 kilometers north-east of Manila between the province of Nueva Viscaya and Pangasinan. The Ikalahan-Kalanguyas have also learned to love and value their territory and nurture its productivity.

In the more recent times, Ikalahan-Kalanguya had foiled several attempts to grap their lands in the '50s, '60s and during the former late dictator, Ferdinand Marcos. With the persistency in their struggle, they finally obtained land security with the signing of the country's first memorandum of agreement with the then Bureau of Forest Department (BFD) now Department of Environment and Natural Resources (DENR). Among other provisions of the contract, it said that the Ikalahan should:

- "manage and use the area to the exclusion of others not subsisting within the area at the time of the signing;
- protect the forests from incursions by outsiders and prevent forest fires…"

But the agreement they had with the government was silent about how the implementation should

proceed. This encouraged them to be creative. The following are 'adaptation' practices adopted by the Ikalahans:

a. Watershed protection

Given the wide latitude in the agreement, the Ikalahan interpreted this as an indication of the respect accorded to elders. They declared 800 hectares as a watershed reserve unavailable for agricultural purposes. To enhance this, the community planted barren areas with native trees. Like the Pidlisan tribe of Sagada, Mountain Province, they set out control systems and rules to prevent forest fires through punishment and rewards. Anyone found causing wildfires resulting in destruction of property had to pay an amount equivalent to the value of what was burned. In addition, he would have to pay for the wages of those who helped to put out the fire. Before the Ikalahan established the reserve, 3,000 hectares of forests have been gutted by fire each year. By the early '80s, this was cut drastically to 30 hectares.

b. Soil protection to erosion control

Next, the Ikalahan studied traditional cultivation practices and promoted what researches revealed as beneficial for the soil. Using crop rotation and fallow forest, they would cultivate new fields when the soil is ready for cultivation and fallowed it again before any significant erosion took place. Here, the forest is allowed to grow until the soil became sufficiently fertile to begin a new cycle.

The cycle usually begins in January when a farmer locates a second-growth forest of approximately one-fourth hectare – an area that his father cultivated several years before. The area chosen must have good soil and tree trunks must be as large as a calf of a man's leg (4 inches). The farmer then cuts the underbrush and trees. Large trunks are set aside for fences while stems, leaves, underbrush and grass are spread over the field to dry usually for two months. After a period of two months or in April, when the biomass are sufficiently dried, a fire line is cleared between the field and the adjacent forest to burn the dry slashing into ash. The ash is used to neutralize acids and release phosphorous and enables the soil to produce abundant tubers. Camote is then planted as soon as the field had cooled after burning. Depending on the variety, harvests begin after three or four months and continued steadily for two years. The soil would not be subjected to plowing or cultivation at any time. When the soil becomes acidic, it was time to fallow. After a cycle of 17 years, the tribe would confirm that the system, when done property, was sustainable indefinitely.

When planting camote in the sloppy areas, Ikalahans employ an ancient practice of contour composting called *gen-gen*. How does the process begin?

- The farmer, usually a woman, digs up all the camote including the leaves and roots, working one small portion of the field, about three square meters, at a time
- She separates tubers for people and for animals;
- She chooses the stems that are good for planting, and stores them in the moist shade for a few days until they sprout;
- She carves a canal of about six inches deep on the contour of the field and puts all the stems and grasses into the canal and covers it with dirt, thus creating a series of contoured humps. When the camote stems sprout, then replants them in the field. The humps created in the slopes make the gen-gen field looks like mini-terraces.

The protrusions created by the gen-gen practice prevent soil erosion during heavy rains and even during storm surges. But apart from gen-gen, the Ikalahans also practice techniques of vegetative terracing in the slopes called Balkah, which means "belt". This involves planting of shrubs, trees or tiger grass along the contours of the slope. The slope dictates the distance between the balkah: the steeper the inclination, the closer the balkah. The result, after four to five years, is a terrace-like structure, which helps prevent erosion and maintain soil fertility.

4. Indigenous Peoples on climate change adaptation at the international level

As global attention is needed to address climate change, international conventions, mechanisms and processes have been established. Some of the most important ones among these and the outcomes related to climate change adaptation are described in brief below.

I. The UN Framework Convention on Climate Change (UNFCCC)

The UNFCCC is the most important international mechanism where binding agreements are made among Parties (governments). However, participation in the UNFCCC processes and negotiations is limited to that of observers for indigenous peoples. Given the limited nature of participation in the negotiations directly, mainstreaming of indigenous peoples' rights, issues and concerns under the UNFCCC has been minimal.

Nonetheless, to gain full and effective participation and to influence Parties, indigenous peoples' representatives and organisations have consistently participated in the Conference of Parties (COP) of the UNFCCC. As part of their international advocacy efforts, indigenous peoples have been consolidating themselves through networking and alliance building. For instance, the International Indigenous Peoples Forum on Climate Change (IIPFCCC) has become an effective channel for consolidating their position and for providing recommendations to influence the outcomes of the COP.

An example of positive outcome that is favorable to indigenous peoples in relation to climate change adaptation under the UNFCCC is paragraph 8 of Article 4. This paragraph recognizes the urgency that faces those different social groups living in the marginal, threatened areas and areas prone to sea level rise, drought and desertification. It also includes fragile and mountainous ecosystems. Further, developed countries are urged to support these vulnerable social groups in developing countries by sharing knowledge and technology to enhance their resilience to the adverse effects of climate change on their livelihoods and well being[9].

Furthermore, the Cancun Adaptation Framework that was agreed upon during COP16 is of high importance to indigenous peoples. The new framework provides potential for a new action and orientation

9 Macchi, M., 2008. Indigenous and traditional peoples and climate change: Issues Paper, IUCN. P 9

to adaptation under the UNFCCC. In COP17, Parties managed to resolve several critical pieces of the Cancun Adaptation Framework. Several strands of adaptation negotiations were integrated and streamlined. It included important provisions for helping developing countries to adapt[10] to climate change.

Most importantly, the Cancun Adaptation Framework also recognizes the need to strengthen international cooperation and expertise in order to understand and reduce loss and damage associated with the adverse effects of climate change, including impacts related to extreme weather events and slow onset events. In this context, the COP established a work programme[11] in order to consider approaches to address loss and damage associated with climate change impacts in developing countries that are particularly vulnerable to the adverse effects of climate change.

Further, the same COP decision requested the Subsidiary Body for Implementation (SBI):

- To agree on activities to be undertaken under the work programme;
- To make recommendations on loss and damage to the COP for its consideration at COP18.

The broad thematic areas to be considered in the implementation of the programme of work on loss and damage associated with the adverse effects of climate change include:

I. Assessing the risk of loss and damage associated with the adverse effects of climate change and current knowledge on the same.

II. A range of approaches to address loss and damage associated with the adverse effects of climate change, including impacts related to extreme weather events and slow onset events, taking into consideration experience at all levels.

III. The role of the Convention in enhancing the implementation of approaches to address loss and damage associated with the adverse effects of climate change.

At the 36th session of the SBI, Parties further noted a number of points relevant to assessing the risk of loss and damage associated with the adverse effects of climate change and the current knowledge on the same, including:

- A range of approaches and gaps.
- Uses of local and indigenous knowledge.
- Constraints, access to and information sharing.
- Enhancing technical and institutional capacities.
- Involvement of and dialogue with decision makers at all levels.

To provide substantive inputs to the 37th session of the SBI and recommendations to the decision on loss and damage to be adopted at COP18 in Doha in December 2012, series of experts meetings at the regional level are also being conducted. The substantive issues in these processes that are being discussed include the following:

- Both economic and non-economic damage and losses that must be considered in both the assessment of loss and damage and in the analysis of approaches to address loss and damage.
- The limits to adaptation, to risk reduction, risk retention and risk transfer approaches to loss and damage.
- Losses and damage from slow-onset impacts and state shifts as distinct threats requiring new types of approaches.
- Distinctions between avoidable and unavoidable losses.
- Loss and damage are not inherent vulnerabilities but fundamentally the result of climate impacts.
- Loss and damage is an issue of equity.
- Methods and tools for risk assessment, including their requirements, strengths and weaknesses to address social and environmental impacts.
- Capacity needs for applying risk assessment methods on the ground, including for facilitating their application in developing countries.

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10 www.insights.wri.org/node/196

11 decision 1/CP.18, Paragraphs 25-29

In addition to this, the UN Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol has decided on both the mission and structure of the Adaptation Fund at the annual meetings of member states. There is now a separate process for developing countries to approach the adaptation fund. All decisions made at each meeting of parties to these international environmental treaties are available at the following website: www.adaptation-fund.org.

II. Convention on Biological Diversity (CBD)

The Convention on Biological Diversity (CBD) is another International mechanism where indigenous peoples have been actively participating in promoting their issues and concerns relating to climate change adaptation, mitigation and biodiversity. Indigenous Peoples have been participating under the banner of International Indigenous Forum on Biodiversity (IIFB) in the CBD processes and have made significant impact in influencing the outcome of the negotiations. The IIFB has an advisory status to the CBD and the processes relating to this has been more open to the participation of indigenous peoples as compared to the UNFCCC.

The CBD has a specific provision referring to the Indigenous Peoples and Local Communities (ILC) under the Article 8j, which recognizes their traditional knowledge, innovations and practices. This article is considered as crosscutting issues under the convention and indigenous representatives have managed to promote the inclusion of traditional knowledge in the various thematic areas of the CBD.

Parties in its fifth session of the Conference of the Parties (COP) in May 2000 committed to undertake adaptation activities recognizing the interlink between biodiversity, climate change and sustainable development. The CBD recognizes that climate change impacts on biodiversity, and change in biodiversity also affect climate change.

Following this commitment made by the Parties, adaptation has been integrated within the programmes of work on various thematic areas such as mountain biodiversity, forest biodiversity, inland waters biodiversity, protected areas, marine and coastal biodiversity etc. The CBD emphasizes ecosystem-based adaptation, which integrates the use of biodiversity and ecosystem services into an overall adaptation strategy. This approach can potentially be cost-effective and generate social, economic and cultural co-benefits and contribute to the conservation of biodiversity.

Further, the CBD promotes research on climate change response activities related to biodiversity in the context of the ecosystem-based approach, environmental impact assessments, and principles of sustainable use. It also calls for the mainstreaming, to the extent possible, of biodiversity considerations into the design, implementation and monitoring of adaptation activities. Parties to the CBD are also

requested to consider the needs of the most vulnerable regions and ecosystems, including indigenous peoples, and to provide support to adaptation activities and plans[12].

12 Joint Liaison Group of the Rio Conventions. Adaptation under the framework of the CBD, the UNFCCD and the UNFCCC.

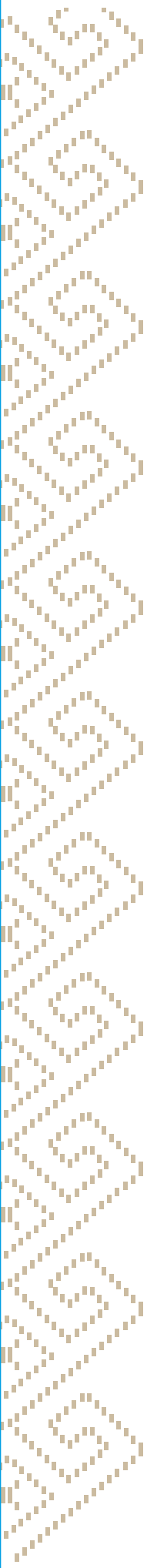
5. Conclusion

Climate change is a reality and many research studies have concluded that climatic uncertainty will increase in the future. This will inevitably create a harsh situation for indigenous peoples if adaptation and mitigations policies and plans do not effectively address their issues and concerns. Unfortunately, though indigenous peoples are at the forefront of the issue of adaptation, there is no adequate mechanism for them to participate effectively in the discussions regarding the development of adaptation strategies, plan and funding mechanisms at the national and international levels. This calls for an urgent need for the creation of such mechanisms and awareness raising and capacity building of indigenous peoples so that they can actively participate in climate change negotiations and processes at all levels.

6. Policy recommendations on Indigenous peoples and climate change adaptation

Indigenous peoples are adapting to climate change stresses and extreme events using their traditional knowledge, innovation and practices. However, the magnitude and severity of climate change impacts are greater than before, which is posing a challenge to their capacity to adapt. Therefore, it is important to explore culturally appropriate ways to enhance their adaptive capacities as well as put in place favorable policies and programmes to support them. To this end, the following recommendations relating to adaptation policies and programmes at the national, regional and international levels have been drawn from the perspective of the indigenous peoples in Asia:

- Recognize, protect and promote indigenous peoples' traditional knowledge and community-based adaptation practices, measures and strategies.
- Recognize the rights of indigenous peoples to their land, territories and resources, their sustainable resource management systems and their right to self-determined development and customary law in accordance with the rights as recognized under UN Declaration on the Rights of Indigenous Peoples (UNDRIP) internationally.
- Ensure Free Prior and Informed Consent (FPIC) in all Climate Change mitigation and adaptation processes, mechanisms, and activities impacting Indigenous Peoples.
- Ensure that REDD+ framework clearly include multiple benefits of forests for climate, ecosystem-based adaptation and the rights of indigenous peoples.
- Ensure the full and effective participation of indigenous peoples in NAPAs, NAPs and in all relevant agreements, policies and programmes at local, regional and international levels.
- Ensure that indigenous peoples have direct access to adaptation funds and culturally appropriate technologies for climate change adaptation.
- Provide support and assistance in building the capacities of indigenous peoples for climate change adaptation, especially in disaster hotspots.
- Provide sustainable livelihood diversification support to indigenous communities to cope with the impacts of climate change and strengthen their adaptive capacities.
- Promote collaborative research and action between indigenous peoples and research institutions.



Environment Programme of AIPP

AIPP has made significant progresses in awareness raising, capacity building, and advocacy and lobby on indigenous peoples' rights and issues in Asia. AIPP has six different programmes, including Indigenous Youth as a separate platform for a sustained work in asserting indigenous peoples' rights in Asia.

The Environment programme focuses on the rights of indigenous peoples to promote and protect the environment and the enhancement of sustainable resource management systems of indigenous peoples. The running projects under the environment programme—climate change adaptation and mitigation (especially on REDD+), and indigenous knowledge and biodiversity—aim to strengthen the capacity of indigenous peoples to secure their rights to lands, territories and resources, and indigenous knowledge.This programmealso has a targeted approach to lobby and advocacy work in climate change, biodiversity, food security and indigenous knowledge at the national, regional and international levels.

Four-Year Strategic Plan(2013-2016)

Overall objective: The collective rights to land, territories and resources of the indigenous peoples in Asia as well as the protection of the environment are respected and recognized at national, regional and international levels.

Specific objective 1:

Indigenous peoples in Asia are aware and confident to articulate and assert their rights and concerns relating to biodiversity, natural resource management and climate change at all levels

Activities:

1.1. Expand information sharing mechanisms using information technology on indigenous issues relating to environment and related processes and measures

1.2.Produce educational materials and training manuals in different languages

1.3.Conduct training and workshops including community education and public awareness (CEPA) on the Convention of Biological Diversity and on Free Prior and Informed Consent (FPIC), advocacy, lobby and negotiation skills.

1.4.Organize study and exchange visits on good practices of indigenous peoples on relevant and priority issues for replication.

1.5.Produce videos and distribute widely on the good practices of forest, traditional natural resource management and REDD+ initiated by indigenous communities

Specific objective 2:

Indigenous peoples in selected areas in Asia have secured community land titles and/or forest rights

Activities:

1. Localize/translated, publish and distribute the training manual on community based mapping, biodiversity monitoring and resource inventory to target communities for community mapping
2. Facilitate and organize training and community seminars on community land mapping and community based biodiversity monitoring and resources inventory.
3. Conduct the community mapping and establish monitoring teams for community land titling and develop the community based resource inventory.
4. Conduct lobby activities and coordinate campaigns and advocacy for securing community land titles.

Specific objective 3:

Mechanisms for sustained engagement of indigenous peoples relating to climate change, sustainable development, land tenure, climate change and biodiversity are strengthened or established at the national, regional and international levels

Activities:

1. Preparation, publication and distribution of Manual on skills training on advocacy
2. Conduct of trainings and skills sharing on lobby and advocacy work
3. Strengthen the networking with indigenous peoples and other civil society organizations for joint advocacy and engagement with relevant mechanisms
4. Carry out researches, document and publish case studies and reports in cooperation with other organizations/ institutions relating to natural resource conservation and management, land tenure, and relevant priority issues for awareness and advocacy
5. Conduct lobby and advocacy work with relevant agencies and parties at national, regional and international levels to ensure the collective rights and full and effective participation of indigenous peoples in the formulation and implementation of plans, policies.
6. Prepare, publish and distribute policy-briefing papers on Climate Change, biodiversity, REDD+ and rights of Indigenous Peoples targeting Asian governments, key actors and related agencies.
7. Organize the side events and other activities on relevant priority issues at different levels, particularly in ASEAN, UNFCCC, CBD and UNCSD processes.
8. Engage in dialogues and meetings with states, multilateral bodies and agencies to promote the rights, interests and welfare of indigenous peoples including their effective participation in matters that concerns them

Achievements of Environment Programme in 2011:

1. Increased knowledge and understanding of indigenous peoples on carbon inventory, REDD+, CC and IP rights in Nepal, Indonesia, Thailand, Vietnam and Laos
2. Increased engagement of indigenous peoples' organizations with relevant government agencies and with other stakeholders for implementation of the project in the partner countries
3. Increased participation of indigenous women leaders in capacity building and advocacy work in the different activities of the program
4. Initiation of research and analysis on climate change adaptation in indigenous communities for the development of a more targeted program and lobby and advocacy tools in addressing the needs and priorities of indigenous peoples on climate change adaptation
5. Broader network and reach of advocacy activities through collaboration with international organizations such the FAO, RECOFTC
6. Dramatic increase in the number of the visitors accessing the CCMIN websites because of timely and updated information sharing
7. Integration of community media (radio) for awareness raising, lobby and advocacy in the local and national levels, especially in Nepal, Thailand and Indonesia
8. Production of more community-friendly and easily understandable information materials (briefing paper, manuals, info posters) for awareness raising and capacity building.

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