United Nations Educational, Scientific and Cultural Organization

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Local and Indigenous Knowledge Systems programme

MUSÉUM NATIONAL D'HISTOIRE NATURELLE

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PARIS2015 A CLIMATE CHANGE CONFERENCE COP21·CMP11

Summaries/Résumés/Resúmenes

RESILIENCE in a time of UNCERTAINTY

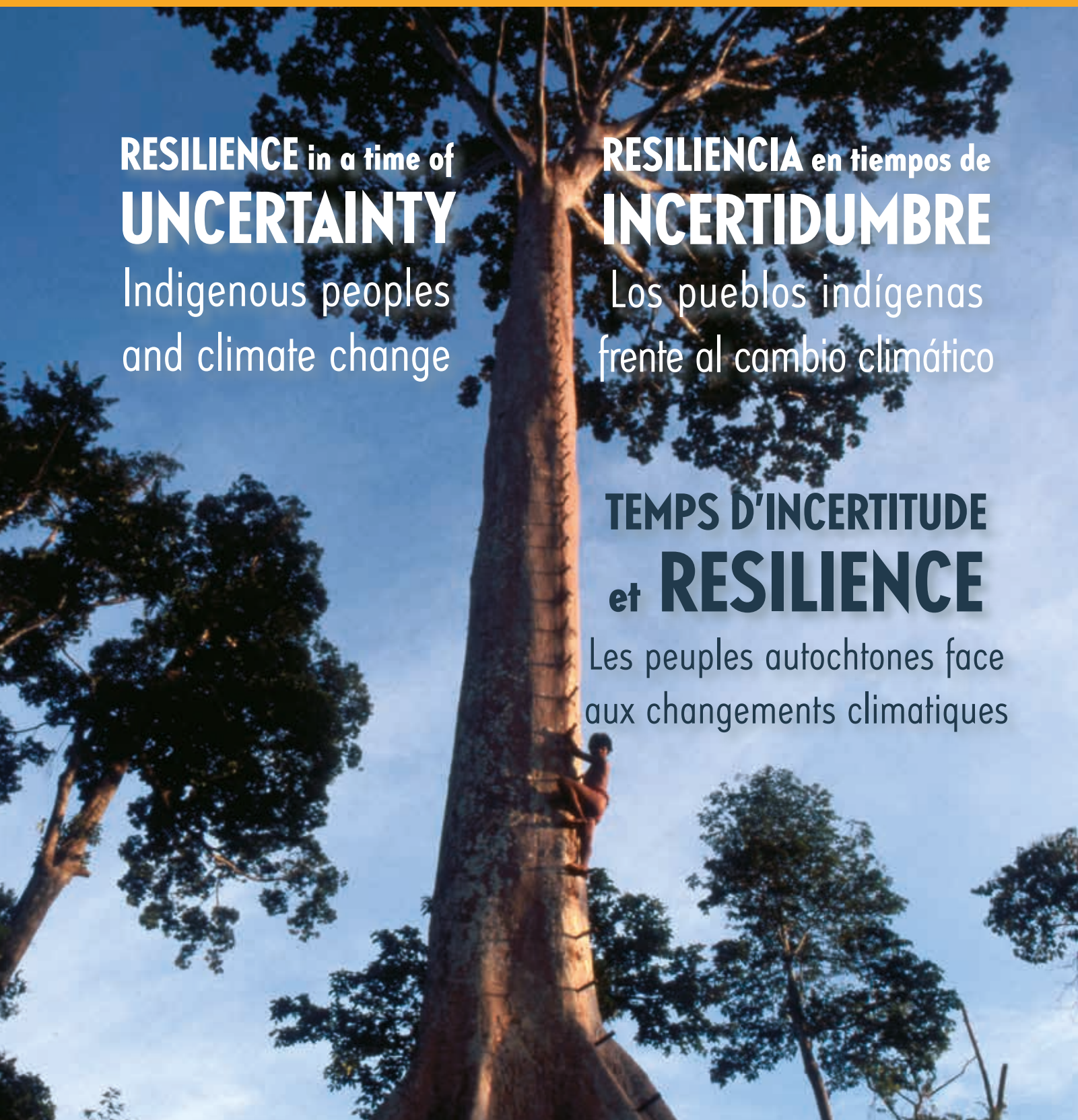
Indigenous peoples and climate change

RESILIENCIA en tiempos de INCERTIDUMBRE

Los pueblos indígenas frente al cambio climático

TEMPS D'INCERTITUDE et RESILIENCE

Les peuples autochtones face aux changements climatiques



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Co-organised by UNESCO and the National Museum of Natural History of France, in partnership with Tebtebba.

Co-organisé par l'UNESCO et le Muséum National d'Histoire Naturelle de France, en partenariat avec Tebtebba.

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Cover Photo

© UN Photo/Aulia Erlangga – Forests are honey for indigenous people in Sumatra, Indonesia

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Impacts of climate change to the transhumance system and local adaptation measures in the Himalayas

Suman ARYAL

University of Southern Queensland, Toowoomba, QLD, Australia

Traditional social-ecological systems are facing challenges in adapting to new disturbances. Transhumance system in the Himalayas was evolved to utilise the seasonal availability of grazing resources distributed at different elevations and has been shaped by centuries of trial and errors generating experiences and ideas for sustaining livelihood and natural resources. Recently, this system is experiencing a number of threats arose from globalisation and climate change among others. Climate models have predicted pronounced warming in high altitude regions in the Himalayas. But, there is no information about the impacts of climate change to the transhumance system and local adaptation measures. One hundred and forty five transhumant herders were interviewed and 6 focus groups were conducted to identify perceived impacts of climate change and explore adaptation strategies in the mountainous areas of Nepal. Transhumant herders have observed fast melting of snow in the rangelands, drying of water resources and increase in drought. Other noticeable changes were early induce in greenery and flowering/ maturing of plants in the rangelands, appearance of new plant species in the rangelands and new diseases to the livestock. Mobility of herd, diversification of herd composition, storage of feeding resources and communal pooling were the local adaptation measures practiced by transhumant herders in the Nepal Himalaya. Findings of the study suggest climate change has impacted traditional social-ecological systems, and local adaptations practices can be instrumental in reducing risk from climate change.

Bionote

I am a passionate environmental and sustainability researcher. My research interests are social-ecological system (SES), environmental assessment, biodiversity conservation, rural livelihood and climate change. My PhD is about social-ecological impacts from the structural change in the traditional SES integrating research tools and techniques from both natural and social science. I held double Master's Degree; one in Biodiversity and Environmental Management and other in Environmental Science. I have over 10 years of experiences in teaching from primary through tertiary level. I have also worked as a conservation officer and agricultural scientist/consultant in different organizations. I have contributed as a biodiversity/agro-biodiversity expert in a number of environmental impact assessment studies. I have published more than a dozen of research articles in high impact journals including Climatic Change, Regional Environmental Change and The Rangeland Journal. My focus of research in recent years is on impact of climate change to the indigenous communities and traditional systems particularly their vulnerabilities and resilience.

Challenges and good practices on Borana indigenous weather forecasting services

Desalegn Yayeh AYAL

Debre Berhan University, Ethiopia

Good practices BICFS

◊ Indigenous weather forecast is the main source of meteorological information for the Borana herders since time immemorial.

◊ The Borana herders forecast and share weather information using well organized cultural networks. The Urgi Elaltus and Uchus observe, interpret and communicate weather information to community elders and heads of Geda who then disseminate it by summoning people for urgent meetings. Alternatively, dissemination of weather information takes place near water points, market places and settlement areas.

◊ Based on the disseminated forecast information the Borana herders take coping and adaptation measures such as strengthening area enclosure through community bylaw, saving water and grass, preparing livestock medicine, storing hay, migrating with animals (water and pasture), destocking animals, reducing expenditure and changing schedules of social and cultural festivities such as wedding.

Challenges for BICFS

◊ The precision and credibility of all modes of traditional weather forecast steadily declined and led to repeated faulty predictions.

◊ Poor documentation and knowledge transfer system, influence of religion and modern education, premature death of forecast experts and expansion of alcoholism were identified as causes undermining the vitality of traditional weather forecast.

Attention to the concerned bodies

◊ Before traditional weather forecasting completely disappears, a remedial action should be carried out to prevent irreversible loss of intangible cultural heritage.

◊ It seems high time to prepare exit strategy for traditional weather forecasting, lest herders would be victimized by unreliable weather information.

◊ Traditional wisdom could serve as a starting point to scientifically study the relationship between various signs and implied weather outcomes.

Bionote

◊ *I possess my PhD in Geography and Environmental Studies (with specialization on Climate Change Adaptation and Vulnerability Assessment), MA in Geography and Environmental Studies (with specialization in Water Resource Management).*

◊ *Map for Sustainable land and water management Planning and Monitoring tool users' guide (Co-author).*

◊ *Sustainable Land and Water management trainers' manual (Co-author).*

◊ *Institutional assessment for climate change adaptation, Didahara, Borena, southern Ethiopia. ILRI Project Report. Nairobi, Kenya, International Livestock Research Institute (ILRI) (principal investigator).*

◊ *Governance Dimensions of Climate Change Adaptation Methodology for Landscape-Level Institutional Assessments. Nairobi, Kenya, International Livestock Research Institute (ILRI) (Co-author).*

◊ *Climate Variability, the Proliferation and Expansion of Major Livestock Diseases in East Gojjam, Northwestern Ethiopia. International Journal of Global Warming in press. (Principal investigator).*

◊ *Comparative Assessment of the Climate Vulnerability among Lowland Pastoralists and Highland Farmers in Ethiopia. Submitted to International Journal of Applied Geography. (Principal investigator).*

◊ *Opportunities and Challenges of Indigenous Biotic Weather Forecasting Among the Borena Herders of Southern Ethiopia. International Journal of SpringerPluse, in press. (Principal investigator).*

◊ *Indigenous Knowledge for Seasonal Weather and Climate Forecasting across East Africa. Poster presentation in Paris. (Co-author).*

◊ *Challenges and Prospects of Indigenous Astrology-Based Weather Forecasting System among the Borana, Southern Ethiopia. Submitted to International Journal of Climatic Change. (Principal investigator).*

◊ *Principal investigator for ongoing Rangeland Rehabilitation project pilot test and assessment of climate variability and extreme related newly emerging livestock diseases.*

◊ *Short term courses such as Climate change (UNFCCC), Climate resilient Development (World Bank Institute), Climate change Smart Agriculture (FAO), Natural Disaster Risk Management (World Bank Institute).*

◊ *More than 15 years work experience (7 years as university lecturer teaching courses Climatology, Natural Resource Management, Geomorphology and Biogeography).*

◊ *Short term courses such as Climate change (UNFCCC), Climate resilient Development (World Bank Institute), Climate change Smart Agriculture (FAO), Natural Disaster Risk Management (World Bank Institute).*

Observing and understanding the impacts of climate change

Sahana BOSE

Central University of Assam, Diphu, India

Sunderbans islands, the world's largest mangrove estuarines shared by India and Bangladesh is one of the most geographically challenged regions of the world where loss of forests, lands and habitats are the major issues due to sea level rise in recent years. Santhal, Oraon, Munda and Ho migrant tribes in the Indian Sunderbans, working as agricultural labourers or cultivating small farms, locally known as 'Adivasis' are the actual climate refugees of the region. Their very frequent displacement from one island to another within a span of 5years has created a wide range of ecological and socio-economic problems leading to humanitarian crisis. These climate refugees are the world's most poor people who do not even earn 10 US dollar per month. This region is an example par excellence which represents absolute failures of adaptation due to climate change impacts. There exist no rehabilitation programme for these climate change refugees and there is extremely poor community participation of them in decisions making process that affect their lives. The sunderbans serve as a natural barrier that reduces the impact of storm and flooding on the rest of the country. This is one of the cyclone-prone parts of the world, so the buffer provided by these forests is critical. This region is also experiencing sea level rise at an average rate of 3.14mm per year along with a population density of more than 1100 person per square kilometres. Again the massive influx of illegal Bangladeshi migrant has created social marginalization among rural population, disguised unemployment, scarcity of land for agriculture, decrease in agricultural yield and food insecurity. It is devilishly hard to come up with a reliable figure for a total number of people likely to be displaced by climate change. There is an enormous uncertainty. Sunderbans mangroves represents South Asia's largest carbon sink which mops up carbon dioxide must survive to help prevent global warming.

This paper talks about:

1. How the climate refugees/indigenous population could be rehabilitated? How this groups can help in adaptation process if they are taken in the decision making process, what indigenous climate change adaptation techniques they have which be implemented to bring climate resilience? What kind of plans should be

implemented for them and for how long? There are wide differences between the plans and policies implemented by the government for this poor people and the actual ground realities. Revising of older plans should be made after discussing the problems with these people.

2. There have been significant failures in development planning and strategies on the part of local and national governments, compromising the capacity of locals to adapt effectively. In absence of planning and institutional support, people have little choice but to adapt on their own.

3. How government and other stakeholders still can save this region if these neglected groups are supported to discover alternate source of livelihoods?

Bionote

At present working as an Assistant Professor, Assam University, Diphu, a place in the Northeastern part of India. Invited as panelist by UNEP in the Third Asia-Pacific Climate change adaptation Forum, Inchoen, Korea, Also participated as discussant in Potsdam Institute for Climate Impacts Research, Potsdam, Germany and Stanley Foundation, U.S.A. Area of specialization-environmental security issues related to Indo-Bangladesh Border. Worked with the indigenous people of Indian Sunderban Regions related to climate change impacts. Participated and presented papers in many international conferences both in India and abroad.

Le changement climatique, cadre d'une révolution intellectuelle nécessaire au bénéfice des peuples autochtones?

Laurence BOUTINOT

CIRAD, International Research Center, France

Les débats et les politiques au sujet du changement climatique constituent une réelle opportunité pour améliorer les conditions et le statut des peuples autochtones en Afrique. A travers le programme de réduction des émissions liées à la déforestation et à la dégradation de la forêt (REDD), il est dorénavant bien admis que les peuples autochtones sont directement concernés. Le Cameroun un des principaux pays forestiers d'Afrique Centrale a adopté la stratégie nationale REDD+.Toutefois, la REDD a un impact sur les populations forestières (les Baka, Bagyéli, Bedzang et Bakola dans les régions forestières du Sud) autrement qualifiées de populations autochtones. La juridiction internationale exige dorénavant la prise en compte de leurs droits et de leurs intérêts (Convention n° 169 de l'OIT, Déclaration des Nations Unies sur les peuples autochtones). Ainsi le statut des autochtones d'Afrique centrale s'étoffe et se précise. Les textes internationaux pertinents sont progressivement ratifiés. Des textes légaux et règlementaires sont discutés et adoptés. Les autochtones contribuent à la confirmation, l'élargissement et le renforcement de ce mouvement sous régional. Encore faut-il savoir l'utiliser afin qu'il ne devienne pas un piège qui se referme sur les peuples autochtones eux-mêmes. Le risque est grand, en effet, de voir ces populations réifiées et reléguées dans un statut qui ne serait que folklorique et qui nierait à la fois leurs revendications de développement social et politique et leurs droits d'accès aux espaces forestiers et leur droits d'usage dans le cadre d'une gestion durable au sein d'autres communautés. Le Cameroun se trouve en effet contraint de définir utilement les droits des autochtones dans un contexte qui laisse peu de place à leur adaptation aux conditions locales et nationales spécifiques et à la conformité du droit. Comment la communauté internationale doit elle se positionner face aux particularités nationales ? A travers ces questions de résilience tant des peuples que des ressources naturelles, c'est l'enjeu même de la définition d'une doctrine locale et sous régionale des autochtones adaptée aux contextes variés, complexes et riches et conforme au droit international pertinent, qui est interrogé.

Bionote

Laurence Boutinot holds a Ph.D. in sociology, Paris I Pantheon Sorbonne, she is since 1999 social scientist at the department Environment and Society, CIRAD in Montpellier, France. She lived and worked for 15 years in Africa on scientific issues related to Socio-anthropology of social change and development. She has also lived and worked in Québec. His research interests include on issues of land tenure, participatory approaches and local governance, decentralization and public policy for the environment. This implies studying management practices of natural resources of local communities, indigenous peoples and traditional knowledge about the environment.

The political ontology of climate justice and indigenous knowledge

Anders BURMAN

Department of Human Geography, Human Ecology Division, Lund University, Sweden

I am currently engaged in a comparative research project called "Indigenous peoples and climate change", focusing on how climate change is perceived and explained differently by different actors and from different ontological lifeworlds in Latin America. My research focuses primarily on the contradictions arising from the encounter between hegemonic notions of "nature" and "climate" and indigenous knowledge and understandings of the Andean landscape and cosmos. I aim to understand how these contradictions are negotiated and articulated in the indigenized political language of, on the one hand, the Bolivian State and, on the other hand, emerging oppositional indigenous movements, in a debate on climate justice. The project runs over a period of four years (2014-2017) and is funded by The Swedish Foundation for Humanities and Social Sciences (RJ).

◊ Several influential studies have shown that indigenous people are among the most vulnerable to the effects of climate change. Likewise, attention has been drawn to indigenous knowledge as a crucial component of climate change adaptation strategies. Nevertheless, a prolific scholarly debate on the "coloniality of knowledge" has manifested the epistemic dimension of continuous colonial domination and the existence of epistemic violence as an integral part of the asymmetric relations of power that characterize the world since 1492. In other words, when compared to "Western" scientific knowledge, indigenous knowledge is rarely seen as being of equal merit. While much has been said on the matter, I believe there is an essential dimension that is missing in the debate on the coloniality of knowledge, especially in relation to climate change and indigenous knowledge. What is missing in the debate is the fundamental discussion about "what there is" and the mechanisms by which a dominant reality imposes itself on other realities; that is to say, epistemological issues tend to be discussed as though they were disembedded from their ontological contexts. I therefore propose a number of additional questions to be considered in research on indigenous knowledge and climate change: Within which ontologically informed lifeworlds and in which relational fields are knowledges produced and by whom? How and by which mechanisms are the partial connections between different ways of producing knowledge and of experiencing realities transformed into spaces of conflict, domination and resistance? These are questions of an ontological nature; questions dealing with "what there is", with what kind of actors there are and what kind of beings compose the relational fields within which knowledge production and political struggle take place, and within which climate change is experienced, understood, and addressed. These questions, moreover, have a critical bearing on the climate justice debate, as understood and articulated in predominantly non-indigenous contexts and idioms, and this paper addresses the relation between climate justice and indigenous knowledge from within the critical theoretical framework of political ontology.

Bionote

I received my PhD in Social Anthropology from the University of Gothenburg in 2009, for a thesis concerned with indigenous activism, ritual practice, perceptions of landscape and place, and Bolivian state politics. 2009 to 2011 I was a Postdoctoral Scholar at the Department of Ethnic Studies at the University of California at Berkeley. I am currently a Senior Lecturer at the Human Ecology Division, Department of Human Geography, at Lund University where I teach undergraduate and graduate courses, mainly related to Political Ecology and Environmental Anthropology. I have published profusely on issues concerning indigenous peoples and movements, activism, ritual practice, cosmology, landscape and perceptions of nature, gender politics, the issue of decolonization and knowledge production in relation to central topics of Political Ecology and Environmental Anthropology with a geographical focus on Andean Bolivia where I have lived and worked for many years.

Implementación de RIA en la Reserva Comunal Amarakaeri en el marco de la Cogestión con SERNANP

Fermín CHIMATANI TAYORI

Ejecutor del Contrato de Administración de la Reserva Comunal Amarakaeri (ECA-RCA), Peru

The presentation will show impacts of climate change on traditional indigenous communities in the fragile ecosystem around the Amarakaeri Reserve in the Peruvian Amazon. Rainy seasons have altered, and rivers have been impacted, which has disrupted traditional livelihoods. Our communities are working to adapt by adjusting farming and fishing habits, looking for alternative livelihoods, all the while supporting one of Latin America's pilot REDD projects, where we will all be working together to save over 500 hectares of rainforest for the protection of our own livelihoods, and as a benefit to humanity. The presentation will show community impacts and broader initiatives in the Reserve.

Bionote

Indigenous Harakbut leader and elected president of the Executor of the Amarakaeri Comunal Reserve (ECA) in Madre de Dios, Peru. The Reserve is a protected area of 400,000 hectares with ten buffer indigenous communities that live traditional forest livelihoods. The indigenous communities are trying to mitigate the impacts of climate change by protecting the carbon and bio-diversity rich tropical forests of the Reserve. My job it to support their efforts and look for creative ways to mitigate and adapt with limited resources and technical support.

Overview of U.S. tribes adaptation to climate change

Ann Marie CHISCHILLY

Institute for Tribal Environmental Professionals, Northern Arizona University, USA

My presentation will highlight my work with tribes in the US to adapt to climate change impacts.

As the executive director of the Institute for Tribal Environmental Professionals (ITEP) at Northern Arizona University (NAU), I oversee five programs that serve all 567 federally recognized tribes in the United States. www.nau. edu/itep. ITEP has served 86% of all the US tribes in the last 23 years.

The Climate Change Program (CCP) is the fastest growing program. Some climate change impacts on Native communities have already been harsh. I will give an overview of ITEP's CCP and highlight some of the tribes we are working with to begin the adaptation to climate change.

I will also give the audience background information including the 2015 U.S. Global Change Research Program issued the Third National Climate Assessment, which is the official report for the U.S. Congress, and dedicated an entire chapter to tribes and Native American Resources Committee, August 2015 8 indigenous peoples (chapter 12). http://nca2014.globalchange.gov/report/sectors/indigenouspeoples.

Briefly, it concludes that Indian tribes and other indigenous peoples are disproportionately impacted by climate change, due in large part to a highly subsistent lifestyle. Many tribal people still live off the earth by hunting, fishing, and planting and gathering. For example, in Alaska, many of the 223 Alaskan Native villages rely on the natural environment for an estimated 85 percent of their diet. ITEP's Climate Change Program offers many resources including training (both in person and via webinars), technical assistance, monthly newsletters, educational resources, tribal profiles, and a toolkit to build tribal capacity to address climate change impacts. All of these services are free to federally recognized tribal environmental professionals. A steering committee composed of tribal environmental experts guides the CCP.

The newest resource available is the CCP staff's ability to facilitate the process of tribal adaptation planning by tribes. Tribes have started to request the assistance of the CCP staff to help them navigate through the process of developing an adaptation plan, from impact and vulnerability assessments, to identifying adaptation strategies, to writing an adaptation plan. Several tribes have completed their adaptation plans, but many more are in the beginning phases. In the last couple of years, the Bureau of Indian Affairs has begun funding tribes to conduct this work. One of the biggest concerns for tribes in developing their adaptation plans is whether to include their traditional knowledges (TKs). How TKs are defined varies significantly, but, in general, the term means the collective knowledge of the tribe or tribal members. A tribal elder's knowledge about the location and usage of medicinal plants is an example of TK. Each tribe is unique in what it considers its TKs. However defined, a common concern has arisen over incorporating their TKs because of the threat of exposure, theft, and general misuse of the TKs. An example of possible misuse would be vandalism of a location where medicinal plants grow.

I will also cover the work I did on the US Department of Interior's federal advisory committee, the Advisory Committee on Climate Change and Natural Resource Science (ACCCNRS) along with my colleagues, Gary Morishima, Ph.D., and Susan Wotkyns (my alternate). We established a subcommittee entitled "Tribal Matters." In this subcommittee, an informal group of indigenous persons, staff of indigenous governments and organizations, and experts with experience working with issues concerning TKs was organized and named the "Climate and Traditional Knowledges Workgroup" (CTKW). The 17-member CTKW felt compelled to develop a framework to increase understanding of issues relating to access and protection of TKs in climate initiatives and interactions between holders of TKs and non-tribal partners. Within a year, the CTKW published a set of guidelines. Climate and Traditional Knowledges Workgroup, Guidelines for Considering Traditional Knowledges (TKs) in Climate Change Initiatives (2014) (TKs Guidelines), available at https://climatetkw.wordpress.com/. The CTKW intends the TKs Guidelines to be an informational resource for tribes, agencies, and organizations across the United States interested in understanding TKs in the context of climate change. The CTKW intends to continue to develop the Guidelines and to accept comments. In

March 2015, the ACCCNRS addressed TKs in the eighth of its nine recommendations to the Secretary of the Interior, saying: "The Committee recommends that the NCCWSC [National Climate Change and Wildlife Science Center] and CSCs [Climate Science Centers] promote the use of both Western science and traditional knowledges of tribal and indigenous people when providing decision makers with relevant information." ACCCNRS, REPORT TO THE SECRETARY OF THE INTERIOR 8 (Mar. 31, 2015), available at https://nccwsc.usgs.gov/sites/default/files/files/ACCCNRS_Report_2015.pdf.

The TKs Guidelines can be seen as the first official step in the United States to address the use of 9 Native American Resources Committee, August 2015 TKs.

I also had the honor of attending one of the United Nations World Intellectual Property Organization (WIPO) workshops on the protection of TKs in Geneva, Switzerland. The workshop covered the traditional intellectual property tools. The workshop also introduced the newest approach – a sui generis tool that is currently being developed by the UN's Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore in order to protect TK. It is an ongoing effort. ITEP will keep working with WIPO's Traditional Knowledge division to train the U.S. tribes on current and emerging intellectual property tools to protect their TKs. ITEP's Climate Change Program will continue to listen to tribes and build strong programs that empower tribes to create their own climate change adaptation plans. It is ITEP's goal to aid tribal nations in adaption to the climate changes that are occurring at an ever-increasing pace. An elder once told me that tribes know how to adapt, we have been doing it since contact with non-Natives.

Bionote

◊ *Ms. Chischilly is the Executive Director at the Institute for Tribal Environmental Professionals (ITEP).She is a national speaker on tribes, climate change and traditional knowledge.*

◊ *At ITEP, she is responsible for managing ITEP's work with Northern Arizona University, state and federal agencies, tribes and Alaska Native villages. Before coming to ITEP, she served for over ten years as Senior Assistant General Counsel to the Gila River Indian Community (Community), where she assisted the Community in implementing the historic Arizona Water Settlement Act and founded the Gila River Indian Community Renewable Energy Team. At ITEP, Ms. Chischilly oversees four environmental programs (climate change, air quality, solid waste and educational outreach) and established the "Tribal Clean Energy Resource Center" to assist tribes in transitioning from fossil fuel based energy to sustainable/clean energy solutions. ITEP celebrated 20 years in the fall of 2012 and has served over 540 tribes and Alaskan Native Villages nationwide (86% of all US tribes). Ms. Chischilly currently serves on the Arizona Attorney magazine Editorial Board, Indian Law Section Executive Board of the Arizona State Bar, Arizona Energy Consortium-Tribal Liaison and First Stewards Founding Board. She served on the National Tribal Water Council, Native American Connections Board and is a graduate of the Arizona Bar Leadership Institute and Northern Arizona University Leadership Program. In May 2013, Department of Interior Secretary Sally Jewell appointed Ms. Chischilly to the Federal Advisory Committee on Climate Change and Natural Resources Science (ACCCNRS). Ms. Chischilly is an enrolled member of the Navajo Nation (Diné). She earned her Juris Doctorate (J.D.) degree from St. Mary's University School of Law and a Masters in Environmental Law (LL.M) from Vermont Law School. She is licensed in Arizona and has practiced in state, district, and federal courts.*

Climate change and food security of the Kankanay and Ibaloi peoples

Minnie DEGAWAN

International Forest and Climate Initiative, World Wildlife Fund, the Philippines

The presentation will focus on the impact of climate change on the food security of the Kankanay and Ibaloi indigenous peoples. For these communities, who are subsistence farmers, it is of utmost importance to be able to predict weather patterns to be able to adopt their agricultural cycles. The years of interaction between indigenous peoples and their environment has developed a system of predicting weather patterns which enabled them to plant the appropriate crops thereby ensuring their food security. Such knowledge has been passed from generation to generation through actual experience and narratives. For generations, the indigenous Kankanaey and Ibaloi have relied on this traditional system close observation of their environment to deal with climate change. Such is now being challenged and the very survival of these subsistence communities is at stake.The presentation will rely on researches previously done in the two communities of Sagada and Dalupirip.These researches were done via focused group discussions among elders, women and local government officials. Additionally, most of ideas were gathered from remembered stories heard during community gatherings. Such ideas were then checked and validated during the focus group discussions.The presentation will be done in the tradition of story telling (dad-dad-at).

Bionote

Minnie Degawan is a Kankanaey-Igorot from the Cordillera, Philippines. She has been an activist for indigenous peoples rights since her student days when she joined mass mobilizations calling for the cancellation of the World Bank funded Chico River Dam project that would have meant the death of the Kalinga and Bontoc Igorots. After the downfall of the Marcos dictatorship, she joined the Cordillera People Alliance in working for the recognition of the right to self-determination of the indigenous peoples of the Cordillera through community educatio, and organizing. The years she spent as a community educator/organizer provided her the necessary grounding to be involved in international policy advocacy work, she actively participated in the drafting of the UNDRIP and in the discussions leading to the formation of the UNPFII. She would later on become the Secretary General of the Cordillera Peoples Alliance and an active member of the International Coordinating Committee of the International Alliance of the Indigenous and Tribal Peoples of the Tropical Forests. She is currently working with the Forest and Climate Program of the WWF as the Safeguards Adviser.

Mountain Resiliency Project (MRP)

Tsechu DOLMA

Mountain Resiliency Project, Tibet, China and Nepal

My presentation will be in a powerpoint about the Mountain Resiliency Project (previously also known as Yulha) (MRP). Our vision is: "climate resilient mountain communities". Millions of Nepalis live in the mountain region; with a high poverty rate of 45%, double the national average. The terrain is rugged, precipitation is low and the poor-quality soil is difficult to farm. The landscape makes it difficult to promote economic activity and deliver services - leaving this region physically isolated, with poor infrastructure and lack of state presence. Moreover, the immediate impacts of climate change have made the challenges of development more acute. To address these issues, MRP works with existing village schools, monasteries and community center to build greenhouses and cash crop orchards. Local partner contributes partial capital investment. Greenhouse/ orchards are hubs for intergenerational platform for community learning while addressing malnourishment and adapting to water resource depletion. The produce yields are then sold off to market, expanding locals' economic participation. The generated revenue will then go back to the local partner, giving them more funding flexibility instead of waiting for unreliable government funds. In addition, locals are trained in greenhouse and business management with tools like Excel, preparing them with applicable modern skills. So far we have four project sites: 1) Geling Village School, Upper Mustang (project was started in 2014); 2) Tserok Tibetan Refugee Camp, Mustang (project was started in summer 2015); 3) Langtang Village, Rasuwa (project was started in summer 2015); and 4) Dhorpattan Tibetan Refugee Camp, Baglung (project was started in summer 2015). While we have not had enough quantitative data to monitor and evaluate our projects, we have livelihood assessment data to show the needs and progress. Foreigners visiting the Nepal mountain region pay $50/-night in permit. The fees earn millions of dollars, however, little to none of the funds trickle back. Locals have demanded their share, however, the government responds by building half-filled schools while neglecting to adequately invest in these communities since they have very little political leverage. Moreover, there is no longterm development project in the region. The only ones around are the mega hydro dams, which exports almost all its energy and leaves the locals in worse condition. State absence has resulted in inconsistent development. MRP sets itself apart by working with public schools with the triple-bottom food, energy and talent security approach. Our unique program provides self-generated revenues for the schools with crop yields, while reducing their reliance on biomass for cooking and training the students with 21st century skills. MRP disrupts institutional negligence and levels the patchy development.

Bionote

I grew up in a Tibetan refugee camp in Nepal. Fleeing from Nepal, seeking political asylum in NY, successfully being first in my family to attend college, and ultimately founding support programs for Himalayan youth in NY, was the most formative experience of my life. My bold, entrepreneurial spirit has brought me back to the country I left behind, Nepal, every year, since I was 17 years old. But when I first returned to post-civil war Nepal, I realized there was much work to be done and talent was needed now more than ever in the country I left behind. Finding gaps in the existing infrastructures, I make deep-investment in small-scale, doable solutions to development challenges. Leveraging my background and strength, I organized a Columbia student service trip to Nepal to assist in post-conflict peace building efforts. During this visit, I learned that the villagers of Geling, in Upper Mustang, were worried about how erratic weather patterns brought on by climate change were impacting their food and water security. Neighboring villages had similar issues. I studied the successes and failures of past development projects, and introduced the Mountain Resiliency Project. A greenhouse, which is not a revolutionary idea by itself, but combined with a school curriculum, business model and local investment, it becomes an incubator for social innovation, financial inclusion and capacity development. My journey from Nepal to NY, and back to Nepal proved that I could lead myself out of challenging situation, and channel my resilience to forge a path to others as well. This experience equipped me with the skills and grit to lead the Mountain Resiliency Project.

The sentinel role of forest dwellers. Eliciting local knowledge for the monitoring of climate change impact on tropical rainforests

Edmond DOUNIAS

IRD-CIFOR, France

The proposed communication is based on the assumption that the Central African forest dwellers could play a key role as 'sentinels' of the Congo Basin forest, as they would help the scientific community to better document the effects of climate change in places where these effects are poorly understood. Our research focuses on the bio-temporal signals that are detected by indigenous peoples from their surrounding forest environment. This perception conditions the local capacity to anticipate seasonal fluctuations and is a determining step of decision-making. How do these bio-temporal signals work when the bioclimatic compass is upset? How do indigenous peoples proceed to build up a prediction from the observation of these precursory signs? How are they are going to adjust their range of alerts to climate change is a crucial step towards adaptive strategies. Insects provide a particularly accurate category of signals because they are sensitive to very subtle variations of climatic conditions, at tight thresholds that are not directly perceptible by humans. Social insects have developed a critical sensitivity to tiny modifications of their environment. For instance, the function that bees can play as sentinels that alert us about subtle landscape alterations, no longer needs to be demonstrated. We propose to illustrate the value of these bio-temporal signals through the 'Sentimiel initiative'. The fundamental challenge of this citizen science operation is to valorize local knowledge tied to beekeeping and honey collecting through a network that federates diverse local actors who possess empirical knowledge about bees and their productions and who, by their regular observation of the activity of these insects, can monitor the impact of climate fluctuations and change on local biodiversity. The ultimate ambition of the Sentimiel initiative is to gain international recognition for this widespread but neglected knowledge, and to give those who hold it the means to access to funding from sources which would otherwise be inaccessible to them.

Bionote

Edmond Dounias works for the French public Research Institute for Development (IRD) and is Senior Research Associate to the Center for International Forestry Research (CIFOR). He is based at the Center for Functional and Evolutionary Ecology (CEFE) at Montpellier (France). His research activities focus on the biocultural interactions between topical forests in Congo Basin and Borneo and their inhabitants, with a particular interest for hunting and gathering nomadic societies, in a context of drastic change. He has a significant experience in anthropology of food, including quantitative food consumption surveys and biomedical monitoring. He also explores the resilience of micro-level socio-ecological systems, the environmental vulnerability and local adaptive strategies of forest dwellers in response to external drivers of change, including climate change.

Mitigation and indigenous peoples: Indigenous peoples rights in Rokan Hilir, Indonesia

Nukila EVANTY

Rights Groups, Indonesia

1. In Riau Indonesia, the most rural communities/ Indigenous Peoples having the problem on lack secure rights to their lands.

2. Government ignore on land-use plans and ignore the customary rights of Indigenous Peoples and allocate lands to development & conservation initiatives without taking local livelihoods into account, moreover the Government prioritise the expansion of oil palm & pulpwood plantation by the companies.

3. The development of economic policy on allocation and management of natural resources have been showed that the government, corporate or businesses indirectly have created the damages to environment and ecology, therefore prompt victim of these environmental damages is indigenous peoples who are residing near the forests.

4. Mitigation and Indigenous peoples need the strategy to ensure that Indigenous peoples should be integrated in decision-making about the future of their forests, mitigation on ' haze" impact to their safe and healthy environment because of "the land clearing", mitigation is to empower community for consultation, mitigation in terms to expand that the businesses or companies, conservationists and government officials all need to adjust their plans to indigenous peoples' rights are respected.

Bionote

Nukila Evanty is a specialist in indigenous people, human rights, social justice and international environmental law. An Indonesian, born in Bagan Siapi-Api, Riau, Indonesia. Belongs to one of Indigenous people in Rokan Hilir, Riau. She joined with RIGHTS group and ISDS (the Institute for Strategic and Development Studies). She finished her first master degree in public international law in 2001 from Faculty of Law University of Groningen, then, master degree in International Law and International Relations from Faculty of Law UNSW,Australia. She worked as human rights specialist with UN Residence Coordinator Office Indonesia, then she focuses on teaching and research at RIGHTS group and ISDS as well as teaching at university. She has published many books and articles in journals, one of her notes published by Council of Councils Global Memo; "the World Conference on Indigenous Peoples; a View from Indonesia", she will publish the book end 2015 regarding "Indigenous Peoples and their Environment in Indonesia".

Coconut people's identity: Threat of climate change and sea level rise

Tapugao FALEFOU

University of Waikato, New Zealand

Climate change and sea level rise is the most profound threat that we, the people of low-lying atoll states, have ever experienced since time immemorial. Scientific findings about global warming and its impacts have not only been heard by us but we are experiencing and seeing them happening with our own eyes. We are living with them and trying to cope with them day in and day out. Sea level rise is threatening our very existence and its impacts such as acute coastal erosion and water inundation causing salinity to our ground water are already taking place. As a sovereign state, the projected increase in the level of the sea means that sooner or later Tuvalu will be swallowed by the great Pacific Ocean and therefore our national and cultural identity would be extinguished forever.

My presentation will be framed around the rootedness and mobility of Pacific people and how climate change and sea level rise would impact on their lives and livelihoods. As reflected in the title of my presentation, I will first explain what I mean by 'coconut people'. I will then talk about the rootedness of the coconut to the ground as a metaphor of people's connectedness to their land/country. Similarly, I will explain the mobile nature of the coconut fruit that can drift and establish in other places to hypothetically explain Pacific people's nature of movement from place to place. Lastly, I will talk about the impact of climate change and sea level rise on the coconut symbolizing similar impacts upon the people of the Pacific, particularly Tuvaluans, who rely on coconuts in their daily lives.

My presentation will draw in real life examples of climate change impacts on coconuts in Tuvalu and likewise on the lives of many people in Tuvalu.

Bionote

Tapugao Falefou is a Tuvaluan student at the University of Waikato in New Zealand. He is undertaking PhD studies on climate change focusing on the impacts of climate change and sea level rise on national and cultural identities of low-lying countries such as Tuvalu. Mr Falefou's interest in this aspect of climate change has culminated from the various climate change conferences and meetings where he represented the Government of Tuvalu around the Pacific region and beyond. Moreover, his decision, which finally resulted in him taking study leave, emanated from the formulation of Tuvalu's first ever-comprehensive Climate Change Policy in 2011–2012. As head of the core team responsible for the formulation process of the Tuvalu Climate Change Policy, he led a nation-wide consultation around the country to discuss and dialogue with people about all related climate change issues. It was during this process that he personally saw the need to take research work on the impact of this phenomenon on Tuvalu's national and cultural identity; an issue he realized that people were very concerned and worried about. Presenting his research findings in this conference is a great opportunity for the international community to hear the voice of the indigenous people of Tuvalu about the impacts of climate change to their lives, livelihoods and the survival of their national and cultural identities.

E Toe Sa'saa le Fafao: Return to paradise

Carinnya Malelega FEAUNATI

Victoria University of Wellington, New Zealand

Following the devastating tsunami of Samoa in 2009 many villages on the south coast of the main island Upolu were left in ruins, one such site is the heritage rich village of Sa'anapu. Five years on the coastal front village is still in a state of ruin and the imminent risk of future tsunami have seen the relocation of families inland, away from the sea, the resourceful mangrove and their historically significant fale tele that once housed their ancestors. Many families who have rebuilt inland have inevitably abandoned their traditionally constructed homes on the beach front and opted for western influenced dwellings. This is due to high costs, traditional skill shortage and an underlying notion of the western influence that impedes small pacific island nations today. Although the increasing foreign aid being injected into the country for community development is a positive move to rebuilding villages, they bring a western architectural typology. With this comes an alarming decline in the traditional Samoan craft of construction, spatial constructs and ultimately the desire of the youth to retain their built heritage for the future.

This presentation will cover an overview of a design research discussion conducted in my final year of the Masters of Architecture (Professional) degree. The research argues that the rebuild process in devastated villages seeing first-hand effects of climate change present an opportunity to retain cultural practices in particular for a community rich village such as Sa'anapu. It also argues that culturally adapted and environmentally considerate design is vital in re-invigorating a displaced community but also encourages future sustainable development – culturally, environmentally and economically.

The presentation will go over the research process in its multidisciplinary framework of environmental science and anthropology to inform the architecture of a case study building that being a housing complex and education centre.

The scientific approach to the research seeks to mitigate the risks and vulnerability of the site in relation to future natural disasters whereas the anthropologic approach with the direct involvement of village of Sa'anapu through participatory design has proven the sharing of knowledge equals better design for those in question and the end result caters to the aspirations for the future of their village and livelihood.

The research presents a methodological approach to architecture for indigenous nations facing the harsh effects of climate change so that they can be physically better prepared for the ever changing environment whilst retaining their tangible heritage and identity.

Bionote

Talofa lava, Kia Ora and Hello

My name is Carinnya Feaunati, I am 24 years of age and have just completed a Master of Architecture (Professional) at Victoria University of Wellington in New Zealand.

I am a full Samoan young woman who is proud of my heritage, culture and ultimately the strands of my identity that make me who I am today. I am from a family of 7 and my Parents are both full Samoans who came to New Zealand as young adults in search of better living opportunities.

I am extremely passionate about indigenous people and as a young Samoan woman I have grown to appreciate the unique approach and way of thinking this has presented to all of life's applications. It is this love for learning about my people and my ancestors that brought me to study architecture in particular in my final year looking at the environmental and social implications around the livelihoods of our communities in the adversity of climate change. One of the major contributing factors in choosing to study and pursue a career in the field of architecture was the ability of its tangible and non-tangible outcomes to have a positive influence on people and the spaces they inhabit every day. I truly believe the direction of my research will contribute positively to the discussion of how architecture, our creations and the thought process of designers can play a part in the future of our communities in the harsh realities of climate change.

I am currently working as a Graduate Architect and also continuing my research initiated in my thesis. I hope to present the findings of my architectural, scientific and anthropologic research from a perspective of a young Samoan women who is ready to help change the world!

Indigenous knowledge of a changing climate: An ethnoecological perspective from Bolivian Amazonia

Álvaro FERNÁNDEZ-LLAMAZARES

Universitat Autònoma de Barcelona, Spain, and University of Helsinki, Finland

Indigenous peoples are increasingly facing threats resulting from a changing climate. Given the unprecedented rates of ongoing climate change, there is scholarly debate on whether these threats might also undermine the adaptive capacity of indigenous knowledge. Due to its strategic position bridging the natural and social sciences, ethnoecology is well-placed to examine to what extent indigenous knowledge is adaptive in the face of rapid climate change. This work is the result of a three-year interdisciplinary study aiming to understand the relations between climate change and the Local Environmental Knowledge held by a native society in Bolivian Amazonia: the Tsimane' hunter-gatherers. Facing rapidly changing social-ecological conditions and with the scientific discourse on anthropogenic climate change still largely inaccessible to this group, the Tsimane' constitute a suitable case study for casting light on how climate change is captured in the social memory of indigenous peoples.

The main argumentative line of this work is that Global Environmental Change has direct expressions at the local scale, including changes related to climate, the ecosystem and the availability of natural resources. This research involved qualitative and quantitative data collection during 15 months of fieldwork in 23 villages of the Tsimane' Territory. I used a number of methods common to ethnoecological research, including participant observation, focus groups and systematic data collection. I specifically conducted semi-structured interviews on environmental change perceptions (n = 300 adults), knowledge tests to assess individual levels of Local Environmental Knowledge (n = 99) and a randomised controlled trial (n = 442). Additional climate data were sourced to obtain scientific estimates of climate change in the study area.

The results of this work show that the Tsimane' identify a wide array of local indicators of climate change. Such indicators could help to fill gaps in instrumental records of Global Environmental Change. This work also shows the existence of a significant overlap between Tsimane' indigenous knowledge and scientific climate change records, as well as the instrumental role that local perceptions play in sparking collective responses for adapting to change. However, my findings also illustrate how Global Environmental Change challenges the adaptive capacity of Local Environmental Knowledge by widening the temporal gap between the rates of change in the ecosystem and the rates of change in the knowledge held by indigenous societies. This work brings new insights to the theoretical discussion on the effectiveness of Local Environmental Knowledge in the context of rapid and unprecedented changes. Results of this work stress the importance of devising strategic plans to support the resilience of indigenous knowledge in the face of ever encroaching climate change.

Bionote

I am an ethnoecologist working on indigenous knowledge of a changing environment. I submitted my PhD in September 2015, and I am starting a post-doctoral fellowship at the Global Change and Conservation Group of the University of Helsinki (Finland). My PhD research explores the interface between Local Environmental Knowledge and climate change. I spent 15 months of fieldwork living with the Tsimane' hunter-gatherers of Bolivian Amazonia. I am interested on the concept of knowledge co-production: striking a balance between science and other ways of knowing. My research shows the potential of integrating different knowledge types for improving understanding of climate change in Bolivian Amazonia.

African dryland peoples and climate change: A knowledge network for conservancies

Kathleen GALVIN

Colorado State University, USA

Climate change is projected in East Africa to increase temperature and precipitation, but most importantly, to increase the frequency and severity of droughts in some areas. Climate change is occurring in conjunction with land fragmentation, increasing human population, competition over land use and changing market forces. Africa's savannas, which are home to the largest concentrations of megafauna on Earth and pastoralists and their livestock, are literally losing ground to settlement, farming, roads and resorts. But some places are re-aggregating the land to provide biodiversity conservation and enhance human livelihoods. Community-based conservancies (CBCs) are promoted as solutions to the large-scale changes that are occurring in savannas. However, there is surprisingly little empirical evidence that supports positive change in poverty reduction, or that support both conservation and development. There is a clear need for social-ecological research on both the processes of governance within and between conservancies, and their goals and outcomes. But for change towards biodiversity conservation and human well-being to occur on the ground now there must also be science and other knowledge(s) co-mingled, discussed and learned from.

A transparent Knowledge Network (KN) for learning through action for collaborative managers, herders, policy makers, academics, and the general public can improve decisions through effective communication by the voices working in conservancies. This includes stories of experiential knowledge, videos, scientific papers, blogs, and policy briefs, and there are multiple knowledges based on age, gender, languages, ethnicity, social networks, economic sectors, and government levels.

While biodiversity is addressed through macroeconomic, regulatory and innovation policies at the global level through the UN Post-2015 Development Agenda, the UN COP 21 meetings and others, it is at the local level that changes occur. With change occurring so rapidly, the past is no longer a reliable guide to the future so that knowledge networks are vital to decision-making. Are conservancies flexible and nimble enough to act to climate change? It depends on their structure, functions and processes. The complex human-ecological systems conservancies govern are embedded in other linked systems but through KNs communities/conservancies may get the chance to become centers of innovation for adaptation.

Bionote

Kathleen Galvin is a Professor in the Department of Anthropology, and Senior Research Scientist at the Natural Resource Ecology Laboratory at Colorado State University, USA. She is an Associate Director of the School of Global Environmental Sustainability http://sustainability.colostate.edu/about/staff and Director, The Africa Center http://africacenter.colostate.edu/. Trained as a biological anthropologist, she has conducted interdisciplinary social-ecological research in the drylands of Africa and for over 25 years. She is interested in issues of pastoral land use, conservation, climate variability and change, food security and resilience and adaptation strategies of people in the savannas. Her research explores local perceptions of climate change and environmental changes and viable solutions.

The Kenyan work has resulted in an award-winning video https://vimeo.com/73980798. Her latest work on pastoral nutrition shows that despite environmental and social changes nutrition remains low (open access: http://link.springer.com/article/10.1007/s10745-015-9749-x). She has also examined the importance of spatial complexity and the costs of land fragmentation for pastoralists around the world. She was a co-author of Changing the Atmosphere, a report to the American Anthropological Association on Global Climate change (http://www.aaanet.org/. For more information see http://anthropology.colostate.edu/pages/faculty/.

Tackling climate change: Development of mitigation policies with indigenous voices

Brenda GUNN

Faculty of Law University of Manitoba, Canada

My presentation will speak about the need to include indigenous peoples in developing and implementing climate change mitigation plans. My presentation will only briefly discuss how climate change impacts indigenous peoples. The focus will be on how the internationally recognized right to participate in decision making on the basis of free, prior and informed consent can be operationalized when states are developing climate change plans.

International law recognizes the right of Indigenous peoples to participate in decisions that impact their rights, yet few states are developing and implementing climate change plans with Indigenous peoples' participation. For example, Canada's INDC claims that climate change is a shared responsibility between Federal and provincial governments in Canada, with each level of government having "its own legal framework, policies and measures in place to reduce greenhouse gas emissions. The Canadian Council of Ministers of the Environment, a federal/provincial/territorial intergovernmental forum, has agreed that climate change will be on its agenda on an ongoing basis." Canada's INDC completely ignores the role of Indigenous governments. This omission is particularly concerning as Indigenous peoples are at the frontlines of climate change and thus need to be included in the mitigation and adaptation planning. Without Indigenous peoples' direct participation in climate change planning, states run the risk of downloading impacts onto already stressed and vulnerable communities. For example, Canada's approach to clean energy includes investing in "low-impact hydro." However, the impacts of hydro developments are directly felt by Indigenous peoples whose lands are subject to flooding and whose waterways are contaminated by increased mercury, etc. While "low-impact hydro developments" may help reduce Canada's overall greenhouse gas emissions, Indigenous peoples are the ones who directly suffer from such approaches. To ensure that climate change planning does not further exacerbate the existing vulnerabilities of Indigenous peoples, it is critical that Indigenous peoples are actively involved in the development and implementation of climate change plans.

Bionote

I am an indigenous legal scholar in Canada. My main research areas are on indigenous peoples' rights in international law, as well as environmental law. Most of my research relates to promoting the recognition and protection of indigenous peoples' land rights.

I have a B.A. from the University of Manitoba and a J.D. from the University of Toronto. I completed her LL.M. in Indigenous Peoples Law & Policy at the University of Arizona. I articled with Sierra Legal Defence Fund (now Ecojustice Canada), the preeminent environmental NGO in Canada. I was called to the bars of Law Society of Upper Canada and Manitoba. I also worked at a community legal clinic in Rabinal, Guatemala on a case of genocide submitted to the Inter-American Commission of Human Rights. I also worked with First Nations on Aboriginal and treaty rights issues in Manitoba. As a proud Metis woman I continue to combine my academic research with my activism pushing for greater recognition of indigenous peoples' inherent rights as determined by indigenous peoples' own legal traditions. My research focuses on promoting greater conformity between international law on the rights of indigenous peoples and domestic law. I continue to be actively involved in the international indigenous peoples' movement, regularly attending international meetings, including the review of Canada before CERD. I provided technical assistance to the UN Expert Mechanism on the Rights of Indigenous Peoples in the analysis and drafting of the report, summarizing the responses on the survey on implementing the UN Declaration. I developed a handbook on understanding and implementing the UN Declaration on the Rights of Indigenous Peoples that is quickly becoming one of the main resources in Canada on the UN Declaration (http://www.indigenousbar.ca/pdf/undrip_handbook.pdf) and has delivered workshops on the Declaration across Canada and internationally. In 2013, I participated in the UNITAR Training Programme to Enhance the Conflict Prevention and Peacemaking Capacities of Indigenous Peoples' Representatives, which continues to impact my research.

Guidelines for considering traditional knowledges in climate change adaptation

Preston HARDISON

Tulalip Tribes, USA

Starting in the late 1980s, biopiracy or misappropriation of indigenous biocultural heritage and traditional knowledges related to genetic resources and biodiversity grew into a global issue. This led to a number of significant policy and legal measures to advance respect for and the protection of traditional knowledges and associated biodiversity. For example, the Convention on Biological Diversity promoted national laws and policies and the International Society of Ethnobiology (ISE) Code of Ethics provided guidance on working with the traditional knowledges and biodiversity utilized by indigenous peoples. One development has been the creation of community biocultural protocols to help manage the process of obtaining the free, prior and informed consent (FPIC) of indigenous peoples and local communities.

These developments are relevant to mainstreaming traditional knowledges in climate change adaptation, but there has been inadequate work to transfer the lessons learned. There are many significant benefits to indigenous engagement in climate change adaptation initiatives, but there are a number of risks as well. Fundamental to FPIC is that in any consent process, there much be a balanced assessment of risks as well as benefits of any proposed project, program, intervention or action.

Traditional knowledges occupy a spectrum of cultural sensitivity, from sacred and secret knowledges to those in daily use and shared widely. Knowledges commonly have a spiritual dimension with norms of appropriate use. Some knowledges have been closely held within communities "since time immemorial," while other forms are widespread and may be shared openly. Given the sensitive cultural nature of traditional knowledges and their circulation, there are a number of potential risks of knowledge sharing and knowledge co-production. These include moral hazard from misuse of the knowledges, misappropriation, the lack of benefit sharing and harms from the misapplication of shared or co-produced knowledges. The benefits include improving adaptation at a landscape and regional level to more effectively prevent or mitigate climate impacts, the incorporation of scientific knowledge that can improve on traditional practices in often novel and unprecedented circumstances, and spreading indigenous worldviews and epistemologies that promote stewardship and a sustainable way of life to prevent continuing and future harms. This presentation will present the Guidelines for Considering Traditional Knowledges (TKs) in Climate Change Adaptation developed by the Climate and Traditional Knowledges Workgroup (CTKW) that reviews over 20 existing research protocols developed by indigenous peoples and local communities, and presents some practical guidance on procedures to promote respect, build trust and ensure reciprocity in the development of research and collaborative relationships.

Bionote

Full time policy analyst for Tulalip Natural Resources. I work on policy issues from the local to international level. I have participated in negotiations related to traditional at the Convention on Biological Diversity since 1996, the World Intellectual Property Organization since 2000, and the Intergovernmental Panel on Biodiversity and Ecosystem Services since 2012. At Tulalip, I also work on climate change adaptation with a focus on traditional knowledge and research ethics and protocols. I am helping to organize a regional and national tribal phenology network, and starting a phenological observation project at Tulalip, with linkages to a tribal college network and involving youth, elders and community members. I have contributed to the formation of a 17 member tribal group that has developed ethical guidelines for the use of traditional knowledge in adaptation. I maintain a global database of adaptation measures (67,000+), climate change impacts (30,000+) and references of published and grey literature, and network and organizational information that has over 6,000 entries on indigenous climate change impacts, mitigation and adaptation measures, in addition to biodiversity, biocultural diversity and heritage, and related issues. This database is being prepared to go online in the next year.

I am a full-time policy analyst for Tulalip Natural Resources. I have worked on TK, biodiversity and climate change issues since the early 1990s. I have worked with indigenous peoples, and in the last 7 years been nominated as a lead negotiator at the Convention on Biological Diversity, IPBES, World Intellectual Property Organization and the Nagoya Protocol. I work on climate change law and policy issues from the local to international levels, and am involved in numerous local and regional networks. I am starting a phenology and TK project at Tulalip, and linking it to a regional and national tribal college network. I maintain a database of over 67,000 adaptation measures, 30,000 climate change impacts, and thousands of bibliographic sources, organizations, and projects related to climate change adaptation, with a focus on indigenous adaptation to climate change.

La tradition polynésienne face au défi climatique

Pascal Erhel HATUUKU

ONG Motu Haka, Iles Marquises, France

En 2010, en Polynésie française, un maire de l'archipel des Tuamotu écrivait aux élus des îles Marquises une demande d'asile climatique... A partir de cette interpellation, se posait plusieurs questions liées aux migrations climatiques, aux nouvelles gouvernances et à l'adaptation des communautés autochtones face aux changements globaux.

Pascal Erhel Hatuuku des Marquises souhaite partager son expérience de la problématiques en s'appuyant sur une tradition permettant de développer des mesures très concrètes d'adaptation et d'atténuation face au défi climatique. Des fosses à culture à l'huile de coco pour énergie, des pirogues à voile au navire hybride, des rahui (jachères traditionnelles) aux aires marines éducatives autant d'éléments rapprochant tradition, sciences et modernité.

Bionote

Deux noms qui marque son appartenance à une double culture. En effet, Pascal, enfant du Fenua, à ce pouvoir de comparaison qu'ont les personnes ayant vécu sous différentes latitudes. Ses multiples pérégrinations l'ont amené à son retour en Polynésie, il y a presque vingt ans, à réapprendre son pays de naissance.

De sa langue d'origine à la culture marquisienne, il devient le secrétaire général de la fédération culturelle Motu Haka en 1999 et est membre actif d'associations et ONGs polynésiennes à caractère patrimonial (culture-nature). Il crée OATEA en 2001, société en ingénierie-conseil en Tourisme, Environnement et Art & Culture. De la création de centre culturel à la réalisation de sentier de randonnée, de guide-conférencier à la formation professionnelle, autodidacte et touche à tout, Pascal Erhel Hatuuku devient conseiller technique auprès des gouvernements sur les thématiques qui lui sont chères : Tourisme-Nature-Culture. Il manquait un Chef de Projet "Marquises-Unesco", Pascal vient pallier idéalement cette gageure.

Pathways to resilience on multiple scales

Logan A. HENNESSY

San Francisco State University, USA

Plenty of evidence indicates significant and widespread climate-related impacts are already affecting indigenous populations. While the United Nations Declaration on the Rights of Indigenous Peoples was passed in 2007, UNFCCC policymakers have been reticent to fully embrace indigenous rights in climate policy. Notably, they have systematically rejected the principle of free, prior, informed consent, putting several peoples and communities at greater risks. For example, the governments of Ecuador and Guyana have been actively seeking international aid for reduced emissions from deforestation and degradation (REDD+) projects while simultaneously supporting unprecedented expansions of extractive developments in oil and mining. This enthusiasm for rushing to secure global partnerships is obscuring the status of dozens of indigenous peoples, threatening a dual appropriation of their land and territories. Pathways to biocultural resilience cover extreme ends of the spectrum. Some regions include trained indigenous communities collecting data for biodiversity and/or biomass monitoring while others situate indigenous communities as active participants in a damaging extractive economy. These extremes raise an important challenge for policymakers. Indigenous communities are well-prepared to use traditional ecological knowledge as partners in habitat conservation, restoration, and monitoring, but resilience hinges on expanding the policy framework to prioritize indigenous rights and reversing destructive feedback cycles. By rejecting the concept of free, prior, informed consent, UNFCCC policymakers, states, and many non-governmental organizations have not only dismissed a key principle in collective rights for indigenous peoples, but have denied the very core of their paradigm for sustainability. The embedded ecological knowledge of indigenous communities can inform more inclusive, place-based interdisciplinary frameworks for implementing climate policy and building lasting solutions through a holistic approach.

Bionote

I study social and environmental impacts of development in indigenous communities. I became interested in indigenous rights through first-hand experience in Huaorani territory of Ecuador in the mid-1990s. Studying their struggles uncovered the legacy of oil exploitation and injustice throughout the Ecuadorian Amazon. I expanded my interests to look at the Amerindian movement against mining in Guyana in the early 2000s, working closely with the Amerindian Peoples Association and the Akawaio peoples. I also worked with several northern non-profit organizations, including Pacific Environment, the International Forum on Globalization, and the Interamerican Association for Environmental Defense. These experiences laid a foundation for deep, structural critiques of extractive development, particularly at a time when the industry was exploring "sustainable mining." With the passage of UNDRIP in 2007, and the heightened attention to climate change, I became interested in understanding how global scale policymakers would address indigenous rights in key international agreements. I am an Associate Professor at San Francisco State University. I hold a Ph.D in Environmental Science, Policy, and Management from University of California, Berkeley. I teach interdisciplinary courses on international development and resources, forest ecology and conservation, climate change, indigenous peoples and natural resources. I am currently focusing on FPIC in climate change debates and REDD+.

Navigating agency in the diaspora due to forced migration secondary to sea level rise

Lesley IAUKEA

University of Hawaii, Manoa, Maui, USA

My presentation will be on power point to illustrate my research. However, I will show a couple poems and songs as examples of how the Tokelauan population uses a different context to show agency in the diaspora.

I will present research from my Master's thesis. I chose to research Tokelau in Oceania because of their past and imminent need to relocate due to Sea Level Rise. Tokelau constitutes three low-lying atolls and lies about 500 km north of Samoa. I looked at the population in the homeland and also the two bigger populations in the diaspora, Aotearoa/New Zealand and Hawai'i. A lot can be said on the two populations that migrated out as they were able to implement a pathway for perpetuation of culture while in the diaspora. I focused on two pathways of resilience, one is the educational platform for each geographic location; and two, the community and the events that were organized daily, weekly, monthly as a way to continue living the Tokelauan culture while in the diaspora.

The first drive of forced migration/relocation for Tokelau happened in 1966 due to a cyclone that devastated the three atolls. Due to the damage of all crops and natural resources, an emergency declaration from New Zealand opened up their airports and citizenship to Tokelauans as a safe place of refuge. Those that stayed on the atolls were forced to move inland due to the sea level rise and thereby enduring other issues such as water quality, crop damage and sustainability, and the cognitive aspect of losing their land in the near future due to these global environmental changes secondary to globalization. In 2005, another cyclone hit Tokelau with waves crashing over the atolls and running through their homes and schools. With an imminent danger of the water rising, strategies of relocating became a top concern. More so for the elders, a concern over perpetuation of culture became the focus as an uncertainty of what the future held for their younger generations became an immediate problem. My research looks at these core issues of forced migration that comes when a culture is cosmologically tied to the land yet due to forces unimagined and unforeseen will see these atolls uninhabitable within the next 7–10 years and out of site within the 50 years. How does this affect a culture and a people that are tied to their land?

The dynamics appear when migration and relocation becomes necessary to a group of people that have to leave their homeland for numerous reasons. For the population that continue to live in Tokelau, it is easy to exist in harmony because the cultural foundation exists where the language continues to be predominantly spoken, the landscape connects the people to the oral history and beliefs of their people through names, stories, and cultural practices that connects the land to the cosmology where there is an overall sense of who they are based on living in that environment.

For those that had to leave their homeland, that connection is hard to obtain while in the diaspora unless there is a conscious awareness of native agency and cultural perpetuation. They are forced to speak another language or language of imposition (Thiong'o 1981, 17), while living in someone else's homeland and therefore, will start to learn another culture as oppose to knowing their own. The landscape is different and the stories that connect one to their cultural is not apparent as they live in a place that does not represent their people. What is desired is to once again be connected to the homeland while in the diaspora. The question that could be asked is how does a diasporic community reclaim and reconnect to the foundation of their culture? Therefore, cosmogony is an important area of knowledge to know as this connection ties the people to the foundation of the culture.

It is important to identify key and successful tools for the survivance of the native peoples in Oceania. "Native survivance is an active sense of presence over historical absence, deracination, and oblivion" (Vizenor 2008, 36). There is a consciousness today of recognizing Indigenous knowledge and is seen by native people as benefiting not only the native community but also non-native communities as well. "The nature of survivance is unmistakable in language, native stories, natural reason, active traditions, customs, and narrative resistance and is clearly observable in persons' attributes such as humor, spirit, cast of mind, and moral courage in literature," (Vizenor 2008, 1) and adds a new vision of seeing the world through different lens.

As I've mentioned, the first setting to focus on is the educational platforms. By incorporating a curriculum

that discusses climate change and the many facets that accompany this global event, an understanding of the 'how' in climate change is important. Questions such as 'How did this happen, how does it affect a culture and people, how do we resolve and find solutions?' are important conversations to have amongst a community that is personally or non-personally affected by such elements. Recognizing Indigenous education as a legitimate form of education is key for Indigenous peoples as this different context highlights and enhances traditions and languages that fall outside of the western concept of curriculum seen as reading, writing and arithmetic. By looking at the educational platforms, the many other facets became apparent to discuss such as living in the diaspora, migration concerns that often come with force driven issues, relations between the native people and the colonial government, pathways for native agency, and a shared and collaborative effort in perpetuating culture for generations to come. With this shift towards implementing Indigenous models of education, this type of curriculum becomes pivotal in cultural reclamation and revitalization in the Pacific, an emphasis on replacing the educational platform becomes pivotal in this syncretic world that we live in so that the curriculum can be culturally appropriate for native people.

The second setting I focus on is the community and the events that were organized daily, weekly, monthly as a way to continue living the Tokelauan culture while in the diaspora. The Tokelauan diasporic community has had to face multiple issues dealing with living away from the homeland. I argue that while living away from the homeland, the need to reconnect and reclaim one's identity becomes a necessity in ensuring cultural ties. This community is forced to set up pathways to ensure continuity of culture while in the diaspora. As native people living away from their homeland, the importance of community grew strong and soon the Tokelauan ethic of maopoopo (unity) led to the formation of fakaloptopotoga (associations) and mafutaga (clubs) in New Zealand (Ickes 1999, 145). "The initial act of leaving one's parents, family, neighborhood, society and culture, and adopting a new life – and work-style is a crucial one" (Cowling 2008, 46). In a way to identify with their homeland and culture, community centers and churches served as a bridge for Tokelauans to identify with each other.

Through the diasporic history of Tokelau and because of the initiatives carried out by the first generation to Aotearoa/New Zealand, there are so many more programs and events that are being done today in a collective manner for culture perpetuation and strength in Tokelauan identity. These pathways have led the community to recognize community centers and churches as a vehicle to native agency. These examples fall back on the structures that were used in the 1960's and 1970's when they were the only source of connecting to each other and those back in the homeland. Today there are many community centers and churches that speak Tokelauan language and share the values and traditions of their people back in Tokelau. Tokelauan agency is seen through many venues and contexts and can be seen and heard from radio programs, language weeks, and church and community centers all over Aotearoa/New Zealand. A running dialogue on climate change in the schools and community events has also allowed the Tokelauan community to talk to the wider community in terms of raising awareness of such dynamics that are associated with the impacts of climate change.

Today, cultural formations and pride of origin are seen through different context such as poetry and music. This concept is not new to native peoples but rather reused again in a time that different contexts can better explain the emotions that come with living in a syncretic world. These different forms of expression creates a setting where it reminds the participants of their origin by recalling such stories, histories, and heart felt feelings of longing, to a place that connects them to the foundation of recreating the sacred and oral world to the present moment in time.

An optimistic approach known to come from Epeli Hau'ofa, a Tongan scholar, discusses another way of looking at the world from a native perspective and grassroots lens. Hau'ofa see's discourse that ultimately leads to native peoples self-characteristics. Like Thiong'o, Hau'ofa sees that there are significant consequences when it comes to people's self-identity and in what is projected out to the world. When we look at the world through our myths, legends, oral traditions and cosmologies, it becomes "evident that we did not see the world as a small island but rather a sea of islands" (Hau'ofa 1994, 7). To have the mindset that we are all connected via the many characteristics above, then there must be another way of looking at the world that can better enhance native peoples in Oceania and around the world.

Hau'ofa focuses on a vast ocean region and draws the people of the Pacific together to form a collective group called Oceania. The point is to band together because separate, we have no power or control, but if together, we could refer to the ocean as part of our domain and collectively be a force to reckon with when raising awareness for climate change. In this very mindset, scholars have critically analyzed and discussed the need to become one in order to be heard. Naturally the discussion leads to Pacific Islanders discussing such matters that will affect the future generations that will ultimately lead into a discussion of how a Pacific Islander studying other Pacific Islanders can be a useful tool in this day and age with a pan-pacific reach.

Bionote

Lesley Kehaunani Iaukea is a Kanaka Maoli wahine (Native Hawaiian woman) and comes from the island of Maui (Hawai'i). She is from the Ahupua'a 'O Hali'imaile and was born into a genealogy that is traceable and goes back sixty eight (68) generations to po (darkness). Raised on an island, Lesley grew up as a competitive swimmer, canoe paddler, and sailor. She also was raised in a community that practiced Native Hawaiian traditions where she danced hula, worked in the Lo'i (taro patch) and took care of the ancient fishponds.

She has a Bachelor's degree in Human Geography with a focus on Sea Level Rise and Indigenous Communities; a Master's degree in Pacific Islands Studies focusing on Indigenous curriculum as a platform to understanding climate change and the tools needed in perpetuation of culture due to forced relocation; and is currently a PhD student in Indigenous Studies at the University of Hawai'i Mānoa campus and continues to write about Indigenous curriculum as an essential pathway in understanding climate change and force driven issues such as relocation secondary to sea level rise. She uses the voyaging canoe as a vehicle in continuing traditional knowledge while in the homeland and/or diaspora, and as a way to incorporate Western science with an Indigenous knowledge foundation. She is also a lecturer at the University of Hawai'i Mānoa and Leeward Community College and teaches on Indigenous knowledge, Sea Level Rise/Climate Change, Qualitative research methods, and Political philosophies/Theories.

Lesley is an active crewmember, educator, and presenter on the voyaging canoe called Hokule'a and authored a curriculum for Hawai'i's schools that incorporates Indigenous knowledge in a curriculum where children follow the canoe around the world via satellite on the 4 year Malama Honua: World Wide Voyage and learn about climate change, transnational relationships, Indigenous knowledge, perpetuation of culture, and sustainability.Lesley Iaukea is a member in Rising Voices, Oceans and Islands Topic for the U.S. Climate Resilience Toolkit Taskforce member, and Nationwide Tribal Climate Education Taskforce member.

Cabañueleros: Local climate observer serving the poorest in the Dominican Republic

Eduardo JULIA

Fundación Sur Futuro, Dominican Republic

Sur Futuro is an organization working with rural mountain regions of the Dominican Republic. Their approach is participatory, promoting local capacities and skills as tools for progress. Since 2009 Sur Futuro is the only organization of civil society of the Dominican Republic with the status of observer to the UNFCCC. This is so because the organization identified climate change as an important threat for maintaining and achievements new development goals. In the course of our work with communities we identified a popular character who develops the practice known as Cabañuelas. This person, known as cabañuelero, who is actually an experienced climate observer has a strong authority in their community. The cabañuelero has a ritual running the last day of the year and the first 24 days of January every year by which predicts weather patterns for the rest of the year. He gives advice on the planting dates and crops. It is noteworthy that this person does not charge for their advice, and it usually does it in the public park. Climate change threatens this intangible capital, both in personal terms as loss of self-esteem, and the impacts on producers for the loss of confidence in cabañuelero's climate predictions. In Sur Futuro we are very concerned about the impact of climate change on this valuable human capital and the loss of its authority as local climate observer and adviser in the rural communities of the Dominican Republic.

Bionote

My job is coordinator of climate change and renewable energy in the Sur Futuro Foundation.

I am an architect and certified environmental auditor.

La perception du changement climatique par la population Kanak en Nouvelle-Calédonie

Annamaria LAMMEL

Université Paris 8, France

Actuellement il existe un consensus aussi bien parmi les scientifiques que les décideurs concernant l'importance de la prise en compte des connaissances locales (voir par exemple le Rapport du GIEC, WG 2, 2014). Grâce au financement de l'ANR, nous avons mené des recherches pendant trois ans en Nouvelle Calédonie sur l'élaboration cognitive des indices des changements climatiques locaux et globaux. Les résultats de cette recherche nous montrent que la population bilingue (français et une des langues autochtones) de la Nouvelle Calédonie a élaboré une perception complexe, systémique des risques climatiques. Différentes scénarios du déroulement de changement climatique ont été identifiés, montrant la présence d'une vision holistique reflétant la bonne connaissance du milieu et des connaissances stables transmises de génération en génération. La prise en considération de cette vision semble être nécessaire pour mieux confronter les défis du changement climatique.

Bionote

Annamaria Lammel is researcher, HDR in cognitive and cross-cultural psychology at the University of Paris 8 Vincennes-Saint-Denis, at the Laboratory Section. Since 2014, she is responsible of e-Lab Interaction between climate system and human system, Campus Complex Systems, UNESCO. IPCC expert, expert for the United Nation Environment Project for the next rapport GEO-6.

Her areas of expertise: cognitive adaptation to climate and global climate change, human adaptability to rapid changes in the environment, local knowledge, psychology and anthropology of climate change, complex systems, decision-making, governance and ethical issues.

She published about 90 scientific papers and eight books.

Siberian reindeer herders facing climate change: Observation and adaptation

Alexandra LAVRILLIER, Semen GABYSHEV, Chantal CLAUD & Maxence ROJO

Research center Cultures, Environments, Arctic, Climat (CEARC), Université de Versailles Saint Quentin-en-Yvelines, Reindeer herding Evenk community, Russian Federation, & Laboratoire de Météorologie Dynamique (LMD), Ecole Polytechnique, France

The Powerpoint presentation is about a Siberian reindeer herding indigenous community (the Evenk), the ways they observe climate change – traditionally or together with scientists, as well as their adaptive strategies for the last 10 years.

The Evenks have been noticing climate and environmental changes for decades, such as a rise in winter and summer temperatures, high weather variability and unexpected temperature jumps, as well as an increase of summer precipitation, but these changes have been increasing more rapidly over the last 5/10 years.

The paper presents some results of the Evenk reindeer herders' transdisciplinary observatory of climate change (and global changes) in Siberia. This observatory is a part of the project BRISK- BRidging Indigenous and Scientific Knowledge about global change in the Arctic (French National Research Agency funded) (UNESCO-MNHN-LMD-CEARC) and BRISK' OBS - Observatories of BRISK project (Institut Paul Emile Victor funded).

This observatory is managed by some Evenk reindeer herders and it links indigenous and scientific observation. The Evenk observatory's methodologies were designed collectively by the herders, climatologists, anthropologists and ethnobiologists. It was established in winter 2013 by S. Gabyshev, L. Egorova (Evenks) and A. Lavrillier. Since ever, it provides daily observation according to criteria of both Indigenous and Scientific knowledge (from social and environmental sciences). In addition, Gabyshev and Lavrillier (with other herders) develop co-production products of knowledge concerning Indigenous Environmental Knowledge, environmental changes, land uses' mapping, adaptive practices and socio-economical impacts of climate and global changes.

The presented results concern climate change's signs and events as perceived and faced by the Evenk reindeer herders from 2005, and with more details from 2013 till today. The paper proposes a detailed analyse of the winter's and summer's extreme or specific events. In parallel, it presents the results of transdisciplinary analyses of the adaptive strategies the reindeer herders use for coping with climate changes.

Bionote

Lavrillier Alexandra – associated Professor in Social Anthropologist at the CEARC (Cultures, Environments, Arctic, Representations, Climate), University of Versailles – UVSQ, France; 20 years research experience in Siberia; two Siberian native languages' speaker, nomadic school co-founder with reindeer herders; related current project – BRISK- BRidging Indigenous and Scientific Knowledge about global change in the Arctic (French National Research Agency funded) (UNESCO-MNHN-LMD-CEARC) and BRISK' OBS – Observatories of BRISK project (Institut Paul Emile Victor funded). Co-founder and co-manager of a transdisciplinary observatory of climate and global changes among the Evenk reindeer herders with S. Gabyshev (the second speaker).

Gabyshev Semen – Evenk reindeer herder from Amur region of Russia and Southern Yakoutia (Siberia) (25 years experience), Siberian Evenk native language speaker, and Associated member of the laboratory CEARC (Cultures, Environments, Arctic, Representations, Climate), University of Versailles UVSQ, France – indigenous co-researcher in the project BRISK.

Sacred water and Sustainable Huni Kuin Cooperative

Fabiano MAIA SALES

Huni Kuin of Jordão, Acre, Brazil

I want to speak of severe ecological and economic developments, water contamination and destabilisation, as well as possible actions for change in the Huni Kuin lands of Acre, and present you an ancient myth and a chant about Xaca and the sacredness of water.

Xaca is the pajé (shaman) of the water, it is a very sacred spirit in the shape of a crab who lives in the river. A (mythical) crab was pregnant and went fishing by the river. She was struck by a thunder and her human son was born. Xaca took the child and raised it in the water. The child was created by the shaman and spirit of the water. The Huni Kuin boy became the guardian of earth taking care of the relationship between human, nature, and the astral—he is the spirit of integration.

We came from water and everything depends on water. Water is not made by humans nor by God. It is already God. Water is an element of nature and human beings have to learn with and from it and know how to use it. If not, we harm ourselves and all life.

The contact with civilization has increased our consumption. We are using oil for engines and food, shampoo, laundry soap, batteries, creating plastic waste, intoxicating and harming the health of water, animals, plants and humans. Today we can no longer drink water from the Jordão, like when I was a child. The river sometimes dries out and has no fish. I am 29 years old and have seen two large floods, when we had to move the village to the top of the mountain. Dryness and floods are becoming more extreme. Yet, we can adapt to changes, learn from other cultures and technologies and integrate them in our culture.

For this, we plan to create a Huni Kuin cooperative as a political, ecological and economic organization that unites the powers of Huni Kuin people. We want to collectively organize our land, finance, food, handicrafts, culture, copyright of our medicines and plants for my peoples to become sustainable entrepreneurs and disseminate information about tools and technologies. Today we increasingly depend on money and the bolsa familia. This trade and the resulting debt destroy us. We want to create a green bank and produce and sell our own products, scents, oil, soap, to create our own consumption and trade for all of our 34 villages.

The money is used to invest in everyone, in nature and sustainability; it provides access to shared resources and land. The cooperative is connected to the world, as a political actor for self-representation

It is a place to conduct research of our plants. It is a spiritual work and mobilizes our traditional forces and knowledge. We will cultivate our medicines in our own hands.

We envision a garden of nature (nature reserve) that maintains biodiversity, decreases pollution and contamination, with special codes that are read only by indigenous that are the voices of natural codes and well prepared to meet any demand of nature and men. We need to save nature and life from the great tragedy of the present and future. It is time to find real solutions.

Haux

Bionote

My name is Fabiano Maia Sales, or Txana Bane Huni Kuin from Novo Natal, Jordão, Acre in the Amazon. I am 29 years old. I am a ancestral indigenous healer, musician, one of the leading forces and historian representing the Huni Kuin traditions and culture of the Jordão region to Europeans. I am the son of the Huni Kuin Sia Kaxinawá, the chief of the Huni Kuin in the Jordão region. As child and during my whole life I was introduced to the chants, oral histories, and work with plants and other medicines of the Amazon rain forest, and today continue to engage with these traditions, expanding also the exchange of knowledge between Europa and Jordão, the spiritual, ecological and the political.

Climate change impacts and biocultural heritage-based responses: Enhancing resilience to climate change in the Potato Park

Lino MAMANI

Asociacion ANDES, Potato Park, Peru

Indigenous mountain communities are particularly vulnerable to the impacts of climate change. According to the IPCC, temperatures are rising at disproportionately higher rates at higher altitudes; these changes are having serious impacts on mountain ecosystems and indigenous peoples. Nonetheless, indigenous peoples' Biocultural heritage offers great potential for adaptation because of its rich traditional knowledge, which has nurtured a wealth of adaptation mechanisms and high degree of diversity of species and ecological niches. Indigenous peoples' biocultural heritage, including a rich diversity of locally adapted seeds and traditional knowledge, offers great potential for adaptation.

Therefore, with the support from the IIED and Asociacion ANDES, in May 2014, representatives from 25 indigenous mountain communities from 10 countries, met in Bhutan to discuss the impacts of climate change and exchange knowledge and experiences for adaptation based on biocultural heritage and local seed systems. More than 70 farmers and local organizations took part, from Bhutan, China, India, Kyrgyzstan, Papua New Guinea, the Philippines, Peru, Taiwan, Tajikistan and Thailand to create the International Network of Mountain Indigenous Peoples. A follow up learning exchange workshop took place in Tajikistan in October consolidate the Network as an international network, and to deepen the knowledge exchange on the impacts of climate change on indigenous mountain communities and how such communities can respond using their biocultural heritage.

With the help of my colleagues Krystyna Swiderska from IIED, and Alejandro Argumedo from Asociacion ANDES, we would like to lead a discussion to present on adaptive strategies for climate change that were discussed in both workshops. Krystyna and Alejandro will will focus on the importance of this Network that has been created with these different mountain communities which includes the importance of establishing Biocultural Heritage Territories and Community Seed Banks. We would also like to present on the Potato Park as our main case study. The discussion about the Park, which is comprised of 5 Quechua indigenous communities will be led by myself, will further discuss the current impacts of climate change on the livelihoods of these communities and how the Network with other indigenous communities is helping my community adapt to climate change.

Bionote

Lino Mamani is part of the Quechua community of Pampallaqta, one of five small communities that make up the Potato Park near the Pisac district in Cusco, Peru. Mamani is a papa arariwa, which in Quechua means, Potato Guardian. As a Potato Guardian, Mamani is very knowledgeable about the varieties of potatoes, their uses, and stories. His main role as a Potato Guardian include educating and training both male and female farmers in the Potato Park to make decisisons, solve problems and quire new skills and techqniques as well as collaborating with scientist and researchers to integrate traditional knowleadge and science for improving the native potato.

New perspectives for IPCC's 6AR: Focus on the local

Valerie MASSON-DELMOTTE

Laboratoire des sciences du climat et de l'environnement, France

http://indigenous2015.org/Valerie_Masson_Delmotte

Bionote

Chercheur senior CEA au LSCE Laboratoire des Sciences du Climat et de l'Environnement (CEA Senior scientist at LSCE)

◊ Variabilité et changement climatique/Climate variability and climate change

◊ Isotopes stables de l'eau/Water stable isotopes

◊ Archives climatiques dans les cernes d'arbres et les glaces polaires/Climate archives from tree rings and polar ice cores

◊ Comparaisons entre reconstructions paléoclimatiques et simulations/Comparison between paleoclimatic reconstructions and simulations

GIEC/IPCC

◊ Membre du bureau pour le 6eme rapport d'évaluation

◊ Lead Author du chapitre paléoclimat du 4ème rapport de synthèse) ipcc-wg1.ucar.edu/

◊ Associée au Prix Nobel de la Paix 2007 remis à Al Gore et au GIEC

Editeur associé de Climate of the Past www.copernicus.org/EGU/cp/

Grand Prix Etienne Roth de l'Académie des Sciences avec Françoise Vimeux (2002)

Collectivement avec le thème climat du LSCE, Prix Louis D de l'Institut de France (2004)

Prix Descartes de la Commission Européenne pour la recherche collaborative transnationale : EPICA (2008)

Prix d'excellence scientifique de l'UVSQ (2011)

Nyangatom people resilience in times of climate variability and change

Alemayehu Hailemicael MEZGEBE

Arba Minch University, Ethiopia

Developing countries are the most vulnerable to climate change impacts because of the high degree of dependency on natural resource based livelihood activities. Lack of the institutional and financial capacity to withstand and cope with these impacts has direct severe effect. The objective of the study was to assess the vulnerability and adaptation strategies of pastoral livelihood to impact of climate change and variability. The study was conducted in Nyangatom Woreda, which is found in lower Omo valley of South Omo Zone. This is one of the drought-prone areas in the zone. The study used both qualitative and quantitative methods of data collection. Primary data were collected by using data gathering tools such as observation, household surveys, key informant interviews and focus group discussions. Secondary data were collected from meteorological stations of nearby Woredas. The study result shows that the Woreda climate has changed in terms of temperature and precipitation. All respondents stated that they had observed increased temperature and decreased annual and seasonal rainfall amounts, along with increased extreme conditions like drought, floods and storms. The observed impact of climate change and variability in pastoral livelihood include impact on natural resource, livestock and the community.

The findings of livelihood vulnerability assessment shows that the livelihood of the community is highly exposed to natural disasters and climate variability.

Similarly, the overall vulnerability mapping of kebels in the Woreda indicate that kebels around Kibish area highly exposed to natural disasters and climate variability, as well as low adaptive capacity compared with kebels around Omo river. The pastoral community has adapted to the perceived climate change and variability through their own autonomous adaptation mechanisms. The coping and adaptation strategies used by pastorals to the perceived or experienced climate change and variability include strategies such as mobility/migration, change in herd composition, selling livestock, resource sharing and engaging in non-pastorals' activities like selling of fire wood and charcoal burning. The adaptation options they employed are not enough to reduce the impact of current climate change and variability due to various barriers. The study identified range land degradation, conflict over scarce resource, market problems, lack of health service and bush encroachment as a barriers for adaptation. Therefore, there is a need to take integrated measures to reduce the vulnerability of pastoral livelihood and to increase the adaptive capacity of the communities.

Bionote

I am an assistant professor of Environmental sciences. My research interest focuses on exploring traditional practices of climate change adaptation and mitigation. Currently, I am working on landscape level Enset biodiversity conservation. Exploration of indigenous knowledge on clones of enset is underway. I have contributed an article on indigenous talents of Konso people to cope with climate change impacts. I have also a chapter on a book "Harnessing land and water resources for improved food security and ecosystem services in Africa" I am working in Arba Minch University running graduate programmes and guiding graduate students.

Sustainable communities in the Arctic

Denise MICHELS

Inuit Circumpolar Council, Alaska, USA

The presentation will identify success stories of communities that have adapted to climate change and opportunities to improve living conditions of communities impacted by the opening of the Arctic due to climate change.

Bionote

Ms. Michels is employed by Kawerak, Inc., a Native non-profit service organization for the Bering Strait region as the Transportation Director. In this position, she is responsible for overseeing the development and implementation of strategies for transportation, infrastructure and Arctic policy. She represents Kawerak, Inc., on the Inuit Circumpolar Council, Alaska.

Ms. Michels served as Mayor of the City of Nome, pop. 3,731, from October 2003 to 2015. Born and raised in Nome, she was the first Alaskan Native to serve in this capacity, and the first woman elected to the post. The Mayor is the chief spokesperson for the City, representing community legislative priorities to the Alaska Legislature and the U.S. Congressional delegation. She continues to focus on Arctic issues, public safety, community, economic and infrastructure development, and promotes bringing diverse groups and residents together.

As a businesswoman, she has owned and operated several businesses and rental property in Nome. Ms. Michels is an active participant in regional and statewide planning activities.

Ms. Michels is a shareholder of Bering Straits Native Corporation, Sitnasuak Native Corporation, and is a Nome Eskimo Community Tribal Member.

She strongly believes in giving back to her community and has served on numerous boards and ad hoc committees as a former member of the following: Alaska Arctic Host Committee member for the State of Alaska for the Arctic Council, Alaska Airlines Community Advisory Board,

State of Alaska's Arctic Policy Commission, State of Alaska's Northern Waters Task Force, BLM's Resource Advisory Council, Resource Development Council, Chair of the Governor Palin's Transition Team for the Department of Military and Veterans Affairs, Advisory Committee member of the Alaska Military Force Advocacy and Structure Team, stakeholder for DOTPF's Long Range Transportation Plan 2030 update, and member of the Governor's Sub Cabinet on Climate Change – Adaptation Advisory Work Group-Public Infrastructure, Past President for the Alaska Municipal League and past President for the Alaska Conference of Mayors.

Traditional knowledge and climate adaptation strategies: A case study of three communities in Kenya

Stephen Santamo MOIKO

Center for Sustainable Drylands Ecosystems and Societies, Univesristy of Nairobi (CSDES), Kenya/Nabara Consult

Climate change is a critical factor, with implications on Kenya's development strategy and welfare of Indigenous Peoples. Livelihoods and prospects of economic development and those of Communities livelihoods are directly dependent on the exploitation of land and natural resources. Nearly 80 per cent of the population resides in rural areas, deriving livelihoods directly from land as farmers, pastoralists, fisher folk and hunter-gatherers, using mostly traditional production systems that depend directly on weather patterns. The country's economic development hopes and aspirations are grounded on the exploitation of land and natural resources through tourism, agriculture and livestock production, and fisheries. A combination of high dependence on natural resources as the basis of livelihoods and the foundation for economic development, high poverty levels and low capacity for adaptation, and the existence of other significant environmental stresses, make Kenya and its significant Indigenous Peoples population highly vulnerable to the impacts of climate change. The impacts are likely to be manifested through increased incidences of droughts and floods, natural disasters, and land degradation leading to food and livelihoods insecurity, especially in the rural areas. This will in turn undermine the country's capacity to realize its broad development goals, especially Kenya's Vision 2030 objectives, thus reversing gains already made and undermining prospects for social, economic, and environmental transformation. It has been estimated that the costs of climate change could be equivalent to 2.6% of Kenya's Gross Domestic Product each year by 2030.

Extreme climatic events such as floods and drought are affecting an increasing number of the rural population and having adverse impacts on economic performance. Indeed the government has asserted that the success of the country's economic development blueprint, Vision 2030, will depend in large measure on how environmental challenges arising from climate change are addressed. Yet, although it recognizes the challenge of climate change to the realization of key targets of economic development, Vision 2030 gives very scant treatment to climate change. It notes however, that climate change may slow down the country's projected economic growth, firstly because "the economy is heavily dependent on climate-sensitive sectors, such as agriculture, tourism and coastal zones", and secondly, because the mechanisms in place for coping with climate related hazards are weak. Kenya is already experiencing significant impacts of climate change. The United Nations Development Programme (UNDP) estimates that the country's mean annual temperature has increased by 1.0 degree Centigrade over the past 50 years, representing an average increase of 0.21 degrees Centigrade every decade. It is projected to increase by 1.0 degree Centigrade to 2.8 degrees by the 2060s. Further projections show that by the turn of the century temperatures in Kenya could increase by nearly 4 degrees Centigrade causing variability of rainfall by up to 20 per cent.

Kenya's indigenous communities are vulnerable to climate risk and increased variability of climate factors. Relative to other communities in the country, Indigenous Peoples are more depended on climate factors and natural environments for livelihoods. Indigenous communities have minimal basic

infrastructure and least livelihoods diversification alternatives.The social and economic status of communities, in turn, has a direct bearing on their vulnerability to the impacts of climate phenomena.

While Indigenous Peoples have Indigenous Knowledge Systems, which they rely on to create coping and adaptation strategies to changing contexts, the high variability in climate factors, experienced in recent decades, has nevertheless impacted highly on the resilience and robustness of their socio-ecological systems. The result has been high levels of exposure to risk, destitution, social fragmentation, local conflict and high incidences of poverty.

A study was carried out in 2012 among three prominent indigenous communities in Kenya: Maasai, Ogiek and Turkana to establish their perceptions of climate change and gauge their application of traditional knowledge in coping to and adapting to Climate change. The findings reveal high awareness of climate change phenomena in local contexts, but poor understanding of climate change causality. The communities employ a wide range of coping and adaptation mechanism, many of which are functional in the short term, but may enhance vulnerability in the long term. Communities' vulnerability to, and success of coping and adaptation mechanisms to climate change, were observed to be also contingent to external factors touching on land tenure, economic opportunities, and governance institutions.

Bionote

An indigenous researcher and consultant from the Maasai Community in Kenya. Studied anthropology at the University of Nairobi then graduate studies at McGill University, Canada. Founder and director at Nabara Consult and associate researcher and lecturer at the University of Nairobi. A rangeland issues' expert, especially on issues of livelihoods (pastoralism), land tenure, climate change, environment and food security. Has carried out a number of climate change studies among indigenous peoples of Kenya and has participated in and coordinated in a number of international collaborative research studies on rangeland and climate related topics in Kenya. Has published a book and a few peer reviewed papers. Has also presented in many international and local conferences.

Indigenous knowledge and indigenous peoples in climate change assessments

Douglas NAKASHIMA & Jennifer RUBIS

Local and Indigenous Knowledge Systems (LINKS), UNESCO, Paris, France

Knowledge of the environment possessed by indigenous peoples encompasses all domains of human interaction with the natural world. While indigenous knowledge has been at the heart of global debates on biodiversity conservation and management for several decades, its emergence in the climate change arena is much more recent. Of course, indigenous peoples have been observing and forecasting weather and climate, and coping with climate variability, since time immemorial. But with a few noteworthy exceptions, these highly-developed skills and accompanying practices, even though essential to the livelihoods, security and well-being of indigenous peoples around the globe, have received little recognition from the global community.

This is now changing due to growing attention to global climate change and the expansion of interest beyond climate science to also include the challenges of climate change adaptation and mitigation, including at the local level. These shifts have triggered a growing interest in indigenous peoples' knowledge, practices and worldviews in a range of climate-related areas, as reflected in regional assessments, such as the Arctic Climate Impact Assessment (ACIA) and global assessments such as those of the Intergovernmental Panel on Climate Change (IPCC). Beginning with IPCC's Third Assessment report and tracking through the Fourth and Fifth Assessment reports, how has the recognition of indigenous peoples and their knowledge evolved, and how might this influence climate change action and decision-making?

Bionote

Douglas Nakashima is Chief of the Small Islands and Indigenous Knowledge section at UNESCO. He has been working in the field of indigenous knowledge for over 30 years and, in 2002, created UNESCO's global programme on Local and Indigenous Knowledge Systems (LINKS) that addresses the role of indigenous knowledge in environmental management, including climate change, and reinforces intergenerational transmission. Most recently he led UNESCO's work with the Intergovernmental Panel on Climate Change to highlight the importance of indigenous knowledge for climate change assessment and adaptation in IPCC's Fifth Assessment Report.

Jennifer Rubis is the Coordinator of Climate Frontlines, a UNESCO-led initiative to highlight the voices of indigenous peoples, small island and rural communities in global climate change debates. Since 2000, she has worked at different levels, from the community to the international arena, to promote the inclusion of indigenous knowledge in environmental policy and decision-making. A Dayak from Malaysian Borneo she comes from a line of shamans and priestesses and from one of the few Jagoi families that actively honor, through practice, their hill rice cultivation traditions.

Observing glacier retreat through indigenous perspectives

Ben ORLOVE

Columbia University, USA

Glaciers have been retreating around the world since the 1970s. This change is one of the most directly visible and widespread consequences of climate change. It is also one of the effects most directly linked to rising temperatures alone, rather than being mediated by ecological and human processes. Moreover, it has significant economic, social and cultural impacts, since it alters water resource availability (there are brief periods of peak water with increased runoff, though these are soon followed by reduced flows), it creates hazards such as glacier lake outburst floods and landslides, and it alters culturally significant landscapes. Much of the knowledge of glacier retreat in the international scientific and policy community comes from a limited number of sources, most of them of short temporal length and uneven spatial coverage. A small number of glaciers, largely in Europe and North America, have been measured since the late nineteenth century. Aerial photography from the mid-twentieth century and remote sensing from satellites since the late twentieth century have added data, though this provides less detail. Indigenous observation of glaciers, by contrast, goes back much earlier in time, including, travel across glaciers and ice-covered passes, and regular visits for rituals and for resource use such as grazing. These observations provides detailed information from around the world, including the major groupings of glaciers in South and Central Asia (Himalayas, Hindu Kush, Karakoram, Tien Shan) and in the Andes of South America, as well as many smaller areas in Africa, Southwestern Asia and New Zealand. Indigenous peoples have long observed glacier areas, ice characteristics such as color (related to the density of dust and soot) and glacier hazards. They note glacier hazards, including outburst floods, landslides, and other events such rapid advances in earlier, cooler periods. This knowledge complements scientific knowledge in its temporal and spatial range and in its rich detail. Moreover, indigenous peoples have long-established traditions of treating glaciers as sentient beings to be respected and honored; in the contemporary context, these traditions can serve to promote preservation of high mountain regions and adaptation activities. These complementarities between indigenous and scientific knowledge – for research and for action – remain at an early stage of their development.

Bionote

Ben Orlove is a Professor in the School of International and Public Affairs and a member of the faculty of the Earth Institute at Columbia University, where he also directs the Master's Program in Climate and Society, and the Center for Research on Environmental Decisions. He is a Senior Research Scientist at the International Research Institute for Climate and Society. He is the Managing Editor of GlacierHub, www.glacierhub.org, a website that covers the scientific, cultural and policy aspects of glacier retreat. Trained as a sociocultural anthropologist, he has conducted field work in the Peruvian Andes since the 1970s and also carried out research in other areas, including the Himalayas and Central Asia. His early work focused on agriculture, fisheries and rangelands. More recently he has studied climate change and glacier retreat, with an emphasis on water, natural hazards and the loss of iconic landscapes. In addition to writing a number of research papers and books and editing two journals (Current Anthropology and Weather, Climate and Society), he is also the author of a memoir and a book of nature writing.

Climate resilience, indigenous youth and local economies in a changing Arctic: New tools for Arctic indigenous peoples

Anders OSKAL in collaboration with Mikhail POGODAEV, Alona GERASIMOVA, Svein D MATHIESEN, Helena OMMA, Johan Mathis TURI, Anna DEGTEVA, Svetlana AVELOVA and Ravdna BM EIRA

International Centre for Reindeer Husbandry (ICR), Kautokeino, Norway

Arctic indigenous peoples face major challenges related to changes in their societies and the northern climate. What most would not recommend for the world, ie. over 2 degrees temperature increase, is already a reality in the Arctic. There is an urgent need for increased understanding of the effects of globalization, climate change and development, as well as adaptation and society resilience, for securing sustainable development in the Arctic.

Arctic change means both challenges and opportunities. Indigenous reindeer herding communities however often find themselves in a disadvantaged position; The negative impacts of eg. cumulative land use change and socio-economic conditions often ´overshadow´ possibilities of positive local development, in terms of the communities´ capacity to be proactive and take lead for local actions. New approaches for adaptation and resilience to Arctic change in local indigenous communities are thus needed.

For this reason, a new Arctic Council project was initiated by Association of World Reindeer Herders: The project is called EALLU Indigenous Youth, Climate Change and Food Culture, and will focus on Traditional Knowledge on food as a foundation for diversification of local economies in the indigenous peoples areas, as a new approach to adapt to Arctic change. The project is hosted by USA, Canada, Norway, Russia and Denmark/Greenland, and will work under the US and Finnish Arctic Council chairmanships 2015–2019.

The Arctic Council EALLIN Reindeer Herding Youth project was a follow-up of IPY/Arctic Council EALÁT, hosted by the Russian Federation and Norway in the Arctic Council, and led by ICR. Following a vision of improving the lives of pan-Arctic reindeer herding youth, the project focus on engaging, educating, networking and empowering youth. More than 160 reindeer herding youth have thus participated in the ´Training of Future Arctic Leaders´ program of UArctic EALÁT Institute at ICR in 2012–2015. EALLIN legacy includes the initiative Arctic Indigenous Peoples´ Culinary Institute. The final report was presented at the 2015 Arctic Council Ministerial Meeting (Pogodaev *et al.*, 2015).

ICR´s IPY/Arctic Council EALÁT project focused on the reindeer herders' ability to respond to climate change and changed use of the Arctic, investigating reindeer herders' traditional knowledge for adaptation, and being reindeer herders' voice to the Arctic Council on these issues. EALÁT organised 21 community-based workshops in reindeer herding

societies, where herders, scientists and authorities jointly addressed the challenges. Recommendations/ findings were presented in the EALÁT reports to the Arctic Council Ministerial Meetings in 2009 and 2011 (Oskal et.al, 2009; Magga et.al, 2011).

Central to EALÁT/EALLIN are the methods for integrating traditional knowledge with science (Oskal *et al.*, 2009; Magga *et al.*, 2011; Eira I., 2012). The community-based approach of EALÁT is an example of bridging the gap between universities and societies, and between science and traditional knowledge (Rosswall et.al, 2012). These issues were also in part reflected by the participation of ICR in the IPCC AR5 WG II Polar Regions Chapter (Nymand-Larsen *et al.*, 2014).

Bionote

Anders Oskal is the Founding Executive Director of the International Centre for Reindeer Husbandry (ICR), and representative of the Association of World Reindeer Herders to the Arctic Council. These organisations both focus on traditional economies.

Holding a Master Degree in Business with a major in Innovation and Entrepreneurship, Oskal comes from an indigenous background in Sámi reindeer herding in northern Norway. He has broad experience with traditional indigenous economic activities, including from operation of his family's small scale reindeer slaughterhouse and processing plant.

Oskal earlier worked for a number of years for the Norwegian Government/Innovation Norway, leading the development of programs for increased value added and innovation for reindeer herders and their companies.

Through ICR, Oskal is also in lead of the Arctic Indigenous Peoples' Culinary Institute, a virtual academic network institute established to document and utilize traditional knowledge and food cultures of indigenous peoples as a means for local business development and innovation.

Association of World Reindeer Herders (WRH) are observers to Arctic Council. Through this position Oskal has lead a number of projects on adaptation and traditional livelihoods. Oskal was also contributing author to the Polar chapter of the IPCC 5th assessment report.

Kghyemba System among Loba indigenous peoples of LoManthang: An indigenous institution amid the tradition and livelihood

Tunga Bhadra RAI

Nepal Federation of Indigenous Nationalities (NEFIN) Climate Change Partnership Program, Nepal

My paper accounts for the discussion on how Kghyemba System, an indigenous institution of village-chiefdom system among Loba Indigenous Peoples of LoManthang Nepal embeds in Loba culture and how that institution ultimately contributes to the actions of adapting traditional livelihood in the face of climate change. It discusses about how Kghyemba System generates meaning in Loba life-ways and to the knowledge attached with the local environment, particularly in water management in high altitude of rain shadow area, Loba rituals and in facing climate change in the recent years. This paper is build upon the conceptual framework about production of meanings through symbols and rituals. The issues are then linked with the concepts of social exclusion explaining the relational status of indigenous Kghyemba System with modern statutory governance system of Nepal, in the context of climate change adaptation and mitigation policies of the country. Qualitative research method gathers the data and the information are analyzed accordingly.

This paper is based on the field work conducted in a village situated in the elevation of 3,850 meters above from the sea level, called "Mud City of LoManthang" and "The Last Forbidden Kingdom" of Nepal, in 2011 and 2015. This village has traditional King and a village chiefdom system, which play a vital role in traditional occupation and also keeping society in harmony.

Bionote

I belong to Rai indigenous community of Nepal. I completed Master's Degree in Anthropology from Tribhuvan University Nepal. I was engaged in several research works and awarded with Harka Gurung Research Fellowship (2009–2011) by SIRF – Netherlands Development Organization (SNV) Nepal and by some others. Currently, I work with Nepal Federation of Indigenous Nationalities (NEFIN) Climate Change Partnership Program. As my work with NEFIN, we work for the awareness raising and capacity building of indigenous peoples on climate change adaptation and mitigation. Advocacy and lobby for the rights of indigenous peoples in climate change is a part of my work. Besides that, I follow the United Nations Framework Convention on Climate Change (UNFCCC) negotiation and also engaged in REDD+ readiness process of Nepal, on behalf of indigenous peoples of the country.

Cambios en el calendario wayuu: Otros entendimientos del cambio climático

Yasmin ROMERO EPIAYU

Movimiento Fuerza de Mujeres Wayuu

Durante los meses de julio y agosto de 2014, el territorio Wayuu vivió una intensa sequía que impactó fuertemente la vida de sus habitantes. La escaséz de agua se tradujo en escaséz de alimentos de cultivo local y la muerte y enfermedad de animales de cría. Esta situación de fuerte presión para el desarrollo de la vida y la supervivencia, causó que se agudizaran las enfermedades y la desnutrición en los niños y niñas de las poblaciones más vulnerables. Es de resaltar que a pesar de no ser esta una problemática reciente en la región, recibió mucha atención mediática debido a la movilización de la sociedad civil del departamento para visibilizar su situación, y a la severidad de los impactos en la vida de las personas que habitan en la región; especialmente a la población wayuu como grupo social históricamente marginado por las estructuras de la sociedad dominante.

La intensa sequía ha pasado y aunque los fuertes impactos aún se sienten y la atención mediática ha mermado, el debate sobre sus causas sigue vigente. Es por esto, que como movimiento nos proponemos participar activamente en este debate a través de una labor investigativa desde nuestros saberes y memorias como pueblo wayuu, los cuales nos permitan abordar y problematizar la noción de 'cambio' en nuestro territorio durante las últimas cuatro décadas. Con esto, pretendemos construir un panorama de las percepciones de las poblaciones wayuu, específicamente las mujeres wayuu, sobre cómo ha cambiado su territorio y las implicaciones que esto ha tenido para la economía reproductiva de nuestras poblaciones en términos de acceso al agua, cultivo de alimentos, acceso a plantas medicinales y cría de animales. En principio, queremos aportarle riqueza descriptiva y diversidad de historias a estos cambios para así contribuir a un entendimiento más profundo y amplio de las dinámicas de nuestro territorio en las últimas décadas.

Apuntamos a evaluar el impacto de estos cambios en la vida diaria de nuestro pueblo, especialmente en las prácticas para la obtención de alimentos (agrícolas y pecuarias) y las transformaciones en los ritmos y temporalidades de la vida como mecanismos de adaptación a dichos cambios. Por esto nos preguntamos:

- ¿Cómo ha cambiado el calendario en la vida del pueblo wayuu?
- ¿Cómo han cambiado – o no – las prácticas agrícolas y pecuarias de los y las wayuu en los últimos cuarenta años?
- ¿Cómo se perciben – o no – cambios en el ritmo de la vida, en las concepciones y prácticas agrícolas?

La pregunta pretende abordar las diferentes percepciones de hombres y mujeres wayuu respecto a los cambios recientes en el calendario, enfocándose de manera específica en el calendario de prácticas agrícolas y pecuarias, y cómo estos cambios han afectado su 'soberanía alimentaria'.

Yazmin aprendió desde muy niña el escucha de la palabra sabia trasmitida desde la voces de sus ancestros o abuelas wayuu, la mayoría de su familia viene de una línea fuertemente del linaje del activismo han defendido históricamente su cultura milenaria, sus tierras sagradas , sus derechos ancestrales que parte fundamental de la herencia encomendada por sus ancestros. Allí empezó a crear ese gran coraje de poder trabajar por su pueblo wayuu, con una claridad frente a los ideales, posicionando el legado de construir una política organizativa partiendo desde la unidad de los sectores sociales y populares.

Esta gran mujer dirigente wayuu, ha sido cuestionada desde aquel momento en que emprendió su lucha por la defensa de WOUNMAINKAT – Madre tierra, en los últimos años las multinacionales en el caso del cerrejón propiedad de la BHP BILLITHON, ANGLO AMERICAN, GLENCORE, SXTRATA. Que vieron a saquear los órganos de WOUNMAINKAT, las tierras sagradas de los wayuu desde hace 35 años, hoy esta empresa saca carbón a cielo abierto, sin que ningún gobierno le exija axolutamente nada, han dicho que las lideresas mujeres wayuu, están mintiendo y que sus luchas serian en vano, porque según dichas empresas ellos jamás han violado los de derechos ancestrales de este pueblo milenario.

Esta gran mujer dirigente wayuu, ha tenido que aprender a vivir en un mundo en donde no ha pertenecido, pero que le ha tocado vivir el mundo occidental, se ha visto obligada a que se adapte a ella, en el caso sus viajes por todos los lados del continente, o el de pararse ante multitudes, denunciando toda la problemática que le ha tocado vivir su gran pueblo wayuu, en la cual hoy se está quebrantando en un estado crítico en donde se ha visto impactada desde ruptura del tejido social a su interior.

Ontologie samie de la variabilité et du changement climatique

Marie ROUÉ & Samuel ROTURIER

CNRS/MNHN & AgroParisTech/ESEE, France

La richesse du vocabulaire des peuples du nord sur la neige et la glace a souvent été signalée dans la littérature linguistique, mais jamais analysée du point de vue de la physique, de la chimie, de l'écologie hivernale qu'elle dévoile, une science des écosystèmes arctiques réellement autochtone. C'est ce que nous proposons de faire ici, pour rendre compte de la vision du monde samie et de leurs savoirs essentiels à l'adaptation au changement climatique.

Les éleveurs de rennes Samis du nord de la Suède et de la Norvège sont choqués qu'on parle du changement climatique sans prendre en compte tous les autres changements auxquels ils sont confrontés quotidiennement et qui contraignent fortement leur capacité d'adaptation. En effet ils font face sur leur territoire aux impacts cumulatifs de projets de développement imposés, ou qui font l'objet d'une concertation purement formelle. Le développement urbain ou touristique, réseau routier et ferroviaire, foresterie industrielle, barrages, mines, pétrole, gaz, et règlementations étatiques sur leur mode d'organisation du territoire sont les premiers freins qu'ils identifient quant à leur adaptation au changement climatique.

En effet, les Samis sont et se considèrent comme des spécialistes de la variabilité climatique, une caractéristique essentielle de leur milieu hivernal, et n'ont aucune crainte quant à leurs propres capacités d'adaptation. Les évènements extrêmes sont beaucoup plus fréquents ces dernières années, et le seront de plus en plus, mais ils les connaissent depuis des siècles. Ce qui les inquiète avant tout, c'est le développement global qui s'intensifie sur leurs terres et quii considère le changement climatique comme une nouvelle opportunité, et une gouvernance qui leur laisse de moins en moins d'autonomie.

La recherche scientifique ne peut donc pas considérer ces phénomènes en isolation, mais doit plutôt refléter la vision holistique samie des impacts cumulatifs du changement global pour appréhender le changement climatique.

En combinant savoirs locaux samis et savoirs scientifiques nous avons initié ensemble un observatoire sur la base de la coproduction des savoirs. Notre méthode est de toujours partir du savoir local sur les écosystèmes, de leur évolution et des stratégies des éleveurs. En partant de leur identification des phénomènes extrêmes, nous utilisons dans un deuxième temps une analyse interdisciplinaire en ethnoécologie, ingénierie écologique et télédétection à l'appui de ces savoirs locaux.

Bionote

Marie Roué, Directrice de recherche émérite au CNRS/MNHN, est anthropologue. Elle a dirigé au Muséum National d'Histoire Naturelle l'UMR APSONAT, Appropriation et Socialisation de la Nature et publié plus de 100 articles et plusieurs livres sur les peuples arctiques et subarctiques, en particulier les Samis éleveurs de rennes du Nord de la Fennoscandie. Spécialiste des savoirs locaux et autochtones, des relations biodiversité/diversité culturelle, elle a travaillé avec les Inuit et les Indiens Cris de la Baie James (Québec arctique) sur les conséquences des grands barrages. Son projet actuel avec les Samis porte sur les changements climatiques, et la coproduction des savoirs, entre savoirs autochtones et sciences (ANR BRISK). Elle est membre du MEP (groupe d'experts interdisciplinaires) et du groupe d'experts sur les Savoirs locaux de l'IPBES (plateforme intergouvernementale sur la Biodiversité et les services écosystémiques).

L'autochtonie comme facteur de résilience « socio-climatique » : Une illustration par le cas des Berbères du haut-Atlas marocain

Adil ROUMANE

Université de Versailles Saint-Quentin-en-Yvelines

Si la variabilité spatiale des surfaces boisées affecte le cycle global du carbone, les populations autochtones peuvent jouer un rôle déterminant face aux changements climatiques par leur contribution à la lutte contre la déforestation. Entre 2001 et 2014, 3 gigatonnes supplémentaires de CO^2 sont concentrés chaque année dans l'atmosphère à cause de la déforestation.

Dans plusieurs pays en développement, le passage d'une gestion coutumière basée sur les savoirs traditionnels à une gestion étatique s'est traduit par une forte régression des surfaces boisées. Bien confirmée, cette dégradation explique l'échec de la gestion administratisée et le coût d'opportunité qu'implique l'exclusion des populations autochtones. Avec la domanialité, les organisations coutumières ont perdu leurs fonctions en faveur des administrations sous équipées et quasi-absente sur le terrain. Les pratiques autochtones ont bien reculé face à un code forestier mal adapté, souvent inappliqué.

Afin d'illustrer le rôle de l'autochtonie dans l'accroissement du « carbone forestiers », nous avons mené une étude empirique chez les Berbères du Haut-Atlas marocain. Si cette communauté a réussi – tout au long de l'histoire- à maintenir un équilibre écosystémique harmonieux entre ses savoirs naturalistes et les particularités biogéographiques de ses forêts, c'est grâce à une assemblée villageoise nommée la Jemaâ. Forte de sa proximité et sa parfaite connaissance des spécificités locales, elle jouait un rôle incontournable dans la définition des ayants droits, la surveillance et le contrôle des volumes extraits. Elle s'appuyait sur un arsenal réglementaire extrait dans sa majeure partie de la coutume, qui se transmit d'une génération à l'autre oralement ou par la pratique. Il revêt parfois la forme d'un code écrit et sauvegardé dans des greniers collectifs nommés Agadir. Parmi ces pratiques on peut citer l'Agdal. Il correspond à une fermeture saisonnière décrétée par la Jemaâ afin d'assurer le repos des plantes et leur reconstitution durant les périodes les plus sensibles de redémarrage de la végétation. Les dates de fermeture et de réouverture sont définies par la Jemaâ qui confie l'Agdal à des gardiens chargés de sa surveillance. Les zones où ces pratiques ont reculé représentent les taux les plus élevés de dégradation forestière, d'érosion des sols et d'exode rural au Maroc.

Bionote

Adil Roumane est géographe spécialisé dans les changements climatiques. Il est également Docteur d'Etat spécialisé en économie des ressources naturelles, de l'environnement et du développement durable. Il travail sur l'importance des savoirs autochtones et des pratiques coutumières en matière de conservation des équilibres écosystémiques. Il été enseignant de biogéographie, de climatologie et d'environnement à l'université de Versailles.

A rapid tipping point in Himalayan agroecological and socio-cultural responses to climate change

Jan SALICK

Missouri Botanical Garden , USA

The Himalaya and Tibetan Plateau – often referred to as the "Third Pole" because of their importance in shaping worldwide climate patterns – are experiencing the most drastic global climate change outside of the poles with temperature increases of 5–6°C, 20–30% increase in rainfall, and melting of permanent snows and glaciers. Simultaneously, this area is a worldwide center of temperate biodiversity, including a majority of medicinal plants important to Tibetan medicine. Our data show that climate changes affect Himalayans' health, agriculture, and livelihoods in a many ways including diseases, pests, crops, water, and annual cycles. Also Tibetans' culture and cosmology are affected. Rapid climate change in the Himalaya threatens the traditional livelihoods of diverse indigenous peoples, challenges traditional systems of knowledge and stresses venerable socio-ecological systems. Documenting local observations of climate change, its impacts on traditional livelihoods, and actions taken in response reveals socio-cultural and agroecological impacts of climate change in the Himalaya. Indigenous observations of rapid change in temperature, precipitation, permanent snow cover, and glaciers directly inform traditional perceptions of and adaptations to Himalayan climate change. Adaptation strategies include a shift from traditional agropastoral practices to combinations of agropastoralism, tourism services, and cash-crop production. Climate change has rapidly tipped the scales in favor of fruit, vegetable, and wine production, cash crops previously unsuitable to the high Himalayan climate. New livelihood strategies signify transformation within the socio-ecological systems of the Himalaya in an effort to develop greater resiliency to climatic change. Rapid development of relevant, place-based adaptations to Himalayan climate change depends on indigenous peoples' abilities to understand the potential impacts of climate change and adjust within complex, traditional socio-ecological systems. Himalayan communities must be given an opportunity to voice their observations of climate change, localized concerns, and culturally relevant resolutions within the global discussion of climate change policy and community development.

Bionote

Jan Salick, PhD, Senior Curator of Ethnobotany at the Missouri Botanical Garden has been working with indigenous peoples since 1973 and on their interactions with climate change since 2000. She worked with the Orang Asli in Southeast Asia, with numerous tribes in throughout the Amazon and in Central America and Mexico, and with many Himalayan peoples since 2000. Most recently (2013–present), she is working with American Indians (Wampanoag and Narragansett) on the impacts of and their adaptations to climate change and sea level rise. She has developed many creative participatory methods as well as published many innovative results. She specializes in traditional land use management, agroecology, and climate change ecology and has over 70 peer reviewed publication and 2 books. She received a PhD from Cornell University (1983), was a Research Scientist at The New York Botanical Garden (1983-9), Professor at Ohio University (1989–2000), Senior Fellow at Oxford, Institute Environmental Change (2005–7), as well as her senior position at the Missouri Botanical Garden. Previously, she has contributed to policy efforts of IPCC, IPBES, CBD, IUBS, FAO, CGIAR and UNESCO efforts on traditional knowledge and climate change including presentations in Rome, South Africa, London, Mexico, Copenhagen, Tokyo, Peru, Paris, etc.

Climate change, water resources and agriculture in eastern Nepal: Contrasted situations according to environments

Joëlle SMADJA

CNRS, France

In the Himalayas, the increase in temperatures, higher than the world average, provokes fear of serious consequences on the water resource and subsequently on villagers' activities. Yet climate specialists using measurements and simulations underline uncertainties and differences between the west and the east of the range. Our work conducted in various geographical units from the North to the South of the range also stresses the need to take into account the diversity of milieus, the high spatial and temporal variability of climatic parameters as well as the social, economic and cultural context of the areas studied when addressing this subject. As part of an interdisciplinary programme (glaciology, hydrology, agronomy, geography) in the Koshi basin in Nepal, our investigations at four sites representative of Nepalese milieus aimed at finding out whether populations noticed any variations in water resources that affected their practices (farming, livestock breeding, tourism) and if they attributed them to climate change. Our results show contrasting situations and changes in practices with no obvious connection to the climate, and they show that populations are more affected by fluctuations in rainfall patterns than by the melting of glaciers and of the snow cover which are emblematic of climate change in this area. And lastly, they highlight the geographical units and the population groups most likely to be impacted by climatic variations.

Bionote

Joëlle Smadja is a geographer, director of research at the CNRS and was head (2005–2012) of the research unit 'Centre for Himalayan Studies'. She has been carrying out research in Nepal since the 1980s in the fields of geomorphology, land use, resource management, climate change, perceptions and representations of the environment, environmental policies and their repercussion on rural societies, and territorial restructurings. Since 2005, she has extended her fieldwork to North-East India.

She has edited:

◊ *'Reading Himalayan Landscapes over Times: Environmental Perception, Knowledge and Practice in Nepal and Ladakh, Institut Français de Pondichéry, 2009 (first published in French in 2003).*

◊ *'Territorial Changes and Territorial Restructurings in the Himalayas', Adroit Publisher, Delhi, 2013*

Rising above the flood: Modifications in agricultural practices and livelihoods systems in Central Amazonia, perspectives from ribeirinho and indigenous communities

Angela May STEWARD

Mamirauá Institute for Sustainable Development/Center for Sustainable Development – University of Brasília, Brazil

This paper will describe the ways in which farmers, residents of two Sustainable Development reserves, Amazonas state, Brazil are modifying their agricultural practices, and thus the general structure of their household economies, as a result of dramatic changes in flood patterns occurring over the past 10 years, and most prominently within the past five years.

The Mamirauá and Amanã sustainable development reserves are located in the middle Solimões region (Central Amazonia) and are home to diverse groups of traditional and indigenous peoples. The Mamirauá reserve is located at the confluence of the Solimões and Japurá Rivers. The Amanã reserve neighbors Mamirauá, extending eastward and together with the Jaú National Park, the three conservation areas form one of the largest blocks of protected tropical forest on the planet. The Mamirauá reserve is unique in being composed of floodplain várzea forests. The Amanã Sustainable Development reserve encompasses forested areas in (uplands) terra firme, várzea and paleovárzea (lower-lying upland areas made up of older alluvial deposits) and areas of igápo (flooded black water forests).

Natural resource management practices in the region are greatly impacted by seasonal flooding patterns. Floodplain areas are subjected to dramatic changes in water levels each year, where river waters can rise from 10 to 12 meters during the flood season, as a result of upriver precipitation patterns and annual off-melting in Andean regions. Under normal conditions, floodplain agriculture is organized around yearly floods, being confined to the periods of the draining of the basin and the dry season. Upland areas in the Amanã reserve escape annual flooding, while some intermediate zones – the paleovárzeas – are flooded during high flood years. Here, agricultural activities are developed through the entire year.

In recent years, the region has experienced rapid change in flooding patterns linked to global climate change, where floods are both higher, characterized by more rapidly rising waters. In many cases, floods are longer lasting. In areas of várzea this has meant that the growing season has been reduced. Quickly rising waters has also meant that many cassava (manioc) farmers in both várzea and paleovárzea environments lost seed materials because waters rose before they were unable to harvest fields before floods destroyed crops and seed materials. Following an extreme flood event in 2012, producers in both várzea and paleovárzea areas quickly modified agricultural practices. During extension and research activities we observed the emergence of novel mechanisms to store seeds, as well as the establishment of annual fields for the purpose of conserving manioc varieties in peri-urban areas in upland environments.

The proposed presentation will discuss the cited changes as part of the results of a survey undertaken in three paleovárzea communities (two ribeirinho and one indigenous – Miranha) and three várzea communities (two ribeirinho and one indigenous – Cocama) on the impacts of changes in flooding patterns on agricultural practices; we will specifically emphasize the spatial rearrangement of production systems and novel techniques for seed conservation in increasingly dynamic and unpredictable environments.

Bionote

Angela Steward is a research scientist who has been studying livelihood transformation in traditional Amazonian communities (indigenous, ribeirinho and Quilombo communities) since 2004. Her area expertise is ethnobiology (PhD in 2008 from the City University of New York and New York Botanical Gardens) and environmental anthropology (postdoctoral studies in Anthropology from the Federal University of Minas Gerais). She has a particular interest in understanding traditional agricultural systems in terms of practice, knowledge and change and evolution over time. Her geographic focus is Brazil, particularly the Brazilian Amazon, but she has also worked in communities

in savanna (Cerrado) environments. Since 2011, Angela has worked in the remote middle Solimões region in Central Amazonia as a researcher and program coordinator of the Family Farming program at the Mamirauá Institute for Sustainable Development. As part of her work in the region, she is investigating with farmers, community leaders and colleagues, how várzea producers (both indigenous and ribeirinho groups) are adapting their strategies and production systems in the face of changing flood patterns. Since May of 2015, she has also been an associate researcher at the Center for Sustainable Development, University of Brasília undertaking a project related to the "on the ground" impacts of REDD+ in Sustainable Development reserves in Central Amazonia.

Sailing the canoe back to the future

Fuluna TIKOIDELAIMAKOTU TUIMOCE

Korova, Fiji

Once the islands of the Lau group between Fiji and Tonga were filled with sails. Our fleets of drua, the double-hull sailing canoes that carried many tons and hundreds of passengers at will across the central Pacific, were built in the small islands of my home. Fijians, Tongans, Samoans all sent families of their best boat builders to live in my islands.

The fast, ocean going ships my ancestors built hundreds of over many generations were made from logs and coconut rope and pandanus sails using only stone, fire, bone and sharksin and were powered by the wind. They had no metal, they had no choice but to learn to excel at their craft using only the materials nature supplied them with. Our islands are limestone, they have little soil and no water.

With this technology my ancestors converted the ocean from a barrier to a highway. The islands of the Lau thrived and our villages were full of people.

Today these villages are growing empty. We cannot afford the cost of fossil fueled powered ships to get back and forth, to trade and to visit our families. The effects of climate change are already being felt in weather changes, warming seas, bleaching coral. The old men no longer make fast, sustainable ships and teach their children to sail and know the ocean in the way my elders have taught me.

We all know that a climate changed future means we face challenges greater than any generation before. For those of us whose communities still live on the ocean, we also know we are the "canary in the cage". We will be best equipped for this challenge if our communities can draw on the lessons learnt from our forebearers. They were strong people.

Today I live not in the island of Moce, but in a small community Korova my uncles and grandfather built on the main island in the city of Suva. My grandfather sailed here from Moce with his sons on the last of the drua a quarter of a century ago, searching for better opportunities for education, health and employment for the next generation. But we have held onto the traditions and knowledge of sailing drua. To this day we have never owned an outboard motor. My dream is to sail back to Moce on a drua so this knowledge can be held generation to generation.

In this short powerpoint presentation I outline a short history of my community and the great canoes they once built. In telling the story of Korova and drua I wish to find the lessons from the past that can prepare us for tomorrow.

Bionote

I am 27 years old. I Come from a family of 4 siblings who lost their father 24 years ago while sailing from our island to the mainland in searching for better life and education.

I am currently staying with my aunties and uncles on a small piece of land close by the sea. This has really help us to keep our art of canoe sailing and boat building alive.

In 2011 I was fortunate enough to sail on the Te Mana O Te Moana voyage preaching the importance of our ocean, our culture and traditions.

My grandfather sailed a drua from my island to the mainland twice. My dad lost his life on the third trip. I really want to repeat what my elders have done, but from the mainland to my island.

Seasonal forecasting in the Pacific: Combining traditional knowledge with modern scientific knowledge method to aid adaptation

Mike WAI-WAI

Department of Meteorology Geo-Hazards, Vanuatu

Communities in Vanuatu have always related to the climate and weather in their own context. Being highly exposed to risks of extreme events such as tropical cyclones, flooding and droughts, communities have naturally adapted in their own ways. They are able to use their surroundings to indicate in advance the different weather extremes they are likely face. These careful observations of their surrounding have allowed them to come up with their own traditional forecasting methods which have been tested and proven to be very reliable.

In parts of the country where communication is still a challenge, communities continue to rely on their knowledge of the environment to guide their preparedness for extreme events. While there is promise in the use of this traditional based science, there are also challenges.

Bionote

Mike Waiwai is a Senior Climatologist and Data Analyst and Archiver at the Climate Section of the Vanuatu Meteorological and Geo-hazards Department. He has also been working as assistant Principal Scientist, Research and Development Officer.

He is currently completing a Post Graduate Degree in Climate Change and Governance at the University of the South Pacific (USP). Currently, he is a Human Resource Manager at the Ministry of Climate Change and Adaptation. He coordinates the Traditional Knowledge (TK) Project in Vanuatu, which includes identifying local communities that use traditional knowledge for environmental forecast applications.

Tribal colleges and universities: Fostering difficult dialogues regarding the use of indigenous knowledges in climate adaptation policies and programmes

Daniel R. WILDCAT

Haskell Indian Nations University, Kansas, USA

As the de facto national tribal university in the United States, Haskell Indian Nations University, serves over 100 of the 567 federally recognized tribes and Alaska Native villages every year. At the convening of the ICE (Impacts of Changing Environments on Indigenous People) Symposium at Haskell in 2006 a tribal college and university (TCU) centered network called the American Indian and Alaska Native Climate Change Working Group formed, now simply known as the Indigenous Peoples Climate Change Working Group. Based on Haskell's leadership role and "on-the-ground" experience in preparing Indigenous students to address environmental issues in their homelands and communities over the past two decades and climate change during the last decade, this paper suggests few institutions are better located than tribal colleges and universities (TCUs), literally and figuratively, to serve as the places with institutional spaces for the serious examination of how TEKs, IKs and LKs can be respectfully and usefully

employed to prepare societies to respond to global climate change. TCUs can play a vital role addressing the difficult issues confronting those nonindigenous governmental, nongovernmental and private sector organizations that seek to understand and use these different ways of knowing and the resultant knowledges in addressing the 'wicked' climate change problems confronting humankind.

While recognition of the validity of Indigenous knowledges and their practical efficacy has grown tremendously in the last two decades, the very real difficulties confronting holders of IKs and the nonindigenous organizations and institutions that want to work together in respectful cooperative efforts to address climate change are seldom directly addressed. This avoidance, regardless of its source, threatens the cooperative employment of indigenous knowledges.

This presentation will suggest the failure to address profound worldview differences between IK holders and those modern primarily Western worldview-informed scientific, policy and program/project driven organizations will almost certainly ensure failure in the respectful and efficacious inclusion of IKs in the development of climate change adaptation strategies. These issues are far from esoteric and indeed are among the most practical issues to be negotiated if the inclusion of IKs in regional and broader climate change adaptation policies is to occur.

Issues of context, trust, responsibilities, respect, attribution, particularity (non-universal and local knowledge features), spirituality and the instrumentalities of IKs must be understood and sadly often remain superficially addressed, if at all. This paper will suggest there are real reasons why not only between the holders of IK and scientific knowledge-holders, but within both parties, the difficult discussions around inclusion of IKs in climate change continue to more talked about than negotiated and enacted.

This presentation contends TCUs can prepare young people to tackle these very new and urgent issues that knowledge-holders, both scientific and indigenous, have seldom had to face. TCUs must be recognized as key institutions in addressing these difficult issues if humankind is to address the "wicked" problems of global climate change.

Bionote

Daniel R. Wildcat is a Yuchi member of the Muscogee Nation. He is director of the Haskell Environmental Research Studies (HERS) Center and member of the Indigenous & American Indian Studies Program at Haskell Indian Nations University. Dr. Wildcat has been an invited speaker on American Indian worldviews at many institutions of higher education. In 1994 he helped form a partnership with the Hazardous Substance Research Center at Kansas State University to create the Haskell Environmental Research Studies (HERS) Center. In 1996 Dr. Wildcat helped plan and organize an American Indian educational program to celebrate the 25th anniversary of Earth Day. Dr. Wildcat helped plan and design a four-part video series entitled All Things Are Connected: The Circle of Life (1997), which dealt with land, air, water and biological issues related Native nations. His recent activities have revolved around forming the American Indian and Alaska Native Climate Change Working Group: a tribal college-centered network of individuals and organizations working on climate change issues. In 2008 he helped organize the Planning for Seven Generations climate change conference sponsored by the National Center for Atmospheric Research. He co-chaired with Winona La Duke the national Native Peoples-Native Homelands Climate Change Workshop at the Mystic Lake Hotel & Casino, November 18-21, 2009.He is the author and/or editor of Power and Place: Indian Education In America, with Vine Deloria, Jr.; Destroying Dogma: Vine Deloria's Legacy on Intellectual America, with Steve Pavlik. His most recent book, Red Alert: Saving the Planet with Indigenous Knowledge, suggests current global climate change issues will require the exercise of indigenous ingenuity – indigenuity.

Side events/ Événements parallèles/ Eventos paralelos

27 November 2015

ROOM II

Firing up for climate: Traditional fire management tackling climate change

Organized by: United Nations University and the Kimberley Land Council

Non-state partner engagement: Benefits beyond carbon. Private sector involvement in biodiversity, cultural and carbon projects

Emily GERRARD

Allens, Australia

The role of private interests in Indigenous peoples' territories can present a risk and an opportunity. The private sector has an integral role in achieving domestic and international emissions reduction targets to mitigate climate change. Whether it is through the development of technology, reducing emissions in industry or developing land sector 'sinks' for carbon storage, climate change mitigation and adaptation measures will involve the private sector. However, this role is not, and should not be considered to be, purely commercial. Socially responsible investment has a major role to play, but so does business practice and innovation. In-kind support and expertise already yields significant social, cultural and environmental benefits in various places, including in parts of Australia. Carbon-related opportunities depend upon and should respect a local community's priorities and aspirations; in doing so they present a pathway to sustainable development and social enterprise. This presentation will highlight examples of corporate involvement and partnerships in fire management projects in Australia to demonstrate how relationships with the private sector and non-state actors can go 'beyond carbon' and achieve benefits for multiple stakeholders, as well as the broader community. The examples discussed emphasise how respect and recognition of Indigenous peoples' rights, customary land tenure and traditional knowledge have contributed to sustainable use and management of ecosystems in Northern Australia. They also underline the importance of governance arrangements and note some of the challenges to be overcome in delivering cultural, environmental, social and economic benefits.

Bionote

Emily Gerrard (Co-Head of Allens' Climate Change Group) is a specialist environmental lawyer based in Melbourne, Australia. Emily's practice includes advising clients on a range of regulatory and compliance matters, including the Australian Government Emissions Reduction Fund and Carbon Farming Initiative, development projects, agreements with Indigenous peoples, and participation in biodiversity, carbon and water markets. She works across a range of sectors, helping clients to understand the impacts, opportunities and risks associated with their projects and advising on environmental issues, land access arrangements and the management of pollution incidents.

Emily also works with the National Indigenous Climate Change Project, a collaborative forum established by Indigenous leaders in Australia to facilitate policy dialogue with representatives of corporate Australia and other experts about risks and opportunities associated with climate change and participation in carbon markets. She is currently part of an advisory committee with Australian scientists overseeing work on the broader application and recognition of Indigenous peoples' traditional ecological knowledge in Australia.

Emily has assisted with the establishment of carbon projects in the North Kimberley which rely on traditional rights and interests in land alongside the Kimberley Land Council. These carbon projects have generated more than 295,000 tradeable carbon credits, which can generate income for remote Kimberley Indigenous communities.

Traditional fire management: Indigenous people leading climate mitigation

Ari GORRING

Kimberley Land Council, Australia

http://indigenous2015.org/Ari_GORRING

Cultural conservation economies: A new picture for indigenous livelihoods

Nolan HUNTER

Kimberley Land Council, Australia

This presentation involves a powerpoint presentation and short video, highlighting the opportunities for Indigenous people to draw on traditional knowledge to mitigate climate change impacts, through examining savanna burning projects in the North West Kimberley.

Globally fires emit nearly 8 Gt CO2e yr-1, 60% of which comes from fire in grasslands, savanna and dry woodland. This is predicted to increase by between 5 and 35% by 2100. Due to colonisation, most of these landscapes have supressed traditional fire management and as a result are poorly managed and degraded.

In Australia, savanna burning projects use traditional knowledge and modern scientific practices to reduce the amount of greenhouse gases emitted to the atmosphere from unmanaged, potentially dangerous late season wildfires. This savanna fire management results in a reduction of total greenhouse gas emissions to the atmosphere.

Savanna burning projects provide an opportunity for Indigenous people to engage in business opportunities that improve livelihoods and allow people to maintain and strengthen connection with country. In addition to carbon abatement, projects on Indigenous land deliver environmental benefits such as increased biodiversity, weed reduction and landscape linkages, and social benefits such as looking after cultural sites,

strengthening connections with country and providing training and employment opportunities.

Across Northern Australia, these projects have already abated over 1.4 million tonnes of carbon dioxide equivalent, while providing jobs, training, and supporting cultural aspirations for indigenous people. In the Kimberley region, credits from the project have been sold to airline Qantas, demonstrating the potential for carbon projects to create long-term community-corporate partnerships.

The KLC has also been working with the United Nations University and the Australian Government on the International Savanna Fire Management Initiative, which demonstrates how reintroducing traditional fire management practices in fire dependant landscapes around the world offers many benefits, such as mitigating emissions of greenhouse gases, helping vulnerable and remote communities adapt to climate change, creating jobs, improving biodiversity, reinvigorating culture, improving food security and health.

This discussion forum will give insight into the Australian experience and how it may be leveraged by Indigenous communities globally. Note we are requesting the presentation to form part of a broader panel launching Australia's International Savanna Fire Management Initiative, which will provide the opportunity to hear how community-based savanna burning projects could be implemented in South East Asia, Southern Africa and Latin America.

Bionote

Nolan Hunter is the CEO of the Kimberley Land Council – a not-for-profit organisation that assists Aboriginal people to secure land rights. He is also the Chairman of the National Native Title Council and a member of the Western Australian State Government Kimberley Regional Planning Committee. The Kimberley Land Council, as the representative body of Kimberley Aboriginal people, works with Traditional Owners to look after country through conducting strategic conservation and land management activities while creating sustainable cultural enterprises to promote social change and build positive futures.

Mr Hunter is a Bardi man with strong links to his people and culture across saltwater country in northern Western Australia. In keeping with Aboriginal traditions, Mr Hunter has been taught by his senior elders the stories of, and knowledge about his people, language, law and culture. His expertise in traditional knowledge has been further advanced in his role as CEO of the KLC, which represents and brings together about 25 different Aboriginal tribal groups from across the region.

Mr Hunter has a professional background in strategic management and staffing operations and has more than 23 years of experience in this field and has worked extensively in Indigenous communities in Australia. Mr Hunter has worked with the Australian Consulate in Manchester, focusing on immigration and humanitarian programs as well as the Australian embassy in Vienna, Moscow, Edinburgh and Dublin. On returning to Australia, Mr Hunter has worked as the Director of several Indigenous organisations.

The global potential of indigenous fire management: How ancient practice is contributing to emissions reductions, biodiversity and sustainable development worldwide

Sam JOHNSTON

United Nations University

Wildfires affect every region of the world. Reported losses generated by wildfires over the past decade (2002–11) were on average US$2.4 billion/year. NASA predicts that global fire activity could increase by between 5 and 35% by 2100 and that most of these increases will take place in these fire dependent landscapes (see www.nasa.gov/topics/earth/features/fiery-past.html).

The history of fire dependant landscapes around the world is remarkably similar. Originally all of these landscapes were dominated by fire regimes that were actively managed by the indigenous people by lighting low-intensity, early dry season fires to create fire breaks and prevent the build up of fuel, which minimised later dry season destructive wildfires. With

colonisation by Europeans of these landscapes the fire management activities of indigenous people were supressed for a variety of reasons.

In Northern Australia, Aboriginal people have managed land for generations by using traditional fire management (TFM). The first project to use TFM to generate carbon credits was the Western Arnhem Land Fire Agreement (WALFA) that started in 2006. There are now over 35 TFM projects that have been approved in Australia, with 14 either indigenous owned or have significant indigenous involvement. The application of TFM has also generated substantial additional or co-benefits including creating market based jobs in remote and vulnerable communities, improving biodiversity, reinvigorating culture, improving food security and health.

With support from the Government of Australia and a range of partners, UNU has undertaken a two year detailed assessment of the feasibility of transferring savanna burning "technology" to Asia, Africa and Latin America.

The Initiative has concluded that methodology for measuring the reduction of greenhouse gas emissions could be adapted to many other fire dependant landscapes around the world and could lead to reductions of wildfire emissions by as much as a half, reducing global greenhouse emissions by more than 1GtCO2e/year.

It also concluded that this technology represents an important – in many cases the only viable – adaptation mechanism to the increased wildfire predicted to occur as a result of climate change.

The Initiative confirmed strong interest in the technology in many key countries, including in Indonesia, Timor Leste, Papua New Guinea, Myanmar, Cambodia, Namibia, Mozambique, South Africa, Tanzania, Botswana, Angola, Zimbabwe, Zambia, Madagascar, Peru, Mexico, Brazil, Colombia, Venezuela, Guatemala and Belize. Indigenous people, philanthropic organisations and companies such as ConocoPhillips, INPEX and BHP Billiton are also interested in this technology. In many of these countries there is interest, readiness and a strong desire to begin immediate on the ground practical work.

Bionote

Head of the Traditional Knowledge Initiative and Senior Research Fellow, United Nations University Institute for the Advanced Study of Sustainability.

Other positions I currently hold are:

- ◊ *Senior Fellow, Faculty of Law, University of Melbourne;*
- ◊ *Member of the Advisory Board of the Centre for Resources, Energy and Environmental Law, University of Melbourne;*
- ◊ *Member of the IUCN Environmental Law Commission;*
- ◊ *Member of the Indigenous Experts Forum on Sustainable Economic Development; and*
- ◊ *Member of the Panel of Experts for the Benefit-sharing Fund of the International Treaty on Plant Genetic resources for Food and Agriculture.*

I have previously been an Expert Reviewer of the Synthesis Report (SYR) of the IPCC Fifth Assessment Report (AR5); a member of the International Reference Group of the World Indigenous Network; Advisory Board of the Indigenous Knowledge Forum, University of Technology, Sydney and a Senior Visiting Fellow at Aoyama Gakuin University, Tokyo, Japan.

Traditional fire management helping indigenous people promote respect for their rights in international diplomacy

Vicky TAULI-CORPUZ

UN Special Rapporteur on the Rights of Indigenous Peoples

http://indigenous2015.org/Victoria_TAULI_CORPUZ

ROOM IV

Connecting diverse knowledge systems for resilience in mountain and forest biocultural systems

Organized by:

ANDES, IIED, SwedBio at Stockholm Resilience Centre, Tebtebba Foundation and PASD

The Walking Workshop methodology and the International Network of Mountain Indigenous Peoples (INMIP) as examples of MEB in practice; INMIP vision and objectives

Alejandro ARGUMEDO

Andes, Peru

Indigenous mountain communities are particularly vulnerable to the impacts of climate change. According to the IPCC, temperatures are rising at disproportionately higher rates at higher altitudes; these changes are having serious impacts on mountain ecosystems and indigenous peoples. Nonetheless, indigenous peoples' Biocultural heritage offers great potential for adaptation because of its rich traditional knowledge, which has nurtured a wealth of adaptation mechanisms and high degree of diversity of species and ecological niches. Indigenous peoples' biocultural heritage, including a rich diversity of locally adapted seeds and traditional knowledge, offers great potential for adaptation.

Therefore, with the support from the IIED and Asociacion ANDES, in May 2014, representatives from 25 indigenous mountain communities from 10 countries, met in Bhutan to discuss the impacts of climate change and exchange knowledge and experiences for adaptation based on biocultural heritage and local seed systems. More than 70 farmers and local organizations took part, from Bhutan, China, India, Kyrgyzstan, Papua New Guinea, the Philippines, Peru, Taiwan, Tajikistan and Thailand to create the International Network of Mountain Indigenous Peoples. A follow up learning exchange workshop took place in Tajikistan in October consolidate the Network as an international network, and to deepen the knowledge exchange on the impacts of climate change on indigenous mountain communities and how such communities can respond using their biocultural heritage.

With the help of my colleagues Krystyna Swiderska from IIED, and Lino Mamani from The Potato Park we would like to lead a discussion to present on adaptive strategies for climate change that were discussed in both workshops. Krystyna and myself will will focus on the importance of this Network that has been created with these different mountain communities which includes the importance of establishing Biocultural Heritage Territories and Community Seed Banks. We would also like to present on the Potato Park as our main case study. The discussion about the Park, which is comprised of 5 Quechua indigenous communities will be led by a community resident named Lino. He will further discuss the current impacts of climate change on the livelihoods of these communities and how the Network with other indigenous communities is helping his community adapt to climate change.

Bionote

Dr. Alejandro Argumedo is the Director of the Asociacion ANDES, a Cusco-based indigenous peoples' non-governmental organization working to protect and develop indigenous peoples' Biocultural Heritage. Alejandro is also founder and coordinator of the International Indigenous Peoples' Biocultural Climate Change Assessment Initiative (IPCCA). He is founder of the Indigenous Peoples' Biodiversity Network (IPBN), and the Call of the Earth

Group, global coalitions of indigenous peoples working towards the shared goals of protecting and nurturing biodiversity and protecting their bio-cultural innovations and intellectual property. He is the current President of the Global Coalition for Biocultural Diversity of the International Society of Ethnobiology, former Executive Director of Cultural Survival Canada and the Indigenous Knowledge Program. He graduated from McGill University, Montreal, Canada in Agriculture. Alejandro has written extensively on diverse themes such as biocultural heritage, genetic resources and community-based conservation, sustainable agriculture, climate change, protected landscapes, has served in expert panels of the UN and other relevant bodies, and has been consultant for various international institutions.

Rice culture innovations through mobilization of traditional knowledge

Florence DAGUITAN

Tebtebba Foundation, Philippines

Assessing the status of the different ecosystems of their territory, enabled the Kalanguyas of Tinoc to re-discover the profound wisdom of their indigenous management system that illustrate an intimate man-land-nature and spirit to maintain the web of life within each and the balance of relationship of the different customary land uses upholding customary sustainable use and equitable sharing of resources. On this basis, they formulated a comprehensive land use, one of which is an innovation in the traditional rice farming system to contribute to the goal of food security and enhanced ecosystems services. Specific objectives are as follows:

- ◊ Increasing forest lands demarcated as conserved/ protected areas
- ◊ Increasing population of wild bees
- ◊ Increasing agro-biodiversity
- ◊ Enhancing soil fertility
- ◊ Maintaining balance within the rice landscape for pest and disease control

The innovation combined cultural practices of seed selection and pest control and soil fertility enhancement that is directly linked to the forest. Enhancement of the system involved the "capture" of microorganisms in the forest and some features of the systems rice intensification (SRI), i.e. age of seedlings and distance. The idea and capacity building for the systems development was started in 2011 but it was only in 2014 that on-farm trials was started by few individuals. What has been attended to is the restoration of degraded forests lands.

From community mapping, the riceland areas of Tinoc, is about 920 hectares. Of these, about 50% are not being cultivated due to lack of irrigation, marked decrease in productivity, some are converted into commercial vegetable farms. With an average production of about 3 tons per hectare (milled rice), present production is just enough for half of the year's supply, short of PhP 51.88M or US$1.15M.

This innovation of looking at different concerns such as irrigation, forest restoration, seeds and farming systems intends to promote a holistic approach in addressing problems.

This project resulted to forest re-growth, strengthened the culture of ubbo [labor exchange network], dang-ah [collective work for a common good], and experimental plots were able to demonstrate 3x to 6x increase in yield per unit area. The work is in progress and is being monitored by both traditional and scientific monitoring system, including inventory of forest.

Bionote

Am a Kankanaey, Igorot. Presently am working with Tebtebba Foundation as Program Coordinator of the Program Indigenous Peoples' and Biodiversity. As part of my work, I facilitate community work in piloting the Ecosystems-based approach which for us is the strengthening of our knowledge systems and practices in indigenous territory management. It entails community ecosystems assessment awareness raising and capacity building towards development planning and implementation. Moreover I represent my organization in the steering committee of a

network of NGO's in the Philippines promoting IP Rights and Food Sovereignty, in the steering committee of the International Partnership of the Satoyama Initiative and a member of International Indigenous Forum on Biodiversity.

From 1985, I worked with the indigenous grassroots organizations in the Cordillera Region in various capacities. First as an agriculturist promoting sustainable agriculture and Forestry through development of traditional knowledge. Second, as a Research Facilitator in the communities and among professionals wherein research is done as an educational process and not just an extraction of knowledge. Part of this experience was translating some traditional knowledge in Forestry and Agriculture into their scientific language. Third as a Executive Director of a program espousing integrated community development. In 1998–2001, when the Cordillera Region was threatened by entry of mining, I was part of a coordinating body of different civil society and peoples organization to create awareness to prevent the plunder of our forests and resources.

Equity and reciprocity creates synergies across knowledge systems: The Multiple Evidence Base approach

Pernilla MALMER

SwedBio at Stockholm Resilience Centre, Stockholm University, Sweden

Connecting diverse knowledge systems for resilience in an era of global change. Experiences in implementing the "Multiple Evidence Base approach" in collaborative partnership across biocultural systems.

It is increasingly important to establish transdiciplinary methods for exchange of knowledge and experiences amongst indigenous peoples, governments and scientists to reinforce the links between cultural diversity and the sustainability of the global environment based on equity. Our diversity of cultures is our source material for learning to live well on a human dominated planet.

This presentation aims at present experiences of a collaborative partnership between a diversity of knowledge systems piloting a Multiple Evidence Base approach (MEB) for co-generation of knowledge and methods for mutual learning across knowledge systems. A MEB approach has received quite some interest in policy, e.g. within IPBES and CBD, as well as in the scientific community, but there is a great need to test and evaluate the relevance of such an approach in a community driven context. The piloting is initiated and conducted by the indigenous peoples and local communities themselves and based on their own needs and priorities. The project partners are: African Biodiversity Network with Institute for Cultural Ecology (ICE) , Kenya and MELCA, Ethiopia ; Forest Peoples Programme (FPP) with Fundación para la Promocción de Conocimiento Indígena (FPCI); Pgakenyaw Association for Sustainable Development (PASD) , Thaliand; Tebtebba Foundation, Philippines; and SwedBio at Stockholm Resilience Centre, Sweden.

The communities involved are mobilizing knowledge to develop responses to challenges emerging from global changes such as climate change, e.g. recover lost diversity of seeds, or protect and revitalize sacred natural sites that protect water sources. Mobilizing knowledge is also part of efforts to demonstrate the sustainability of their traditional management and governance, as informed knowledge for enhanced policies and decisions at scales beyond the local. This leads to respect and recognition of their customary skills and rights to their resources, creating space to respond to climate change based on their own experience accumulated over time.

A range of methods and procedures are employed in the pilots, emerging from the particular biocultural system. There is also an interest and need for data generated using scientific methods, e.g. from natural science, and sources from other knowledge systems that is relevant for the challenges they are facing. The Multiple Evidence Base approach is useful to create an enriched picture of knowledges from different knowledge systems, with full integrity, side by side on equal level, bringing a comprehensive understanding of the situation.

Bionote

I am agronomist by training with a comprehensive professional experience from indigenous peoples organizations, farmers' organizations, NGOs, government and universities, with particular focus on biodiversity and rights, agro-ecology, indigenous and local knowledge, resilience and global change.

In the 80s I was part of establishing the organic agriculture movement and working with rural development and cooperative mobilization in Sweden.

In the 90s I worked on the ground with indigenous and smallholder farmers organizations in Central America. Since then my work has been focused on linking local action to global policy related to livelihoods, biodiversity and rights. I was International Secretary at the Swedish Society for Nature Conservation, building their collaboration with farmers and indigenous organizations from 1997 to 2005, when I started to work at SwedBio as Senior Advisor.

SwedBio is since 2011 part of Stockholm Resilience Centre, based at Stockholm University. SRC focus is on sustainability science for biosphere stewardship. SwedBio is a knowledge interface, enabling knowledge generation, dialogue and exchange between practitioners, policymakers and scientists for development and implementation of policies and methods at multiple scales.

I am co-ordinating the transdiciplinary work on methods development for connecting diverse knowledge systems regarding IPLCs, scientific institutions, governments, and UN bodies. I am engaged in relevant international processes related to biodiversity and ILK, as SwedBio at SRC as well as technical expert in Swedish delegations. Other areas of my expertise are resilience assessments and co-ordination of international programs, workshops and dialogues.

Summary of the outcomes of the recent INMIP learning exchange in Tajikistan: Climate change impacts and biocultural heritage-based responses

Krystyna SWIDERSKA

IIED

My presentation will focus on the outcomes of the Second Learning Exchange of the International Network of Mountain Indigenous Peoples, held in Tajikistan on 11–18 September. It brought together 21 communities to explore the impacts of climate change and develop responses to enhance resilience based on biocultural heritage. The meeting established an international network of biocultural heritage territories and community seed banks. I will also present the resulting Declaration including key recommendations for COP21. If there is time I would also like to present key findings from the SIFOR project (Smallholder Innovation for Resilience), on biocultural innovations developed by 64 indigenous communities in response to climate change and how to strengthen biocultural innovation for enhanced resilience.

Bionote

I am a Principal Researcher at IIED, where I have conducted research on traditional knowledge, biocultural heritage and climate resilience with local partners and indigenous communities since 1998. I work closely with ANDES to support the Potato Park and develop tools to protect biocultural heritage globally. I coordinate the EC funded project, Smallholder Innovation for Resilience which entails action-research with 64 indigenous and local communities in Peru, China, India and Kenya. I link the voices of indigenous peoples to climate policy processes, including through the International Network on Mountain Indigenous Peoples, working alongside Alejandro Argumedo. We set up this network in Bhutan in 2014, when we were co-chairs of the International Society for Ethnobiology's Global Coalition for Biocultural Diversity. My Masters thesis entailed research on bioprospecting and indigenous rights in Peru, with Machiguenga and Wachipaire communities in Manu National Park, Madre de Dios.

Rotational farming in northern Thailand: Traditional governance and management systems contribution to food security, biocultural diversity and carbon sequestration

Prasert TRAKANSUPHAKON

Pgakenyaw Association for Sustainable Development (PASD), Thailand

The community of Hin Lad Nai, is situated in the north of Thailand, in an evergreen forest. The community is karen people, traditionally practising rotational farming. In 1989, the village started work to conserve the forest based on traditional knowledge, after it had been almost destroyed by a logging concession granted without any community consultation, which resulted in increasingly frequent outbreaks of wild fires. During the last 30 years, they managed to regenerate 80 per cent of their forest which had been logged, while maintaining their rotational farming system and developing high-value products to create a cash income from the flourishing forest. In 1992, the government tried to turn the area into a national park and resettle the communities but the communities were able to resist this by forming a network to fight for their land rights and by showing their forest conservation achievements.

The rotational farming system practised in Hin Lad Nai is the backbone of the natural resources management system developed by the Karen people. It contains the full range of Karen knowledge and wisdom, including cosmology, spirituality, technical knowledge of conservation practice, as well as value and cultural elements that are needed for any type of bio-cultural diversity management. It is the base for the spirituality and decides where different moments in the calendar cycle over the year will take place. It provides the Karen people with stories and tales for their culture, and metaphors for their language; it is part of their identity. The sticky rice is grown in the rotational farming system, and the rotational farming provides the broad diversity of food crops. No less than 207 species are found in the rotational system, providing the base for a rich, healthy and tasty diet. The rotational farming is also the home of a rich biological diversity of plants, domesticated as well as wild species, and it creates shelter and habitat for a wide range of animals, birds and insects during the different stages of rotation.

The community of Hin Lad Nai has been fighting to protect their rotational farming system as the base for their livelihoods. As part of this efforts, they initiated a study on climate impact from rotational farming. It showed that rotational farming does not cause climate change but rather contribute to maintain the balance of the ecosystem, and reduce greenhouse gas (GHG) emissions. Mountain peoples are not the cause of climate change, their farming systems and ways of living have the potential to reduce negative impact. Hin Lad Nai has been observing different kinds of climate extremes over the last years, such as abnormally long dry seasons, as well as flooding making it impossible to burn the rotational fields on time. Under this conditions, the diversifying of the products from the forest has contributed resilience, and to sustain livelihood, still with the rotational farming as the base. They are now conducting community reserach in order to gain further evidence to getting their system recognized and accpeted by the government.

Bionote

Prasert belongs to the Karen people in Thailand. He has been a practitioner of social development among indigenous peoples for over 20 years, specialising in indigenous knowledge, natural resource management and rotational farming in Thailand and South East Asia. Prasert is President of the organization Pgakenyaw Association for Sustainable Development (PASD) and closely engaged in the community of Hin Lad Nai, and its commitment to defend their rotational farming systems, and get it recognized and accepted as sustainable by the Thai government. This is how the community research in Hin Lad Nai started.

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