Knowledge Systems and Climate Change Adaptation Where the Mbororo Peoples and Official Science meet

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1 INTRODUCTION

1.1 The broader policy context and recent developments

The value of grassroots involvement in climate-related decision-making has received attention in several official climate policy documents starting from Art. 6 of the United Nations Framework Convention on Climate Change (UNFCCC) (UN, 1992, p. 17). The Intergovernmental Panel on Climate Change (IPCC)[2] recognizes the importance of traditional knowledge and the International Indigenous Peoples Forum on Climate Change (IIPFCC) is a recognised constituency in the UNFCCC COP. The IPCC Third Assessment Report refers to 'active participation by concerned parties' (IPCC, 2001, p. 899) and draws attention to local problems and solutions. Moreover UNDP guidelines for adaptation strategies foster grassroots stakeholders' participation.

Despite the adoption of a National Adaptation Programme of Action (NAPA), minority groups including indigenous people (e.g. mobile people / pastoralists) in many African countries are still largely excluded from climate-related decision-making. This contrasts with the values upon which the NAPA process was founded in 2001. UNFCCC COP7 established that Least Developed Countries (LDCs) should be assisted in the preparation of NAPAs aimed at identifying their urgent and immediate adaptation needs. The main advantage of NAPA lies in the fact that the assessment of the vulnerabilities and the identification of the solutions should be action-oriented, country-driven and encourage multi-stakeholders' endorsement. NAPAs were meant to recognise the diverse biomes within national states, and involve participation of those whose livelihoods are tied to the sustainability of each of these biomes.

Climate science and related information can be used to great advantage not only to avoid and manage climatic risks but also to take advantage of the opportunities arising from changed climate conditions. A major concern is that climate services[3] are weakest where they are needed the most – in climate-vulnerable developing countries (WMO, 2010). Currently there is a major communication gap between meteorologists and end users, who do not have access to scientific observations and forecasting, and even if they were able to have access, would still need a process to convert scientific information and data into media which can be integrated into local knowledge systems and decision-making processes (IPACC, 2011). This lack of connection is even more evident in rural African communities and amongst peoples who are excluded from formal governance. IPACC delegates raised the specific concerns of African

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[2] The IPCC is the leading international scientific body for climate change. It provides a comprehensive assessment of the current state of knowledge on climate change and both its environmental and socio-economic impacts (IPCC).

[3] A climate service is best described as the process of providing climate information and products, which involves interaction between a provider and a recipient, along with the means to access and process information. A simple example of a climate service is a farmer (user) receiving seasonal outlooks for rain or drought (information) from his national meteorological and hydrological organization (provider) (World Meteorological Organization, 2010).

pastoralists at the World Meteorological Organisation's World Climate Conference 3 in Geneva in August 2009.

A few months later experts in atmospheric sciences and policy makers agreed to set up the Global Framework for Climate Services. This emphasises the need for making climate services increasingly available to users and, more importantly, responsive to users' needs as well as advocating for bottom up communication. Such services and their components spelled out in a report by the title: "*Climate Knowledge for Action: A Global Framework for Climate Services – Empowering the Most Vulnerable*" have been tabled for discussion at the Sixteenth World Meteorological Congress which took place in Geneva in May 2011. The framework calls for the establishment of a "User Interface Platform" which is intended to provide a forum to make users' interests a driving force in the development and operations of the Framework.

In December 2010, Parties to the UNFCCC adopted the Cancun Adaptation Framework (CAF). CAF is intended to accelerate policy making and interventions that reduce human vulnerability to climate change, and build resilience - both biological ecosystem resilience and socio-ecological resilience. The CAF is founded on a number of principles including the recognition of the need to involve holders of different knowledge systems - traditional, indigenous and scientific.

Within this context in 2011 the Indigenous Peoples of Africa Coordinating Committee (IPACC), l'Association des Femmes Peules Autochtones du Tchad (AFPAT), the Technical Centre for Agricultural and Rural Cooperation ACP-EU (CTA) and the Open Society of Southern Africa, in collaboration with other development partners[4], launched the project "*Influencing regional policy processes in Climate Change Adaptation through the merger of African pastoralist traditional knowledge and atmospheric science*". This initiative is intended to bring together different African knowledge holders and experts to discuss how traditional rural knowledge systems and adaptation strategies can interact with atmospheric sciences (climatology and meteorology) and State policy making to create an enabling environment for medium and long-term adaptation to climate change. This would enhance both human security and ecosystem resilience.

1.2 Traditional knowledge systems and climate change

Climate change impacts on local ecosystems and livelihood patterns. Local resource users and knowledge holders, such as nomadic pastoralists are key stakeholders in observing, monitoring and responding to climate change and hold a body of Traditional Ecological Knowledge[5] (TEK) that should be considered while developing strategies for climate change adaptation and mitigation. Nonetheless unexpected and long-lasting changes in climatic patterns or significant alterations of ecosystems may weaken or invalidate local traditional weather / climate predictive systems thus jeopardising age-old adaptation strategies and mechanisms.

[4] UNESCO Climate Frontlines / LINKS, Conservation International, World Meteorological Organization and the African Centre of Meteorological Application for Development.

[5] "Traditional Ecological Knowledge" (TEK) is an academic term referring to aboriginal, indigenous, or other forms of traditional knowledge regarding local environmental resources. TEK can be defined as "a cumulative body of knowledge, practice, and belief, evolving by adaptive processes and handed down through generations by cultural transmission. It concerns the relationship of living beings (including human) with one another and with their environment" (FAO, 2003). TEK is commonly used in natural resource management as a substitute for baseline environmental data to measure changes over time in remote regions that have little recorded scientific data.

Moreover, in the full gamut of NAPAs submitted by African States to the UNFCCC, the only State Party to actively note the importance of local knowledge was Uganda. This raises a concern about which knowledge systems African states consider valid and important in developing national adaptation plans, and how diverse users and knowledge holders are going to be able to work together effectively to build social and ecological resilience.

2 THE CASE OF THE MBORORO PEOPLE

2.1 About the Mbororo

The Fulani-Mbororo people (often called Mbororo) are nomadic and semi-nomadic livestock herders traditionally living in parts of Cameroon, the Central African Republic, Chad, Niger and Nigeria.

The Mbororo people of Chad are a pastoralist minority group. They mainly rely on livestock and subsistence agriculture for their livelihood. According to the 1993 census there are 250.000 Mbororo people spread in the central arid and southern tropical areas of Chad. It is hard to estimate their exact number because of significant migrations to neighbouring countries due to conflicts and climate change. Mbororo people are characterized by a distinctive lifestyle, culture and language. They are a poor population with 99 per cent illiteracy rate. They have no political representation in Government and are often discriminated. The Mbororo people's livelihood is strictly linked to nature and natural resources. They have a thorough knowledge of their ecosystem and in the past they proved to fairly and sustainably manage their natural resource base.

Likewise other mobile people, the Mbororo have age-old knowledge systems to rely upon and they developed strategies on how to cope with changing seasonal weather patterns and sustainably manage meagre resources.

It is worth recalling that the Mbororo (i) move their cattle around the territory in ways that allow the ecosystems to regenerate; (iii) rotate grazing areas; (iv) selected over time special breeds of cattle like the Mbororoji, Akuji, Bunaji and Gudali apt for the ecosystems they occupy; (v) divide their livestock in smaller groups allocating them to different grazing areas, the strongest animals being sent to the fairest destinations; (vi) raise different types of livestock (such as cattle and goats) having different grazing habits, thus reducing the risk of losing all their animals at once, etc.

Some Mbororo elders hold a great deal of knowledge and are trusted by their communities for predicting the distribution of rainfall, droughts and other seasonal

patterns. It is through observing the sky, migrations of birds and insects and through the listening to the sounds made by livestock that elders make their own predictions.

Examples of traditional predictive systems include the following: (i) the size and the shape of fruits produced by a certain palm tree may indicate whether or not the coming year will be good; (ii) abundant offspring of a certain type of lizard is a predictor of a good season; (iii) changes in the direction of the wind from East to West are an indicator of rain that will last for days; and (iv) although the sky may be clear, the occurrence of a particular insect species indicates that it is about to rain.

Although the Mbororo people's traditional knowledge has helped dealing with environmental change and resource scarcity throughout the years, the capacity of elders to make reliable predictions has been affected and with it in some cases their trustworthiness. In fact, in recent times climate change hit hard making meteorological events extreme, drought spells longer, flush floods more intense and desertification and biodiversity loss more severe.

2.2 Challenges faced by the Mbororo People

Climate change coupled to increasing restrictions imposed on their mobility pose enormous challenges to pastoralists. Mbororo herders roam across vast distances (up to 1000 kilometres) to feed their livestock. Droughts and dwindling resources push them to herd their livestock even farther.

In Chad some Mbororo lost their stock and had to change their way of life and become semi-nomadic or sedentary. They try to adapt to new lifestyles, but experience extreme hardship compounded by the loss of cultural identity. Growing crops has hardly been part of their traditional culture and yields are meagre also because of the scarcity of water. Resource tenure is another issue, as land, natural resources and resources in the subsoil belong to the State in Chad[6] (Wessendorf, 2009). Having no formal rights on land Mbororo people are increasingly deprived from their traditional grazing areas due to land and water resources[7] being "fenced off" after allocation to private companies.

Faced by all these constraints the youth tend to move to urban centres. Their low level of literacy makes them prone to marginalisation and exploitation.

The distinctive needs of these groups are rarely addressed in Chadian society, public debates or in the work of national, regional and international organisations.

[6] The main problem in access and management of natural resources lie in the fact that according to the formal law all land and natural resources (land, water, forests) belong to the state whereas Islamic and customary law recognizes a different use right and ownership system. The formal recognition of land ownership is hampered by long and costly procedures which have not even been disseminated in local languages (USAID). The general population, grassroots organizations, and many officials and leaders are unfamiliar with the content of the formal land laws.

[7] Under the Water Code, all naturally-occurring surface and subsurface water is considered to be in the public domain. Water rights are generally included in and transferred along with land rights. Under Islamic and customary law, all people have rights of access to water sources.

3 BRIDGING TRADITIONAL AND SCIENTIFIC KNOWLEDGE

Climate science uses modern monitoring and forecasting systems to generate and provide a wide range of information on past, present and future scenarios on global, regional and national scales.

Nonetheless mandated agencies experience difficulties in effectively conveying such information to the local level and into local decision making and risk-management processes. In fact at grassroots level, decisions are based on a *local scale* and on a range of factors where climate knowledge is one of the many. Other factors include social networks, local loyalties, cultural values, intuition, beliefs and age-old trust in traditional predictive systems, which in turn may have suffered from rapid changes in climatic pattern and significant alterations of ecosystems.

On the other hand ordinary people experience great difficulties in making their voice heard by scientists, and this is particularly true for marginalised communities or minority groups speaking languages other than the dominant ones, having no access to or mastery of information communication technologies (ICTs) which could allow them to effectively document their knowledge and communicate it effectively to scientists and decision-makers. In many scientific circles, indigenous knowledge is considered anecdotal, empirical and of no particular value.

Communications challenges are found along a continuum that spans the following:

- How to make climate and weather information useful and relevant for vulnerable communities?
- How to build on the traditional understanding of climate risk and adaptation in the context of climate forecasting and to develop mechanisms for communication and processing of information adapted to the need of users?

- How can participatory ICTs help local people document and express their traditional ecological knowledge and share it with scientists and decision makers?
- How to create intercultural platforms leading to informed decision making?

4 WAY FORWARD

The activities set out in the project "*Influencing regional policy processes in Climate Change Adaptation through the merger of African pastoralist traditional knowledge and atmospheric science*" are intended to bring African pastoralists, conservation scientists, meteorologists and African policy makers together into a dialogue about their knowledge systems, their needs and the possibility of enhancing two-way flows of data, knowledge and information necessary to implement appropriate adaptive responses and long-term planning.

The aim of the initial activities is twofold. On the one hand, these would allow working with different decision-makers - from the global climate service providers to the local pastoralists. The information provided would enable local pastoralists to take appropriate adaptation decisions based on available long-term, scientific weather

forecasts. Organised so as to facilitate a two-way dialogue, the events will also provide an opportunity to see how the pastoralists' site-specific observations and related knowledge, when aggregated, could provide more nuanced and locally accurate weather forecasts.

The project includes also a participatory mapping exercise to be conducted at the fringes of Lake Chad in April 2012. The exercise will build on a methodology already applied in several countries in Africa and known as Participatory 3D Modelling (P3DM). The aim of the exercise is to fill the gap observed in practice between bottom-up traditional contributions to the understanding of climate change and top-down science-driven approaches.

Overall, the aim is to have a longer term process which will continue to provide firm policy input at national, regional and global levels, with an increasing ability of rural communities to work with African climate and meteorology scientists and governments' ministries to elaborate adaptation practices and policies.

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