Indigenous Knowledge in Governance of REDD+ for Climate Change Mitigation in Tanzania: Opportunities and Challenges

Samuel Mukulu Orecho, Alfred N.N. Muzuka and Mark Kelvin Mte

School of Materials, Energy, Water and Environmental Sciences (MEWES), Tanzania
The Nelson Mandela African Institute of Science and Technology (NM-AIST), Tanzania

ABSTRACT Reducing Emissions from Deforestation and Forest Degradation (REDD) governance is a climate change mitigation measure with opportunities and challenges. A case is made for development of a hybrid environmental ethics in Tanzania, based on indigenous knowledge and other knowledge systems. There is impressive progress made in the establishment of structures at the national and district levels with build-up of a complex system that presents considerable challenges as well as opportunities. There is an opportunity to involve indigenous communities, increase financial streams and improve on existing systems. Improvements to the REDD+ framework should be robust in addressing the diverse emerging issues and the wide range of stakeholders and interest groups and must be put within the broader context of Tanzania's priorities of livelihood improvement and poverty alleviation. Proper mapping of indigenous communities, research and capacity building programmes should be undertaken.

INTRODUCTION

Deforestation and forest degradation are one of the most serious environmental problems driven by a diverse and complex set of factors (Achard et al. 2002; Geist and Lambin 2002). The areas of land under forest in Tanzania have over the years declined tremendously with an estimated loss of 412,000 ha per year between 1990 and 2005 (Blomley and Iddi 2009) although the latest results indicate that the state and trends of the forestry resources are largely unknown (Tomppo et al. 2010). Climate change is another environmental problem that poses a threat to ecosystems and human kind with its associated impacts (Field et al. 2014; Fowler et al. 2007). Deforestation and climate change are intricately linked; forests take up carbon dioxide – a greenhouse gas responsible for climate change while changes in forest land use lead to carbon emissions (Moutinho and Schwartzman 2005). Scientists and policy-makers have envisioned and devised a climate change mitigation mechanism related to forests that has come to be known as Reducing Emissions from Deforestation and Forest Degradation (REDD) (Wallbott 2014).

The origins of Reducing Emissions from Deforestation and Forest Degradation date back to December 2005 in Montreal, Canada during the Conference of Parties (CoP) meetings of United Nations Framework Convention on Climate Change (UNFCCC) when The Governments of Papua New Guinea and Costa Rica requested for the issue to be taken up (UNFCCC, '*REDD*'). In 2008 at Bali, Indonesia three areas - conservation, sustainable management and enhancement of forest stocks, were added giving rise to what is now known as REDD plus. REDD+ is seen as a promising win-win strategy to simultaneously deal with global challenge of climate change, deforestation and forest degradation (SENSE 2013). REDD+ at its basic is intended to be a climate change mitigation measure with the primary objective of reducing emissions (Phelps et al. 2012) and is being presented as a 'governance' process. Meaningful reduction of greenhouse gas emissions and climate change amelioration requires collective action and to this end, REDD+ governance is being designed to fit within the 'philosophy of collective action'. The history of REDD+ governance in Tanzania can be traced back to April 2008, when The Norwegian and Tanzanian Governments established a partnership to address climate change challenges. This was a landmark in REDD+ governance in that it laid a foundation on which the current REDD+ structure is being built (Bukurura 1995). The UN-REDD joined the initiative in 2008 marking its inception in Tanzania (UN-REDD, '*Tanzania*'). The World Bank through its Forest Carbon Partnership Facility (FCPF) is another major player although it fails to take account of indigenous peoples' concerns (Economic and Social Affairs 2009). The Tanzanian Government has developed and submitted its proposal to FCPF for its Readiness-Plan Idea Note (R-PIN). Thus the overall REDD+ struc-

ture is made of multi-level governance system transcending international, national, regional and local levels.

Globally, the 1970s-1980s was a turning point in which attention was focussed on exploring how indigenous knowledge (IK) and environmental institutions could contribute to sustainable development (Purcell 1998). The word indigenous combined with knowledge is used to signify a social science perspective as well as philosophical and ideological position that rests on the recognition of the role of knowledge in power relations (Purcell 1998). The occurrence of forested areas the world over is synonymous with the existence of indigenous people who harmoniously co-exist with forests because of their rich indigenous knowledge systems. A case for successful involvement of indigenous people in REDD process is made for two principal reasons. First, their rich indigenous knowledge system developed over the years (Mihlar 2008) of living with forestry ecosystems should be used in designing REDD strategies and policies at both international and national levels. Indigenous groups offer alternative knowledge and perspectives based on their own locally developed practices of resource use (Berkes et al. 2000). Second, because REDD+ strategies will be implemented in indigenous peoples' lands (Mihlar 2008).

This paper explores the opportunities and challenges in designing and adopting REDD+ governance structure in Tanzania including the possible role of indigenous knowledge.

METHODOLOGY

An understanding of environmental ethics derived from indigenous knowledge is essential for three reasons. First, for *goals and policy setting* – policy-makers must operate with a set of value criteria by which to judge the outcome of different decisions (Edwards-Jones et al. 2009). Secondly, for *institutional and social values* – indigenous communities operate with shared environmental ethics which can be harnessed and transformed into formalised institutions for environmental governance of REDD and third for *motivation and individual behaviour* (Edwards-Jones et al. 2009) – the set of value systems held by individuals in indigenous communities influences the way they behave (Edwards-Jones et al. 2009). An understanding of what are

environmental ethical considerations is important to these communities and how they translate these values into action is therefore critical to developing policies and institutions that work effectively in solving environmental problems (Edwards-Jones et al. 2009).

RESULTS AND DISCUSSION

To elucidate these opportunities and challenges, it is necessary first to dissect the current REDD+ architecture in Tanzania as outlined in the following section.

REDD+ Institutional Structure and Coordination in Tanzania and IK Status

Structure and Coordination

REDD+ Initiative Tanzania, outlines the governance structure. The coordination of activities is undertaken under three levels – national, regional and local levels – each level with its own role and responsibilities. At the national level, the Division of Environment in the Vice President's Office (VPO) coordinates all climate change issues including adaptation and mitigation. A National Climate Change Steering Committee (NCCSC) and a National Climate Change Technical Committee (NCCTC) have been established to oversee and implement climate change activities. Under this kind of structure, REDD+ only forms a subset of overall climate change governance.

In addition, a National REDD+ Task Force, Technical Working Groups and a Secretariat have been established. The Institute of Resource Assessment of University of Dar es Salaam acts as the secretariat. Yet to be established are REDD+ Trust Fund (NRTF) and a National Carbon Monitoring Centre (NCMC). At the regional and district levels, coordination of activities adheres to existing local government institutional structures. The Regional Administrative Secretariat serves as the link between the Ministries and District Councils. At the district and municipal levels, Environmental Committees serve as coordinators for REDD+ activities in their respective areas. Taken as a whole, the National REDD+ governance structure reflects a decentralised and multi-level governance system. A close scrutiny reveals that several institutions are involved and there is an inter-play between

political and technical actors. These many institutions could present coordination problems.

Status of Indigenous Knowledge in Tanzania

As Mascarenhas (2001), points out that IK in Tanzania is in the doldrums for several reasons the main ones being colonial mentality, indifference to the plight of people living in rural areas and a path of development that relies excessively on external thinking and assistance.

Opportunities

The coming of REDD+ will provide an opportunity to address the underlying causes of deforestation and forest degradation and an opportunity to tap into the rich indigenous knowledge systems. According to the Forestry Act of 2002, the drivers of deforestation include settlement and agricultural expansion, overgrazing, fire and charcoal production, timber extraction, infrastructure development, mining and most recently large-scale agriculture for biofuel production. All these drivers are caused by market and policy failures, rapid population growth and rural poverty. Since the drivers are known, this provides a good starting point for the design and implementation of REDD+ to appropriately address these drivers. As the drivers of forest degradation are often outside the forest sector, achieving REDD+ should involve coordinating with agricultural and other sectors in reducing emissions. It is expected that deforestation rate will be minimised and at the same time, economic benefits will be maximised by promoting sustainable forest management (Somorin et al. 2013) that incorporates indigenous concerns and taps into their rich knowledge systems. After all it has been demonstrated that indigenous people are capable of influencing REDD policy at the highest levels of policy-making at the UNFCCC (Wallbott 2014).

With REDD+, there is an opportunity to build on experiences of existing governance tools to ensure effectiveness including the appropriate involvement of indigenous and local communities. There have been previous efforts in governing forests and understanding of these efforts provide a foundation on which to build REDD+ governance system through policy, legal and institutional reforms that will encompass a much broader range of issues than the current system. Part of existing efforts include, implementation of the Participatory Forest Management (PFM) guided by Forestry Policy of 1998 and backed by Forestry Act of 2002. Manifestly, there has to be a shift in order to accommodate and address emerging issues within REDD+.

Such issues include but not limited to land tenure, livelihoods, agriculture and the role played by indigenous people and their rich knowledge systems. The prospect to transform all existing tools and schemes towards a REDD regime is real as emissions reductions would be as much a priority as other co-benefits (Somorin et al. 2013). Furthermore they suggest strengthening of existing institutions rather than designing entirely new ones. Much to its credit the UN-REDD programme – a coalition of three UN entities of Food and Agriculture Organisation (FAO), United Nations Environment Programme (UNEP) and United Nations Development Programme (UNDP) has in its most recent strategy recognised and given importance to indigenous people and local communities with UNDP as the lead agency.

The strategy recognises that efforts to reduce emissions from deforestation and forest degradation will only succeed with meaningful engagement of indigenous people and other stakeholders in forested areas even developing an *"Operational Guidance on the Engagement of Indigenous Peoples and other Forest Dependent Communities"* (UN-REDD 2011). Already important lessons-learnt outcomes have begun to emerge that can be scaled-up to other regions. But then the UN-REDD though a major player is just one in many players involved at the international and national levels. Many organisations and institutions including national and local governments, non-governmental organisations (NGOs) and international organisations have to a large extend not involved indigenous communities.

REDD+ is a relatively cheap and promising approach for mitigating climate change (Angelsen et al. 2009). Through REDD+, Tanzania will have an opportunity to be part of global collective efforts to address climate change and its associated effects. In return, there are financial streams that come into the economy. This will reward forest conservation and management efforts (Okereke and Dooley 2010). REDD+ could generate large investment flows and institutionalise governance. Multiple benefits such as re-

ducing biodiversity loss and desertification, and offering an opportunity in the form of payment for ecosystem services accrue. With 35.257 million hectares (39.9 %) of land area being forests (Vice President's Office 2012), the financial returns from forestry will be substantial.

The UN-REDD has committed a total of 4 million USD for the National REDD+ programme. Whether these resources reach the beneficiaries is debatable given the corruption within government. Even if resources reach, the extent to which livelihoods will be transformed is uncertain. That REDD+ promises to deliver co-benefits of poverty reduction, biodiversity conservation and economic development provides the opportunity to design governance systems capable of delivering these co-benefits and involving indigenous communities (UN-REDD 2011).

Harmonisation of the existing policy, legal and institutional frameworks for forestry management and emissions reduction is another governance opportunity presented for the design of REDD+. Currently the main policy instrument is the Forestry Policy (1998); main legal instrument is the Forestry Act of 2002. In addition, a number of other policies and legal regimes that touch on forestry exist and include but not limited to National Land Use Policy (1995), National Environment Policy (1997), Environment Management Act (2004), Land Act (1999) and Village Land Act (199). Most of these policies and legislative instruments have aspects of indigenous communities albeit to a very limited extent while others like the Environment Management Act makes no mention of indigenous people. A critical observation reveals that the policy, legal and institutional frameworks are sectoral based each having elements that purport to address forestry related problems in the way that best meets the interests of each sector (Angelsen et al. 2009). The results are duplication of efforts, uncoordinated efforts and above all conflicting roles, responsibilities and ideas. Reforms should be able to harmonise these to resolve conflicts and build synergies for effective attainment of REDD+ objectives. In addition, there is the opportunity to integrate with the more successful Clean Development Mechanism (CDM).

Challenges

Defining the roles of actors, mostly civil society and the private sector is a challenge. Although REDD+ is supposed to encompass a wide variety of organisations, a close look at the existing set-up reveals an inadequate incorporation of actors including indigenous peoples' organisations. The role/agency of indigenous people as actors in influencing REDD+ mechanism at international level is increasing but it is still indirect and weak (Schroeder 2010). Conspicuously missing are international and national non-governmental organisations (NGOs) who are not as intensely involved in the REDD+ process. A possible reason is that these actors have objectives that address climate change and related environmental issues in a much broader sense than REDD+ would. NGOs operate as a link between local communities and the government; they assist in disseminating REDD+ knowledge among local communities. This minimal involvement of NGOs is an indication that the massive resources and expertise that is a prerequisite for proper REDD+ governance is not being tapped into. Policy approaches and measures that align REDD+ objectives to those of these actors should be able to address this. The private sector too is less involved and yet activities of these players are strongly related to drivers of deforestation and forest degradation. The fact that implementing REDD+ would inevitably need the private sector (some of whom come from indigenous communities) to make sustainable land use decisions, their inclusion or exclusion is critical for the success of implementation (Somorin et al. 2013). Strategies and approaches need to be defined along with the rules of engagement; which emphasise the responsibilities of all parties which will make implantation of REDD+ possible (Somorin et al. 2013).

The REDD+ structure is being built based on similar structures that have been implemented in different countries. This "one-size-fits all" approach fails to take into consideration differences in local circumstances including cultural diversity of indigenous people. As Bukurura (1995) notes, there is lack of replication of traditional methods across cultural boundaries. For instance in Indonesia, the first country to implement REDD, indigenous people with the help of environmental organisations have been struggling to influence REDD laws and policies and have shown resistance to REDD implementation as it is (Johnstone 2010). In Tanzania, there are no reported cases of such resistance to REDD implementation even though it is still early to judge. Nevertheless, 'borrowed' REDD

ideas from other parts of the world are expected to present a noteworthy challenge in addressing local indigenous peoples' issues that may directly or indirectly influence the desired REDD+ outcomes. Approaches should therefore be more flexible, adopting where necessary strategies that address local conditions and indigenous peoples' concerns.

Human, technical and physical capacity deficits present a challenge. The current interaction of the leading institutions within Tanzania is challenged by leadership issues related to managing the overall coordination of the national REDD+ strategy. Within Tanzania there is a general lack of knowledge systems that is required for a successful REDD+ output. The dissemination of indigenous knowledge is still weak. As Akinde, (2008) notes indigenous knowledge does not flow on its own accord as it needs owners or originators with the vision and motivation to create, adapt or exchange it. Akinde (2008) further emphasises that they need to have the creative, technical and people skills to transform ideas, knowledge, belief, value, norm, moral, law, custom, language, human institutions and technology. While indigenous communities can contribute immensely to REDD+, their knowledge has to be integrated and combined with other knowledge systems including scientific knowledge for the success of REDD+. It follows then, that capacity building programmes for indigenous people themselves is required if REDD+ objectives are to be realised. UNDP and UNEP-WCMC recognised this and have since developed a specialised *"Toolkit to Support Conservation by Indigenous Peoples and Local Communities"* (Corrigan and Hay-Edie 2013). Whether this toolkit is widely adopted remains to be seen, but it is a step in the right direction. REDD+ is a relatively new idea having come into the forefront of global environmental governance ten years ago (as of 2015). This is not long enough a period for Tanzania to have built sufficient knowledge systems; human, technical and institutional capacity for the governance of REDD+. Nonetheless, the process of capacity development and institutional strengthening is underway but this will take time to achieve the desired competence. Such capacity building programmes should take into consideration the use of above mentioned or similar toolkits for indigenous knowledge tapping.

In the light of other pressing development challenges like poverty and low infrastructural and economic development, REDD+ might be swept under the carpet (Somorin et al. 2013). Environmental issues, climate change inclusive along with its associated governance do not always take a centre stage in the political arena. This will further relegate REDD+ to the back seat of political priorities thereby compromising the expected financial streams and opportunity to tap into IK. The political motivation to fast track REDD+ stems from donors' financing but such sources of funding are uncertain. UNFCCC has indeed acknowledged difficulty in raising required funds to support REDD+ implementation. One of the biggest challenges is to design REDD+ to successfully compete with alternative sources of livelihoods derived from forests. To illustrate this, we might ask: Is the market price of timber from forests higher or less than income derived from REDD+ payments? The same inquiry can be extended to income derived from other forest related livelihoods. For as long as the income derived from REDD+ is less than that from these sources, then it is deemed to fail. Reforms should aim at making REDD+ inflows more competitive if REDD+ is to attain its goals.

Coordinating roles and responsibilities is a challenge (Acharya et al. 2009). Concerns continue to exist on the willingness of different actor groups to cooperate particularly those outside the forestry sector. Equally important to the coordinating roles of the government is the design of the required institutional arrangements to meet specific REDD+ outcomes (Somorin et al. 2013). Leadership and coordination to develop effective collaborations at the local, regional, national and international arena is a requirement for REDD+ implementation. Political leadership of REDD+ is needed especially in the mobilisation of external resources – financial, technical and managerial. Stronger leadership for the effective implementation of REDD+ is therefore called for (Somorin et al. 2013). Although financial streams may flow to forest communities there is uncertainty of tenure, a lack of consultation and an all-round lack of recognition and protection of the rights of indigenous people (Wright 2012 '*Indigenous People and Land Ownership*').

At present, there are no laws and policies designed distinctively for REDD+ although Tanzania is in the process of designing one. This challenge is exacerbated by the lack of an inter-

national agreement on REDD+ which would act as a reference point for the design of a national REDD+ policy. Although a draft National REDD+ Strategy and Action Plan that includes indigenous people has been developed, this needs to be backed-up by a formal policy and law. National REDD legislation as Baez (2011), suggest may impact negatively on indigenous people if not well formulated. Policy and institutional reforms necessary for successful implementation of REDD+ will be substantial and realising the potential of REDD+ will be neither fast nor easy (Somorin et al. 2013). It remains to be seen if such policy and law will adequately incorporate indigenous input and address their concerns. Effective and sustainable policies on forests and climate change mitigation must be based on the recognition of rights, respect for the principle of free, prior and informed consent (Griffiths 2008). Institutional strengthening policy should focus on governance of benefits sharing, communication, guaranteeing indigenous rights (customary, land title, community forestry and carbon rights).

Many ongoing national development efforts such as increasing food security, rural development, energy security and infrastructural development are quite disconnected from the REDD+ process. All these efforts including the national REDD+ process have one thing in common, that is the inadequate involvement of indigenous input, a testimony in itself of the extent of negligence exhibited towards IK at the national levels. As poverty reduction is central to any developmental efforts, it is in REDD+ best interest to align its programmes and policies at the national and district levels to meet these mentioned targets and to incorporate indigenous concerns as laid out in the various international institutional REDD strategies. A prerequisite for the success especially of REDD unlike the other mentioned processes, is a bottom-up harnessing of indigenous input.

Complexity of the causes of deforestation and forest degradation: REDD+ governance structure is meant to govern a wide range and often complex set of resources and issues. Such resources according to Thompson et al. (2011), include but not limited to trees themselves (potentially used for timber, food, fuel, cultural traditions, etc.), non-timber forest resources, local landholdings adjacent to forests and indigenous interests. Thus, governing the impacts of climate change through the reduction of deforestation and forest degradation requires governing many different types of land cover, livelihoods activities, ecosystem services and governance capacities (Angelsen et al. 2009). In particular, attention has to be given to indigenous people and their indigenous knowledge systems that are still not well tapped. The many issues to be governed present a challenge for mechanism design.

The REDD+ process in and of itself is a complex arrangement that requires the integration of natural sciences and social aspects for effective governance. On the one hand, issues like measurements and verification of carbon emissions are largely scientific processes that require scientific technical know-how. Besides, there are social and cultural issues like livelihoods and cultural heritage that have to be brought on board. Attempts have been made to integrate these within the REDD+ process but still the integration presents a challenge (Acharya et al. 2009). We might ask: How much of a carbon reduction leads to societal welfare and how would such welfare be estimated? Thus REDD+ presupposes that governance integrates issues such as monitoring, verification and reporting systems, co-benefits, land tenure, land use rights and benefits-sharing (Somorin et al. 2013). As part of the REDD process, Participatory Forest Carbon Assessment (PFCA) has to be conducted; in one such study by Mukama et al. (2012) locals were able to perform most tasks in carbon assessment. However integrating indigenous knowledge into this process presents a considerable challenge as the process is expensive and traditional knowledge systems have not been documented. These findings are similar to those of Larrazábal et al. (2012) where community monitoring has been found useful and effective but at the same time expensive for REDD+ carbon monitoring.

It is widely recognised that good environmental governance should consist of a participatory approach (Agrawal et al. 2011) as one of the key ingredients. There are a number of forest related stakeholders each with interests which may conflict or offer synergies. Such stakeholders include indigenous people, agricultural farmers, and timber traders to name a few (Pistorius et al. 2011). In the current framework attempts have been and continue to be made to incorporate views and concerns as well

as ensure active participation of such groups. The processes of doing these presents a significant challenge since success of REDD+ will depend on an effective partnership formation with indigenous and local communities. A challenge arises due to ambiguity in which the term indigenous is used. Who exactly constitute indigenous people? Whilst there are accusations of minimal involvement of indigenous communities, in Tanzania's case there are accusations of fraudulent involvement of indigenous people in REDD+ process. The Maasai for instance are recognised by United Nations as indigenous people and attempts have been made to involve them in the Tanzanian REDD+ programme. Surprisingly one of their very own sits on the UN-REDD policy board as an indigenous peoples' representative yet the Maasai do not inhabit significant forested areas and might therefore be free-riding. This is just one example; it is possible that several other such cases could exist. Proper mapping of who does or does not benefit in financial terms needs to be incorporated into design of REDD+.

CONCLUSION

Existing indigenous knowledge systems need to be documented and incorporated into the prevailing environmental ethics. Tanzania being unique in its ways of environmental management which has largely been ignored to some extent in environmental policy-making, it would appear that the effective addressing of the current climate change crisis calls for harnessing of new environmental ethics based on traditional indigenous knowledge systems and incorporating these with western science.

Reducing Emissions from Deforestation and Forest Degradation is a relatively young and rapidly evolving mechanism that has the potential to reduce emissions from the forestry sector while at the same time improving livelihoods through attracting financial inflows. The mechanism presents unique governance opportunities for Tanzania including the opportunities to involve indigenous people and their rich knowledge systems.

RECOMMENDATIONS

Environmental ethics has to solve three problems. (a) It has to identify the ethical issues at stake in a decision (b) it has to determine what ethical principles are involved in these issues and (c) it has to see how those principles should be applied in addressing environmental problems. Against this backdrop, environmental ethics derived from indigenous knowledge systems as it relates to REDD have to be developed and nurtured through:

- Proper identification and mapping of *bona fide* forest-related indigenous communities in forested areas based on internationally established criteria should be carried out as there are a number of indigenous people who have no relation to forests and have unfairly benefited from REDD programme.
- Gaps in research and documentation of forest-related indigenous knowledge systems and evaluation of their usefulness in relation to REDD should be carried out especially the indigenous knowledge-policy interface and aspects that can act as building blocks for the development of indigenous sound environmental ethics. It is therefore important to integrate IK with other knowledge systems in the local communities. Perhaps the best approach to environmental ethics is a hybrid that incorporates indigenous knowledge and western science.
- Training and capacity development programmes for the indigenous communities themselves, policy-makers and implementers, trainer-of-trainers programmes in research institutes and universities, and introduction of curricula in indigenous knowledge/environmental ethics in training institutions.

The integration of IKS could be done through designing and implementation of policy, legal and institutional frameworks specifically for REDD+ that takes consideration of IKS.

REFERENCES

Achard F, Eva HD, Stibig HJ, Mayaux P, Gallego J, Richards T, Malingreau JP 2002. Determination of deforestation rates of the world's humid tropical forests. *Science,* 297: 999.

Acharya K, Dangi R, Tripathi D, Bushley B, Bhandary R, Bhattarai B 2009. *Ready for REDD? Taking Stock of Experience, Opportunities and Challenges in Nepal.* Nepal Kathmandu: Nepal Foresters' Association, Mass Printing Press.

Agrawal A, Nepstad D, Chhatre A 2011. Reducing emissions from deforestation and forest degradation. *Annual Review of Environment and Resources,* 36: 373.

Akinde TA 2008. Indigenous knowledge dissemination and use: A discuss. *Samaru Journal of Information Studies,* 8: 8-11.

Angelsen A, Brockhaus M 2009. *Realising REDD+: National Strategy and Policy Options.* CIFOR: Indonesia.

Baez S 2011. Right REDD framework: National laws that best protect indigenous rights in a global REDD regime. *The Fordham L Rev,* 80: 821-875.

Berkes F, Colding J, Folke C 2000. Rediscovery of traditional ecological knowledge as adaptive management. *Ecological Applications,* 10: 1251-1262.

Blomley T, Iddi S 2009. *Participatory Forest Management in Tanzania: 1993-2009: Lessons Learned and Experiences to Date.* Dar es Salaam: Ministry of Natural Resources and Tourism, Forestry and Beekeeping Division.

Bukurura SH 1995. Indigenous communication systems: Lessons and experience from among the Sukuma and Nyamwezi of West Central Tanzania. *Nordic Journal of African Studies,* 4: 1-16.

Corrigan C, Hay-Edie T 2013. *A Toolkit to Support Conservation by Indigenous Peoples and Local Communities: Building Capacity and Sharing Knowledge for Indigenous Peoples' and Community Conserved Territories and Areas (ICCAs).* Cambridge, United Kingdom: UNEP-WCMC.

Economic and Social Affairs 2009. *State of the World's Indigenous Peoples.* New York: United Nations.

Edwards-Jones G, Davies B, Hussain S 2009. *Ecological Economics: An Introduction.* London, United Kingdom: Blackwell Science Ltd.

Field CB, Barros VR, Mach K, Mastrandrea M 2014. Climate Change 2014: Impacts, Adaptation and Vulnerability. *Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.* New York: Cambridge University Press.

Fowler H, Blenkinsop S, Tebaldi C 2007. Linking climate change modelling to impacts studies: Recent advances in downscaling techniques for hydrological modelling. *International Journal of Climatology*, 27(12): 1547-1578.

Geist HJ, Lambin EF 2002. Proximate causes and underlying driving forces of tropical deforestation. *BioScience,* 52(2): 143-0150.

Griffiths T 2008. *Seeing 'REDD'? Forests, Climate Change Mitigation and the Rights of Indigenous Peoples and Local Communities.* UK: Moretonin-Marsh.

Johnstone N 2010. Indonesia in the REDD: Climate change, indigenous peoples and global legal pluralism. *APLPJ,* 12(1): 93-123.

Larrazábal A, McCall MK, Mwampamba TH, Skutsch M 2012. The role of community carbon monitoring for REDD+: A review of experiences. *Current Opinion in Environmental Sustainability,* 4: 707-716.

Mascarenhas AC 2001. Indigenous Knowledge, Livelihoods and Development: Is a High Rate of Sustainable Growth Achievable? *Inaugural Tanzanian Biennal Development Forum.* Ed. Forum to Assess Development Policies of Tanzania."Issue Paper on Indigenous Knowledge for Development in Tanzania." Bagamoyo, The Links Workshop and Forum African Links, P. 13.

Mihlar F 2008. *Voices that Must be Heard: Minorities and Indigenous People Combating Climate Change.* London: Minority Rights Group International.

Moutinho P, Schwartzman S 2005. *Tropical Deforestation and Climate Change.* Brazil: Amazon Institute for Environmental Research.

Mukama K, Mustalahti I, Zahabu E 2012. Participatory forest carbon assessment and REDD. *International Journal of Forestry Research,* 1: 1-14.

Okereke C, Dooley K 2010. Principles of justice in proposals and policy approaches to avoided deforestation: Towards a post-Kyoto climate agreement. *Global Environmental Change,* 20: 82-95.

Phelps J, Friess D, Webb E 2012. Win–Win REDD+ Approaches Belie Carbon–Biodiversity trade-offs. *Biological Conservation,* 154: 53-60.

Pistorius T, Schmitt C, Benick D, Entenmann S, Reinecke S 2011.Greening REDD plus-challenges and opportunities for integrating biodiversity safeguards at and across policy levels. *German Journal of Forestry Research,* 182: 82-98.

Purcell TW 1998. Indigenous knowledge and Applied Anthropology: Questions of definition and direction. *Human Organization,* 57: 258-272.

REDD+ Initiative Tanzania "Overview of REDD+ Initiative in Tanzania" 2013. REDD+ Initiatiative in Tanzania. From <http://theredddesk.org/countries/tanzania> (Retrieved on 20 January 2016).

Schroeder H 2010. Agency in international climate negotiations: The case of indigenous peoples and avoided deforestation. *International Environmental Agreements: Politics, Law and Economics*, 10(4): 317-332.

SENSE 2013.Outcomes Event REDD Science and Governance. Research School for Socio-Economic and Natural Sciences of the Environment. From <www.sense.nl/news/c74/?startnum=11> (Retrieved on 20 January 2016).

Somorin OA, Visseren-Hamakers IJ, Arts B, Sonwa DJ, Tiani A-M 2013. REDD+ policy strategy in Cameroon: Actors, institutions and governance. *Environmental Science and Policy,* 35: 87-97.

Thompson MC, Baruah M, Carr ER 2011. Seeing REDD+ as a project of environmental governance. *Environmental Science and Policy,* 14(2): 100-110.

Tomppo E, Katila M, Mäkisara K, Peräsaari J, Malimbwi R, Chamuya N, Otieno J, Dalsgaard S, Leppänen M 2010. *Report to the Food and Agriculture Organization of the United Nations (FAO) in Support of Sampling Study for National Forestry Resources Monitoring and Assessment (NAFORMA) in Tanzania.* Rome, Italy: FAO.

UN-REDD 2011. *UN-REDD Programme Strategy 2011 - 2015. (Ed.) UN-REDD.* Geneva, Switzerland: UN-REDD.

United Republic of Tanzania 2013. UN-REDD. 1/07/2013. From <www.un-redd.org/UNREDDProgramme/CountryActions/Tanzania/tabid/1028/language/en-US/Default.aspx> (Retrieved on 20 January 2016).

Vice President's Office 2012. *National Strategy for Reduced Emissions from Deforestation and Forest Degradation (REDD).* Dar es Salaam, United Republic of Tanzania.

Wallbott L 2014. Indigenous peoples in UN REDD+ Negotiations:"Importing Power" and lobbying for rights through discursive interplay management. *Ecology and Society,* 19: 21-34.

Wright G 2012. Indigenous people and customary land ownership under domestic REDD frameworks: A case study of Indonesia. *Law, Environment and Development Journal,* 7: 117.