I. SESSION DESCRIPTION

ID: G4

Ecosystem Services under climate change in Africa

Hosts:

<table>
<thead>
<tr>
<th>Title</th>
<th>Name</th>
<th>Organisation</th>
<th>E-mail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Host</td>
<td>Davnah Payne</td>
<td>Global Mountain Biodiversity Assessment, University of Bern</td>
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<tr>
<td>Others involved:</td>
<td>Sunday Berlioz KAKPO</td>
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</table>
Abstract:

Ecosystem (provisioning, regulating, cultural, and supporting) services underpin Africa’s socioeconomic development and support human well-being. This is especially critical in light of the millions of inhabitants living in extreme poverty today and who are heavily relying on natural resources for their livelihoods and general wellbeing. Accordingly, it is crucial to understand how the effects of climate change on Africa’s terrestrial, freshwater, and coastal ecosystems affect the provision of, access to, and use of ecosystem services, and what policies and governance mechanisms are needed to build social, economic, and ecological resilience to climate change across scales and locations.

Goals and objectives of the session:

In this session we will review existing knowledge on the effects of climate change on ecosystem services in Africa; review the lessons learnt from attempts to address them; and discuss research, implementation, and policy gaps. This session is open to academic and non-academic participants

Planned output / Deliverables:

The expected output of this session is an analysis of gaps and opportunities in research and action on ecosystem services under climate change in Africa

Related to ESP Working Group:

General Section
## II. SESSION PROGRAM

**Date of session:** Tuesday, 18 June 2019  
**Time of session:** 10:30 – 12:30

### Timetable speakers

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<th>First name</th>
<th>Surname</th>
<th>Organization</th>
<th>Title of presentation</th>
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<tr>
<td>10:30 – 10:40</td>
<td>Davnah</td>
<td>Payne</td>
<td>Global Mountain Biodiversity Assessment</td>
<td>Setting the stage – biodiversity, ecosystem services and climate change in Africa: what does the IPBES assessment for Africa tells us</td>
</tr>
<tr>
<td>10:40 – 11:00</td>
<td>Yvonne</td>
<td>Nti</td>
<td>University of Potsdam</td>
<td>The evolution of climate change and urban green space across sectors, an analysis of Ghana’s national policies and implications for urban climate adaptation</td>
</tr>
<tr>
<td>11:00 – 11:20</td>
<td>Belachew</td>
<td>Gizachew</td>
<td>Norwegian Institute of Bioeconomy Research</td>
<td>Carbon in protected areas of Uganda: Implications to the carbon benefits of conservation</td>
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<tr>
<td>11:20 – 11:40</td>
<td>Adebola</td>
<td>Adedugbe</td>
<td>Farmideas Nigeria</td>
<td>Climate change impacts on food systems in sub Saharan Africa: key challenges and concrete solutions</td>
</tr>
<tr>
<td>11:40 – 12:00</td>
<td>Mardochee</td>
<td>Ephraim</td>
<td>Université nationale d’agriculture</td>
<td>Etat des ressources naturelles de Djegbadji et de Adouanko (site Ramsar 1017) au sud-ouest du Bénin dans le context actuel de changement climatique</td>
</tr>
<tr>
<td>12:00 – 12:05</td>
<td>Takuo</td>
<td>Jean</td>
<td>ERD</td>
<td>Contribution to the promotion of Dizangué ecotourism – Cameroon</td>
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<td>(flash talk)</td>
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<tr>
<td>12:05 – 12:10</td>
<td>Joyce</td>
<td>Lepetu</td>
<td>Botswana University of Agriculture and Natural Resources(BUAN)</td>
<td>Socio-economic factors influencing household dependence on forests and its implication for forest-based climate change adaptation and mitigation strategies: a case study of Chobe forest reserve</td>
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<tr>
<td>(flash talk)</td>
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<tr>
<td>12:10 – 12:30</td>
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<td>Discussion</td>
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III. Abstracts

The abstracts appear in alphabetic order based on the last name of the first author. The first author is the presenting author unless indicated otherwise.

1. Type of submission: Abstract

G. General sessions: G4 Ecosystem Services under climate change in Africa

Climate Change Impacts on Food Systems in sub Saharan Africa Key Challenges and Concrete Solutions

First authors(s): Adebola Adedugbe
Affiliation: Farmideas Nigeria
Contact: bolaadedugbe@gmail.com

Climate change is increasingly recognized as a major challenge facing households and communities, local and national governments; and international agencies and organizations. Therefore adaptation (responding to the impacts of climate change) is increasingly necessary. Climate change is a long-term change in the statistics of weather expressed as a probable change in mean or extreme weather conditions. And it is affecting the natural resource base, people and food security. Africa’s vulnerability to climate change impacts have been underscored by the severe droughts experienced recently in the Sahel in 2012 and the Horn in 2011. All these bring into focus the serious impacts of climate change in the continent and highlighting the urgent need for adaptation as a priority in providing sustainable solutions to reduce the vulnerability of a great majority of Africa’s one billion citizens. Climate change is increasingly recognized as a major challenge facing households and communities, local and national governments and international agencies and organizations. Climate change is already affecting the livelihoods of West African smallholder farmers who rely on rain-fed agricultural techniques, and it is expected to make food shortages more acute as the region’s Population continues to grow. Farmers in the region are trying to cope with irregular rainfall, flooding and degraded soil and we must recognize the potential to reduce some of the effects of climate variability and change. The earth’s climate has already been altered to such an extent that mitigation (efforts to reduce the concentrations of greenhouse gases in the atmosphere) alone will be inadequate. This paper provides a short description of the potential influence of climate change variability on food systems and local adaptation strategies as it affects Sub Saharan Africa.

Keywords: Africa, Climate change, Ecosystem based Adaptation, sub Saharan Africa
Etat des ressources naturelles de djègbadji et de adounko (site ramsar 1017) au sud-ouest benin (afrique de l'ouest) dans le contexte actuel de changement climatique

First authors(s): Christelle Claudia Akotossode
Presenting author: Mardochee Ephraim Achoh
Other author(s): Vodugnon Manhougnon Hamil Bonard
Affiliation: Université d'Abomey–Calavi
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La préservation des sites Ramsar reste une obligation des pays contractants et nécessite un suivi permanent. Cette étude vise à apprécier l'état actuel des zones de Djègbadi et Adounko au Bénin dans le contexte de changement climatique. A cet effet, 8 placeaux de 900 m2 chacun ont été installés sur deux sites (Adounko et Djègbadji) à raison de 4 placeaux par site. Au sein de chaque placeau, 9 placettes de 100 m2 ont été installées. L’estimation de l’abondance–dominance des espèces recensées a été effectuée. Ensuite, les données satellitaires de la zone d’étude ont été consultées pour une étude comparative entre la période de 2000 à 2016. A l’issue de cette étude, 23 espèces végétales ont été inventoriées avec une dominance significative des espèces de la mangrove (p < 0,05). Au niveau de la faune aviaire, 15 espèces ont été inventoriées avec une abondance plus élevée de Spilopelia senegalensis et Egretta intermedia alors que 8 espèces d’insectes ont été inventoriées avec une abondance plus élevée de Formica sanguinea et Anophele gambiae. Les données satellitaires révèlent que la mangrove et les formations marécageuses ont connu une réduction respective de 1,93% et de 14,77% alors que l’occupation des superficies par les agglomérations a connu une augmentation de 8,32%. Adounko semble être plus préservé que Djègbadji. Mais la dynamique de la biodiversité des deux sites est fortement influencée par les activités anthropiques, ce qui augmente le réchauffement climatique. Des actions fortes de cogestion (décideurs politiques, ONGs et utilisateurs) sont nécessaires pour la préservation.

Keywords: diversité biologique, zone côtière, facteurs anthropiques, Bénin
G. General sessions: G4 Ecosystem Services under climate change in Africa

Carbon in Protected Areas of Uganda: Implications to the carbon benefits of conservation

First authors(s): Belachew Gizachew
Other author(s): Svein Solberg, Stefano Puliti
Affiliation: Norwegian Institute of Bioeconomy Research (NIBIO)
Contact: belachew.gizachew@nibio.no

Uganda designated 16% of its land as Protected Area (PA) with a goal of habitat and biodiversity conservation. Protected areas offer great potential for carbon conservation in the context of climate change mitigation. Drawing on a wall–to–wall map of forest carbon change for the entire Uganda, developed using two Digital Elevation Model (DEM) data sets for the period 2000–2012; we (1) quantified forest carbon gain and loss within all 713 PAs and their external buffer zones, (2) and evaluated the degree of isolation and habitat fragmentation of PAs due to external pressure. The net annual forest carbon gain in PAs of Uganda was $0.22 \pm 1.36$ t/ha, but a significant proportion (63%) of the PAs exhibited a net carbon loss. About 37% of the PAs were “effective”, i.e., gained or at least maintained forest carbon during the period. Nevertheless, carbon losses in the external buffer zones of those effective PAs significantly contrast with carbon gains inside of the PA boundaries, providing evidence of habitat isolation and fragmentation. The combined carbon losses inside the boundaries of a large number of PAs, together with leakage in external buffer zones suggest that PAs, regardless of the management categories are threatened by deforestation and forest degradation. If Uganda will have to benefit from the ecosystem services through carbon conservation via climate change mitigation mechanisms such as REDD+, there is an urgent need to look into the current PA management approaches, and design conservation strategies that account for the surrounding landscapes and communities outside of the PAs.

Keywords: Forest Carbon, Fragmentation; Conservation; Protected Areas; Uganda
4. **Type of submission: Abstract**

G. General sessions: G4 Ecosystem Services under climate change in Africa

**The evolution of climate change and urban green space across sectors, an analysis of Ghana’s national policies and implications for urban climate adaptation**

*First authors(s):* Yvonne Odame-Nti  
*Other author(s):* Dr Torsten Lipp  
*Affiliation:* University of Potsdam  
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Cities are increasingly becoming recognized for their importance to address climate change considering the intertwined relationship between urbanization and climate change and the projected urbanization yet to occur. Given the current state of urbanization that is wiping out green space and gradually turning cities into deserts, there has been increasing efforts to promote urban green space as a way to reverse environmental impacts of urbanization and promote cities adaptation. Using Ghana as case study and adapting from relevant research frameworks, 47 policy instruments from various sectors from early 1990s to 2016 are collated and to assess how approaches to climate change and green space have changed over time, across sectors and scale. Results showed that there is a long standing increasing recognition of climate change over time, however some sectors that are less engage in climate change issues show limited recognition of climate change. Also analysis of climate impacts and risks has been weak across sectors and hasn’t followed global trend of advanced climate science analysis in recent years to aid policy formulation. Secondly, there is recognition of importance of green space with high activity to protect and/or enhance green space at the national level, but there is relatively low activity level at urban scale, which shows most actions on green space are focused on non-urban areas. Further studies into sector-specific factors driving prioritization of climate change issues across sectors is required to understand how to encourage equitable participation of sectors to address climate change. Also awareness of climate change need to be promoted as well as the benefits of urban green space to promote cities adaptation to climate change.

**Keywords:** Climate change, urban green space, cities adaptation, sustainability, ecosystem services
5. Type of submission: **Poster abstract**

**G. General sessions: G4 Ecosystem Services under climate change in Africa**

**Socio–economic factors influencing household dependence on forests and its implication for forest–based climate change adaptation and mitigation strategies: a case study of chobe forest reserve.**

*First authors(s):* Joyce Lepe

*Other author(s):* Hesekia Garekae

*Affiliation:* BUAN

*Contact:* jlepetu@yahoo.com

Many rural communities rely on forests, which makes sustainable forest use and management central to their livelihood and resilience to climate change (FAO 2015). Forest based climate change mitigation and adaptation projects are widely promoted to enable households to adapt to the challenge of climate change. However, there are concerns about the implications of strategic and practical steps taken in this context on forest–dependent communities. Protected Areas (PA) such as Chobe Forest Reserves were gazetted as an effort to protect the only forests of Miombo woodlands found in northern Botswana. However, dynamics of the relationship between local residents and these PAs in relation to different socio–economic and demographic factors remains poorly understood and such has implications on the sustainable management of these resources. Thus, there is need to reconcile local socio–economic vulnerabilities and forest–based climate change intervention initiatives.

In the current study, socio–economic factors influencing households’ dependence on forest resources and associated implications on climate change interventions were investigated.

A structured questionnaire was administered to household heads in 3 villages adjacent to CFR. Socioeconomic, demographic, and forest use data were obtained by interviewing 183 households residing around Chobe Forest Reserve (CFR) to estimate their dependency on CFR. Descriptive analysis and Logistic regression was employed to analyse the relationship between Forest dependency and explanatory factors up to 99.4%, of the respondents depended on the forest resources predominantly because of low costs associated with using them. It was observed that socio–economic characteristics of households such as age and education level of respondents significantly (P < 0.05) influenced use of the forest resources. Thus, effectiveness and sustainability of forest–based climate change intervention initiatives can be promoted if the socio–economic conditions prevailing within households in areas next to forests are improved.

**Keywords:** forest dependency, livelihood, rural community, vulnerability, Botswana
6. Type of submission: Poster abstract

G. General sessions: G4 Ecosystem Services under climate change in Africa

**Contribution to the promotion of Dizangé ecotourism – Cameroon**

*First authors(s):* Guy Alain Tagne Tiam  
*Other author(s):* Delphine Mamgue Fokoua  
*Affiliation:* ERD  
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As part of project activities contributing to the promotion of the ecotourism in Dizangue – Cameroon, ERD benefitted from a support of GEF/SGP/UNDP in its sixth operational phase. Indeed, Cameroon enormous tourist potentials. Known as “Africa in Miniature”, it is classified 25th tourist destination in Africa and 155th in the world by the Bloom Consulting Brand Ranking.

Being defined as the fact to travel in, or out of a place different to one where usually lives for its pleasure. This can imply spending a night in a hotel establishment, the restoration etc. Several attractive elements categorize the tourism, among which, the natural resources (sea, lake, beach, fauna, flora…). It is thus, that spring the “Ecotourism concept”. Dizangue offers a marvelous ecotourism site and poorly known, constituted by the Lake Ossa, the Manatees, the birds of various species, etc.

Thus, in order to booster the tourist economy in this locality, and at the national level, ERD organization tackles to sensitize the fishers on the securities, the misdemeanors of the loss of the biological diversity, to create the communities nurseries for reforestation on the banks of the Lake, to run campaigns of reforestation around the Ossa lake in order to preserve this potential and only shelter of the Manatee in Cameroon, to define the tourist circuits and to arrange some boucaros on these circuit to facilitate the orientations of visitors. At the end, one will have trees planted for the preparation of a watchtower on the banks of the lake, two communities’ nurseries, circuit’s ecotourism, two boucaros, and a tourist Guide association legally created having to drive visitors. The increase of the tourist enhance economy and the social cohesion of the populations of Dizangue united around the Ecotourism concept constitute crucial impacts so much ongoing for the project that for GEF/SGP/UNDP.

**Keywords:** Ecotourism, Lake Ossa, tourist economy