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# Innovative Approaches

## Climate Change Resilience in Urban Environments

### *Programme*

*Final Symposium of the Resilience in Urban Sudan (RUS) Project,*

*25-26 August 2022*

*Malmö University, Sweden*

## Seminar Day 1 – 25 August 2022

Time	Activity	Location
10:30	Registration	Stora Storm
11:30 – 12:00	Welcome coffee	Stora Storm
12:00 – 13:00	LUNCH	Stora Storm
13:00 – 13:15	<p>Welcome by Cecilia Christersson Vice-Chancellor for Global Engagement Malmö University</p> <p>Day Chair: Dr. Josepha Wessels, Malmö University</p>	<p>Stora Storm</p> <p>ZOOMLINK: <a href="https://mau-se.zoom.us/j/68717617999">https://mau-se.zoom.us/j/68717617999</a></p>
13:15 – 14:00	<p><i>Keynote lecture 1</i></p> <p>“Climate Change, Migration and Conflicts in Sudan”</p> <p>By Eiman Abegasim Seifeldeen co-founder of the Sudanese Environmentalists Association</p>	<p>Stora Storm</p> <p>ZOOMLINK: <a href="https://mau-se.zoom.us/j/68717617999">https://mau-se.zoom.us/j/68717617999</a></p>
14:00 – 14:20	<p>“Research on Climate Change in Sudan at Malmö University”</p> <p>By Dr. Josepha Wessels Malmö University</p>	<p>Stora Storm</p> <p>ZOOMLINK: <a href="https://mau-se.zoom.us/j/68717617999">https://mau-se.zoom.us/j/68717617999</a></p>
14:20 – 15:00	<p>“Agriculture and landuse in the context of climate change and development in Tuti Island”</p> <p>By Dr. Sumaya Zakieldeem University of Khartoum</p>	<p>Stora Storm</p> <p>ZOOMLINK: <a href="https://mau-se.zoom.us/j/68717617999">https://mau-se.zoom.us/j/68717617999</a></p>
15:00 – 15:15	BREAK	Stora Storm
15:00 – 15:45	<p><i>Keynote lecture 2</i></p> <p>“From climate change and migration to environments and mobilities: downscaling</p>	<p>Stora Storm</p> <p>ZOOMLINK: <a href="https://mau-se.zoom.us/j/68717617999">https://mau-se.zoom.us/j/68717617999</a></p>

	<p>and rethinking global categories and their nexus”</p> <p>By Professor Barbara Casciarri Paris-8 University</p>	
15:45 – 16:15	<p>“Migration, Diversity and the role of social cohesion for Climate Change Resilience in Greater Khartoum”</p> <p>By Dr. Fanny Christou and Hisham Bilal Malmö University/University of Khartoum</p>	<p>Stora Storm ZOOMLINK: <a href="https://mau-se.zoom.us/j/68717617999">https://mau-se.zoom.us/j/68717617999</a></p>
16:15 – 16:45	<p>“Oral History and Climate Change at Tuti Island, Sudan”</p> <p>By Dr. Vittorio Felci Malmö University</p>	<p>Stora Storm ZOOMLINK: <a href="https://mau-se.zoom.us/j/68717617999">https://mau-se.zoom.us/j/68717617999</a></p>
16:45 – 17:15	<p><i>Keynote lecture 3</i></p> <p>“Climate Change and Security in Sudan from an international perspective”</p> <p>By Dr. Johan Schaar, SIPRI</p>	<p>Stora Storm ZOOMLINK: <a href="https://mau-se.zoom.us/j/68717617999">https://mau-se.zoom.us/j/68717617999</a></p>
17:15 – 18:00	<p>Screening of the RUS project research film</p> <p>Virtual Reality 360 Installation to experience the case study sites in Greater Khartoum</p>	<p>Stora Storm</p> <p>Lilla Storm</p>
19:00	<p>Conference Dinner</p>	<p>Shamiat restaurant Södra Förstadsgatan 78 Malmö</p>

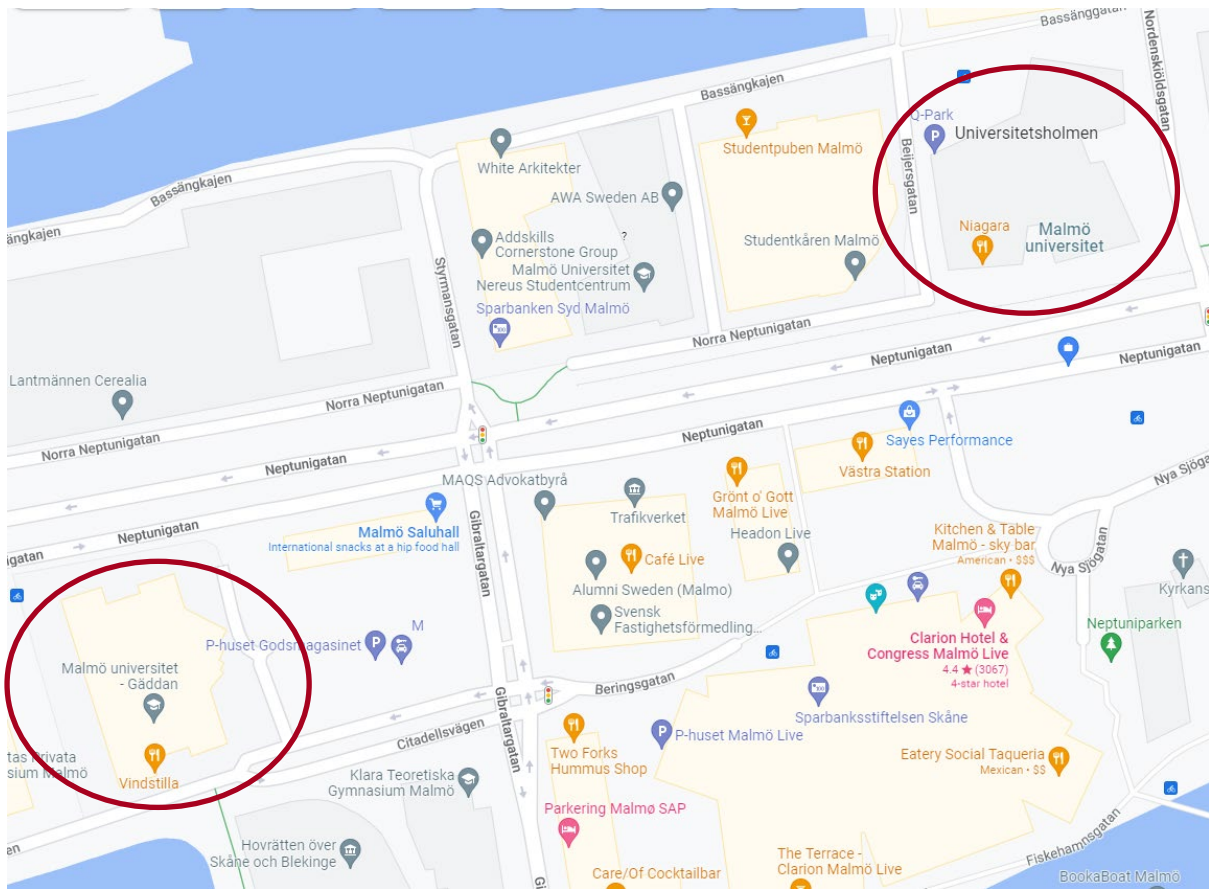
## Seminar Day 2 – 26 August 2022

Time	Activity	Location
08:30	<p><i>Opening lecture</i></p> <p>“Road to COP 27, Africa debate on climate change”</p> <p>Professor Muna Ahmed University of Khartoum</p>	<p>Niagara</p> <p>NIC0541-K3 studio</p> <p><a href="https://mau-se.zoom.us/j/69483272216">ZOOMLINK https://mau-se.zoom.us/j/69483272216</a></p>
09:15-10:45	<p><u>Panel 1</u></p> <p>Chair/Moderator: Dr. Sumaya Zakieldeem, University of Khartoum</p> <p><b>Innovative Approaches to Climate Change Communication and Storytelling</b></p> <ul style="list-style-type: none"> <li>• “Spatialised visual stories of climate change impact in Greater Khartoum” By Dr. Josepha Wessels, Malmö University</li> <li>• “The untapped potential of AI discourse tailorability: how what we say and how we understand shapes futures” By Dr. Jess Haynie-Lavelle, Malmö University</li> <li>• “Terrestrial Management: Ecological farming in Puerto Rico” By Dr. Tracy Trägardh, Malmö University</li> </ul>	<p>Niagara</p> <p>NIC0505</p> <p><a href="https://mau-se.zoom.us/j/67248379144">ZOOMLINK https://mau-se.zoom.us/j/67248379144</a></p>
	<p><u>Panel 2</u></p> <p>Chair/Moderator: Hisham Bilal, University of Khartoum</p>	<p>Niagara</p> <p>NIC0541-K3 studio</p>

	<p><b>Land Use, Climate Change Resilience and Social Dimensions at local level</b></p> <ul style="list-style-type: none"> <li>• “Social Dimensions of Resilience and Climate Change: A Rapid Review” By Dr. Azher Hameed Qamar, Lund University</li> <li>• “Climate change adaptation at the margins. The case of Cairo, Egypt” By Dr. Marwa Dabaiah, Malmö University</li> <li>• “A violent climate or a climate of violence? exploring the socio-environmental nexus in a newly privatized scheme; the case of the contemporary Gezira agricultural scheme, Sudan” By Dr. Aroob Al Faki Alameen, University of Khartoum</li> <li>• “The politics of social and environmental protections of refugees population: understanding ‘protection’ and ‘agency’ among South Sudanese refugees in Khartoum (Sudan)” By Dr. Mohammed Bakhit, University of Khartoum</li> </ul>	<p>ZOOMLINK  <a href="https://mau-se.zoom.us/j/69483272216">https://mau-se.zoom.us/j/69483272216</a></p>
<p>10:45– 11:00</p>	<p>BREAK</p>	<p>Niagara NIC0541-K3 studio</p>
<p>11:00– 12:30</p>	<p><u>Panel 3</u> Chair/moderator: Dr. Hisham Shazali, University of Khartoum</p>	<p>Niagara NIC0505 ZOOMLINK</p>

	<p style="text-align: center;"><b>Floods and Loss and Damage in Urban Environments</b></p> <ul style="list-style-type: none"> <li>• “Loss and damage under the UNFCCC and the agenda for COP 27” By Dr.Sumaya Zakieldeem, University of Khartoum</li> <li>• “Floods and Loss and Damage in Urban Environments in Sudan” By Prof. Samia Nour, University of Khartoum</li> <li>• “Loss and damage of the 2020 flood of Tuti Island” By Yassir Abdallah, University of Khartoum</li> </ul>	<p style="text-align: right;"><a href="https://mau-se.zoom.us/j/67248379144">https://mau-se.zoom.us/j/67248379144</a></p>
	<p style="text-align: center;"><u>Panel 4</u> Chair/Moderator: Dr. Fanny Christou, Malmö University</p> <p style="text-align: center;"><b>Urbanisation and Climate Change Migration</b></p> <ul style="list-style-type: none"> <li>• “Urbanisation and Climate Change Migration in the Sudan” By Prof Abulgasim Seif el Deen, Consultant Forester and Environmentalist</li> <li>• “The relationship between climate change and the health care system in Sudan through a study of urban migration in Khartoum” By Dr. Noha Hamza, University of Khartoum</li> </ul>	<p style="text-align: center;">Niagara NIC0541-K3 studio</p> <p style="text-align: center;">ZOOMLINK <a href="https://mau-se.zoom.us/j/69483272216">https://mau-se.zoom.us/j/69483272216</a></p>

	<ul style="list-style-type: none"> <li>• “Migrants as sustainability actors: 'In between' nation, city and migrant discourses and actions” By Mark Connaughton, Lund University</li> </ul>	
12:30– 13:30	Lunch	Stora Storm
13:30– 14:30	<p><i>Closing plenary</i></p> <p>Chair: Dr. Josepha Wessels, Malmö University</p> <p>“Moving forward for climate change resilience in urban environments”</p>	<p>Stora Storm</p> <p><b>ZOOMLINK:</b> <a href="https://mau-se.zoom.us/j/68717617999">https://mau-se.zoom.us/j/68717617999</a></p>



## **Locations**

- Gäddan Building, Storm Innovation Hub – Stora Storm (*groundfloor*), Citadellsvägen 7, 211 18 Malmö or Neptunigatan 36, 211 18 Malmö
- Niagara Building, 5th Floor (C-Area), Nordenskiöldsgatan 1, 211 19 Malmö (*Take elevator B to come up to the 5th floor*)

## **Contact information:**

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# **ABSTRACTS**

## KEYNOTE 1

### **Climate Change, Migration and Conflicts in Sudan**

**by Eiman Seifeldin, Sudanese Environmentalist Association**

Sudan is characterized by frequent droughts, high rainfall variability and fragile economy that depends on agricultural production, Sudan is one of the most vulnerable countries to climate variability and climate change, with the recurrent natural disasters and long standing and recurrent intercommunal conflicts and armed conflicts that jeopardizes the development the livelihood of people of the Sudan and make the step out of this situation is impossible without having a sustainable and everlasting peace.

The debate among the scholars of interrelation of climate change, conflict and displacement still needs more efforts as this viscous circle of the three interacting factors affecting livelihood of millions of people in the Sahel and as well as in the Horn of Africa. Migration as a mechanism of adaptation and resilience to climatic change or to flee war and conflicts sustains further deterioration on the fragile ecosystems, that become unable to welcome the huge number of migrants. It has been long recognized that climate change will displace people and within the national borders. The Intergovernmental Panel on Climate Change on its first report on 1990 recognized that the greatest single impact of climate change is migration the report estimated that by 2050, 150 million people could be displaced by desertification, water scarcity, floods, storms and other climate change related disasters.

For three decades during the rule of National Congress Party NCP, political instability, fragile economics and civil war forced Sudanese people to flee the country. According to IMO there are 4.5 million Sudanese living abroad. 51% of them were living in neighboring African countries and the rest 49% reside in Gulf States, Europe and North America. the migration rate is 24,54% it declines according to deportations or armed clashes in host country.

3.2 million IDPS registered in Darfur living in dire situation of insecurity, Covid 19 and disasters. Severe economic crises and worsening food insecurity intensifies competition for resources that contributed to the steep rise in violence and displacement during the last year of 2021.

As it is difficult to dismantle the specific factors causing displacement it is important to adopt a holistic approach to understanding the impact of climatic change on the movement of people. Through examination of the situation in Sudan and with reference to different reports reaffirm that Sudan is a host, source and transient country for migrants in addition to Internally displaced persons IDPs. This situation urges the cooperation between steak holders and decision makers to adopt new policies to address the issues of migration, displacement and relocation from national and regional perspective with guidance of Cancun Adaptation Framework work.

The geostrategic position of Sudan in the middle between the Sahel and the Horn of Africa make the favor of most of the displaced people from neighboring countries to seek a refuge in Sudan, a country that doesn't have the capacity to absorb the huge number of transitory migrants who eventually choose to find their way through Mediterranean and put their lives at

steak by choosing dangerous route. The efforts made to combat this migration by EU resulted in detrimental episodes on deterioration of human rights in Africa and Europe.

Sustainable peace, democracy, human rights and dignity are key factors to detangle the interrelated impacts of climate change and enhance the resilience and adaptation measures in fragile community in Sudan.

## **KEYNOTE 2**

### ***From climate change and migration to environments and mobilities: downscaling and rethinking global categories and their nexus.***

**Barbara Casciarri, Professor of Anthropology, University Paris 8 (France)**

**LAVUE/CEDEJ**

This paper is based on a long-term experience of research on environmental anthropology issues in various contexts (Sudan, Morocco, France, Italy, 2000-20), and on a recent pedagogic project for training in qualitative fieldwork on climate change and migration in Sudan (CliMigraForm, 2020-22).

The first background brought me to inquiry among rural and urban people, focusing on dynamics of natural resources access (water and land) in situations of « ecological » crisis. In order to seize this dimension, I was brought to put temporarily aside the information coming from quantitative data and official discourses (produced by national or international actors). The observation of local practices, displayed by pastoralists, farmers, or urban dwellers, to interact with(in) their environments, and the listening to their « socio-environmental » biographies, showed me the relevance of qualitative approaches in dealing with humans/ecology embeddedness.

During the second experience I faced the needs of a collective participatory students' training in Sudan on processes of climate change and migration in urban and rural contexts. Here we decided to « downscale » the targeted issues, to avoid the bias coming from a mainly naturalistic (depoliticized) vision of « climate crisis » and a statistical macroscale vision of « migration crisis », with the ideological nexus established between them by an eurocentric mainstream vision. Again, turning towards local perceptions and expressions of ecological knowledge and socio-environmental memories, appeared both as a better device for the pedagogic objectifs of the project and a fruitful tool for unpacking the complex and varied strategies built by local communities to face critical situations.

By sharing these experiences with the ones of other actors in similar contexts, I would like to plead for the interest of matching research, teaching and civil activism for grasping a vision « from below » of climate change dynamics and challenging our scientific categories for thinking and talking about.

## **PANEL 1 Innovative Approaches to Climate Change Communication and Storytelling**

### **The untapped potential of AI discourse tailorability: how what we say and how we understand shapes futures**

*Jess Haynie-Lavelle, Malmö University, Global Political Studies*

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The threat of the mounting climate change crisis requires a collective human response. As a species we have yet to achieve this level of solidarity and its likelihood is difficult to imagine. To move forward together we must form a discourse of collective participation. We need a discourse which will de-normalize the acceptability of the worst climate impact culprits while integrating an inclusive collection of knowledge. How to achieve this communication from where we stand now when we are all entrenched in our own sociocultural frameworks? I posit that we require an intermediary to teach us key concepts in an approachable and scalable way. Following that, the ability to reimagine a sustainable future is enabled, where we can share goals without the need to share culture or values. This role can be filled by an Artificial Intelligence system.

The logic algorithm of AI technology is highly suited to this specialized application, due to its capability to map a participant's point of view. The system could adapt its own discourse to meet the user – be it religious, cultural, economic standing, educational level, or personal preferences. Operating within the worldview of the user, the AI could then offer scientific evidence which the user is open to receiving – leaving the less acceptable material for a time when trust has been built. Employing an AI system within the educator role has the potential therefore to operate inclusively of the user's point of view and avoids the backlash of dismissive communication that emerges when culture clash occurs. It can operate as a transnational, or transcultural, communicator where humans have so far failed. This would pave the way, not only for educating on what we already know about planetary boundaries, but also for enabling an ability to imagine a different solution to the crisis at hand.

### **Terrestrial Management: Ecological farming in Puerto Rico**

*Tracy Trägårdh, Malmö University*

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According to the 2022 IPCC report on mitigation of climate change, a transformational change is necessary in every aspect of society, industry and commerce by 2030 in order to keep global temperatures within safe limits. What would this transformation look like and how do we begin? I argue that applying Bruno Latour's concept of the Terrestrial can help

lead us towards the path of transformation. More specifically how the multispecies management of ecological farming in Puerto Rico can help us understand how to reorient management practices in the New Climatic Regime.

I explore what it means to land in Gaia and situate ourselves within the Plantationocene. According to German watch, an academic and research institute, Puerto Rico is the most at risk country in the world to extreme weather events. I situate Puerto Rico as a microcosm of the living wholeness of the Earth. Taking an autoethnographic approach to uncovering stories of the earthbound to discover a world where colonialism, neoliberalism and racism has led to environmental degradation, food insecurity, and poverty. By placing Bruno Latour's arguments for a new political landscape in dialogue with post-qualitative inquiry, I hope to gain insight to the world in a different way, one that acknowledges the intricate nature of the connections between the social and the ecological. Connections that cannot be unravelled into neat and easy to follow strands of cause and effect but are tangled and knotted, allowing for multiple entry points into ideas of becoming Terrestrial.

## **PANEL 2 Land Use, Climate Change Resilience and Social Dimensions at local level**

### **Social Dimensions of Resilience and Climate Change: A Rapid Review**

*Azher Hameed Qamar, Lund University*

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Climate change and its associated challenges may have an impact on people and communities. In this context, community resilience is viewed as a resource for mitigating the impact. Studies provide conceptual and empirical insight of the relationship between social capital and resilience. However, the social dimensions of resilience have received little attention in climate change research. This short article provides a rapid review of published studies that investigate the social dimensions of resilience in the context of climate change. A literature search in Scopus was undertaken for this rapid review, using the title search words "Social" AND "Resilience" AND "Climate." The search yielded 27 articles, of which I shortlisted 18 for review that were related to the social dimension of resilience. Based on the findings of the review, I grouped them into three categories: 1) social capital approach, 2) social psychological approach, and 3) right-based approach. The findings reveal a positive association between social capital and resilience, as well as the interconnectedness between bonding, bridging, and linking, which provide the structural foundation for social capital. The social psychology approach, on the other hand, is tightly linked to cognitive aspects of social capital (such as social identity, reciprocity, and shared knowledge of risk

and responsibility) that contribute to collective psychosocial resilience. The third perspective is a human rights-based approach to understanding the social dimension of resilience with regard to equity and power while investigating the narratives that normalize inequality and marginalization. In the context of climate change, adaptation strategies and resilience-building interventions should be theoretically grounded in the conceptualization of social resilience as a capacity-building process (with reference to agency, participation and empowerment). The bottom-up empirical investigation of social contracts, practices, and experiences using theoretical triangulation and an interdisciplinary research approach is proposed in this rapid review.

### **Climate change adaptation at the margins. The case of Cairo, Egypt**

*Marwa Dabaieh, Malmö University.*

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The duration, frequency, and intensity of climate change are increasing. Adaptation to climate change is oftentimes perceived as a local concern. Vulnerable groups try to find nature-based and low-tech ways to cope with extreme urban climate change events. At the margins, citizens find diverse direct and indirect adaptive strategies in absence of government interventions. From this study's investigative approach in Cairo, Egypt we draw results primarily from interviews with locals and observational walks in three locations. We have chosen three vulnerable areas in the same urban zone. One is classified as public social housing, one as an informal area, and the third as a historic residential area. Research revealed that adaptation can be political, demanding that locals sometimes make hard choices, especially during the absence of government intervention. Nevertheless, some of the adaptive strategies observed can be promoted as mainstream sustainable nature-based adaptation. The discussion reflects some social and economic dimensions that affect local adaptation synergies. This study hopefully contributes to the understanding of how the capacity of individual homeowners can help mitigate climate change risk through the implementation of their own physical and psychological adaptive strategies. In addition, it bears relevance not only for countries sharing similar climates, economic conditions, or similar social norms, but also for general adaptation strategies that might support ecosystem-based or nature-based adaptation or tailor-made scenarios for locally applicable adaptation to climate change.

**A violent climate or a climate of violence? exploring the socio-environmental nexus in a newly privatized scheme; the case of the contemporary Gezira agricultural scheme, Sudan**

*Aroob Alfaki, University of Khartoum*

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The Gezira scheme is one of the largest national agricultural schemes in Africa and the world's largest gravity irrigation scheme. Despite its considerable contribution to the Sudanese national economy in the early 19th century, the scheme's productivity witnessed a gradual deterioration, to which the state responded by gradually withdrawing from subsidizing the scheme until full privatization was legalized by the Sudanese government in 2005.

This paper argues that the privatization of the Gezira scheme had resulted in serious socio-environmental implications, not just on the production and productivity of the scheme or the sustainability of its ecological environment, but also on the local culture of eco-friendly agriculture among the farmers and agricultural workers in Gezira community.

Using qualitative data collected between 2018 -2019, in addition to the schemes' available secondary data, the paper found out that the privatization of the scheme has resulted in a huge gap in technical assistance as well as financial assistance, reflected in the diminishing roles of Gezira schemes' administration as well as the Federal Ministry of Agriculture, finance and irrigation. This has left the decision-making mechanism at the hand of land users (= farmers), who also had to adapt their production relations by creating partnerships with agricultural workers in the scheme. While these partnerships increased the sense of belonging to the Gezira land among the farmers as landowners, it also put the direct engagement with agricultural procedures on the shoulders of the workers. The conflict of interests resulted from these complicated production relations has resulted in the adoption of new economic approaches that encourage the capitalistic exploitation of land at the expense of saving and sustaining the ecological landscape of the scheme.

## **The politics of social and environmental protections of Refugees population: understanding 'protection' and 'agency' among South Sudanese refugees in Khartoum (Sudan)**

Mohamed A. G. Bakhit (PhD), University of Khartoum

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The article intends to investigate how social/environmental protections and development programmes in an open refugee camps have been designed and implemented in a very specific way by the three actors involved (refugee population, UNHCR/NGOs, and local government/COR officers). Also, it examines the perceptions and ideologies behind the particular selection of social/environmental protections and who actually determines the priorities and takes on the responsibilities involved.

The paper looked on the agency of refugee population in order to investigate the relations between the three agents and the provision of social/environmental protection and services programmes, by examining a specific development program in Nivasha camp designed to protect refugee's health and environment through establishing a public latrines in different quarters in the camp. The paper argue that there is an apparent contestations between what refugee population think their rights and how to be protected, and what other actors- UNHCR/NGOs with the support of COR/Government and the local mediators(Sultans)- are designing and perceiving as kind of protections and services. This ever evolving contestation shape the way refugee population conceptualize all other actors, as just 'harming' them instead of 'protecting' them.

### **PANEL 3 Floods and Loss and Damage in Urban Environments**

#### **Floods and Loss and Damage in Urban Environments in Sudan**

Prof. Dr. Samia Satti Osman Mohamed Nour, University of Khartoum

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During the past years Sudan frequently suffered from several serious environmental problems and natural disasters, including for instance, flooding , drought and desertification that caused critical loss and damage in rural and urban environments in Sudan. This paper aims to investigate the pattern, causes and consequences of flooding problems in urban environments in Sudan, with particular focus on Khartoum State. In particular, this paper aims to discuss the roots causes of seasonal flood in urban environment in Sudan, discuss



the critical impacts on the living conditions of the urban Sudanese people, mainly, the critical loss and damage in urban environments in Sudan, and to suggest adoption of coherent and sound policies to deal with the critical loss and damage in urban environment in Sudan with particular focus on Khartoum State. Regarding the methodology, this paper applies both the descriptive and comparative approaches and uses secondary data obtained from relevant national and international sources to examine the pattern, causes and consequences of flooding problems in urban environments in Sudan, mainly in Khartoum State. One merit of this research is that it provides a more comprehensive and in-depth investigation, fills a gap in the literature, and provides an extremely valuable and important contribution by discussing the causes and consequences of flooding problems in urban environments in Sudan with particular focus on Khartoum State during the period 1988-2020. One merit of this research is that it is consistent with United Nation Sustainable Development Goals (SDGs), (mainly, (SDG 13: Climate Action), and (SDG 11: Sustainable Cities and Communities). Another advantage of this research is that from policy perspective this research provides useful policy recommendations to implement a more coherent strategy to adopt effective and preventive policy measures to deal with the critical impacts of flood and loss and damage in urban environment in Sudan.

#### **PANEL 4 Urbanisation and Climate Change Migration**

##### **Urbanization and Climate Change Migration**

Abul Gasim Seif el Din, Independent Researcher, Emeritus Professor Ahlia University  
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Climate Change, (CC), leads to poverty of the rural communities, who suffer food shortages, poor health and are finally compelled to migrate to urban centres, where they reside in cardboard shanty towns, remain unemployed. They are exposed to lack of social stability, frequent morbidity, reduction of production capacity, deficiency of basic services, while education is an unaffordable luxury and child labour is needed to augment food security. The food is scavenged from trash bins and depots by the children and occasionally, by the adults as well.

Despite its wealth of natural resources, Sudan is a poor country, because military dictatorships, which ruled the country for more than 80 percent of the time since independence in 1956, failed to establish rational governance. Demands of the masses for

democracy are suppressed by killing the dissidents by the army, while the generals indulge in corruption. Crop failure and livestock decimation, resulting from drought recurrence and disease outbreak, receive little or no attention from the military rulers. Civil service has deteriorated as trained professionals resort to Gulf and petro-dollar countries, mostly because of poor salaries at home, which are often delayed for months. The few health care centres are deficient of drugs, which are obtainable in the black market, thus leading to increased mortality among the villagers.

Crop and livestock prices, which are manipulated by the traders in the domestic markets, are so low that the farmers and herders fail to recover production cost. The smallholders, therefore, resort to clearing more of the forests to grow food crops, a process repeated year after year, until vast areas are suffering from desertification. Land degradation, which starts as patches and pockets, expands to cover vast areas, thus reducing arable land surface.

### **The relationship between climate change and the health care system in Sudan through a study of urban migration in Khartoum**

Noha Hassan Eltayib Hamza, University of Khartoum

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Climate change has had a significant impact on the means of livelihood in Sudan in general and in rural areas in particular. This resulted in population movements, mainly to the national capital, Khartoum. These growing numbers of migrants put pressure on the crumbling urban service system (water, electricity, health care system ...etc...). Migration in response to climate change ranges from mobility as a proactive adaptation strategy to forced displacement in the face of life-threatening risks.

The United Nations High Commissioner for Refugees (UNHCR) reports that an average of 21.5 million people were forcibly displaced each year by sudden onset weather-related hazards between 2008 and 2016, and thousands more from slow-onset hazards linked to climate change impacts. Actually these numbers are constantly increasing day by day .

This study aims at investigating the dialectical relationship between climate change, migration and the health services system in Khartoum. It provides an overview of climate change and its impact on population response and health care system. The main question of the study is: to what extent climate change affects population mobility and consequently health care system? The study adopts quantitative and qualitative approaches and will employ questionnaires, interviews and focus group discussions.

## **Migrants as sustainability actors: 'In between' nation, city and migrant discourses and actions**

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Although it is widely recognized that migration can have a substantial impact on societal transformations, potential contributions of migration to sustainability are often overlooked in mainstream discourse on environmentalism and sustainability. Here we seek to identify current narratives of migration and sustainability at scales 'in between' nation and city and actions of migrants. Migration is commonly framed in public policy as a source of labour but with negative consequences for social cohesion. The study hypothesises that the lived experience of sustainability challenges by migrants within urban destination regions differs from dominant discourses and perceptions of migrant populations within societies. We test and document such divergence using data from 21 interviews with key stakeholders from the city and Swedish national level, an attitudinal survey of migrants and non-migrants in Malmö, Sweden; and media analysis of local and Swedish national newspapers. The results confirm this divergence of perspectives and narratives culminating in new insight on the framing, making and barriers to migrants becoming agents of sustainability for transformations. By exploring how migrants are embedded within local sustainability narratives in places the study aims to illuminate the (unrecognised) potential of migration to play a transformative role in local and national sustainability policy and to construct ways towards more plural and inclusive approaches to sustainability in the city.