

# Analysis of policy network of adapting to climate change in Sudan

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**Abstract-** This research paper focuses on the analysis of the network that links governmental institutions, non-governmental organizations and United Nations agencies involved in the process of adapting to climate change in Sudan; to find out how they are communicating and cooperating. This paper has adopted qualitative method approach and Desk-based review of various documents and similar research papers as methodology to attain the results. Interviews and focus group discussions have been carried out with key ministries and institutions at national and sub-national levels, executive personnel in local nongovernmental organizations and with some United Nations agencies working in Sudan. The diagram drawn from the data collected during interviews has yielded a visualization of the main actors of the process of adapting to climate change in Sudan. The study has concluded that; using the concepts of network analysis methodologies has helped in acquiring a clear image of institutional and policy network of adapting to climate change in Sudan

**Keywords-** adaptation, climate change, Policy network, Sudan.

## I. INTRODUCTION

Effective communication, collaboration and networking amongst governmental and non-governmental institutions involved in the process of adapting to climate change, are prerequisites tools for effective adaption to climate change. This research paper focuses on network analysis of governmental institutions, non-governmental organizations and United Nations agencies working in Sudan, to find out how they are communicating and cooperating in order to tackle the issue of adapting to climate change in Sudan. However, specific objectives of this research are:

- 1) To help increase knowledge and understanding of key institutions and their roles in adapting to climate change in Sudan.
- 2) To provide insight to institutional environment and linkages in adapting to climate change in Sudan.
- 3) To visualize the network of main stakeholders of adapting to climate change in Sudan.

Institutional analysis considered as a valuable tool for clarifying the roles and relationships between the key agencies, government and non-government, which have an interest in adapting to climate change. Institutional analysis can identify the institutional counterparts that are most likely to effectively take the lead on mainstreaming adaptation to climate variability and climate change in national planning or on implementing adaptation measures (I. Gelil, 2011). The policy network

approach is a model which identifies actors participating in a particular policy issue or arena, traces their interactions and resource sharing, and assesses their respective influence (Rhodes and Marsh, 1992). It is limited in its ability to explain policy change or learning; but it is a useful tool to use in conjunction with theories lacking adequate conceptualizations of interaction (John Turnpenny et al., 2005). Evaluating effective network governance is a complex process, and to date only a limited number of studies have addressed this issue (Provan and Milward 2001).

Sudan is one of the most vulnerable countries to the adverse impacts of climate change; therefore, adaptation is considered as a priority for the implementation of the United Nation Framework Convention on Climate Change (UNFCCC). Various studies proved that climate change will have adverse impacts on the development process particularly on sectors like water, agriculture and health. Sudan has crossed an advanced path in preparing adaptation plans to climate change, The National Adaptation Plan - 2013 (NAP) contained programs to increase adaptive capacity for vulnerable communities, programs to increase resilience for certain agricultural, environmental and social systems. NAP also contained proposals for institutional reform to include and implement NAP in the developmental programs (N. Goutbi, 2013).

On the other hand, environment management institutions, similar to other institutions in Sudan; were subject to continuous change and reshaping due to political instability. In 1994, Sudanese political system moved from centralization toward decentralization. Federal system adopted with Sudan re-divided into twenty six states; each with significant autonomy and powers. The federal system adopted in Sudan in accordance with the recommendations of the National Conference for Peace in 1989. In 2011, following the independence of Republic of South Sudan, Sudan is now composed of 18 states. In this system, ministerial portfolios divided into two; federal ministries and state ministries. Federal ministries exercise its power at national level with wider sovereignty and jurisdictions while states' ministries planned to act only at state level. Each state is composed of localities, administrative units and popular committees and each state headed by governor "Wali". Main duties of each state's government are to execute and manage all educational, health, agricultural and service activities at the level of localities (Eltayeb, 2003). Sudan started issuance of various natural resources laws in 1902 and has set up the first governmental Environmental Committee in 1977. Sudan has participated in international conferences that laid milestones in environmental safeguard and protection such as the Stockholm Conference on Environment and Human Development in 1972, the UN Conference on Desertification in 1976, and participated

in the Earth Summit in 1992 and Johannesburg Summit in 2002. Sudan has taken necessary steps over time towards meeting its obligations under the Rio Conventions. Environment protection act released in 2001, has empowered Higher Council for Environment and Natural resources (HCENR) to be responsible for safeguard, management of natural resources and adapting to climate change.

## II. METHODS

This paper has adopted qualitative method approach. Interviews and focus group discussions have been carried out with key actors at federal and Khartoum state ministries and institutions, executive personnel in four local nongovernmental organizations, three United Nations agencies and staff personnel of three localities (municipalities) at Khartoum state level have been also interviewed (Table 1). Desk-based review of various documents and similar research papers has been also followed as a methodology to carry out this study. Policy and relation network approach has been followed in this study. According to K.G. Provan and H.B Milward, 2001; the network of relations represents a structured system on different levels including the community or organization level; the network of stakeholders or agents; and the level of individuals or participants in the network. Each level is interconnected with all others, and as such, each level cannot be considered outside the context of the network (S. Kinnear et al. 2013).

Table I: Description and numbers of respondents

Respondent	Number
Federal and Khartoum state ministries and institutes	16
United Nations Agency	3
Nongovernmental organization	4
Khartoum State locality (Municipality)	3
Total of respondents	26

In this research paper; centrality measures are used to describe the importance of an actor in the network based on the actor's location and connections with others. There are various centrality measures, but in this research paper, the concentration was on the degree of centrality and betweenness centrality. The degree of an actor refers to the number of ties it has within the network, and degree of centrality provides an indication of popularity or activity (L.C. Freeman 1979) as well as potential for power and influence (N. Kapucu 2005). Betweenness centrality indicates how often an actor lies between other pairs of actors; being between two actors indicates a sense of dependence and influence, as the actor has the potential to control information flow (N. Kapucu2005). In contrast to degree centrality, high betweenness centrality indicates that an actor is important in keeping the network together. Often, but not always, high degree actors are the same as high betweenness actors. Typically, high degree actors are quite publicly visible (after all, they have many ties); whereas high betweenness actors with low degree may not be well recognized for how important they are to network structure Kinnear et al. 2013).

## III. RESULTS AND DISCUSSIONS

Figure 1 illustrates an overall pattern of policy and institutional network and linkages. The focal agency for adapting to climate

change is HCENR which falls under Ministry of Environment, Forests and Physical planning. HCENR was established in 1992 as a central government agency coordinating governmental efforts for sustainable development including adapting to climate change related activities, responsibility for drawing and coordinating national policies and plans and proposing legislation for environmental protection and conservation of natural resources. HCENR has been liaising international agreements pertaining to environmental safeguard and climate change, all international conventions, Multilateral Environmental Agreements (MEAs) and Global Environment Facility (GEF) projects have been managed by this body.

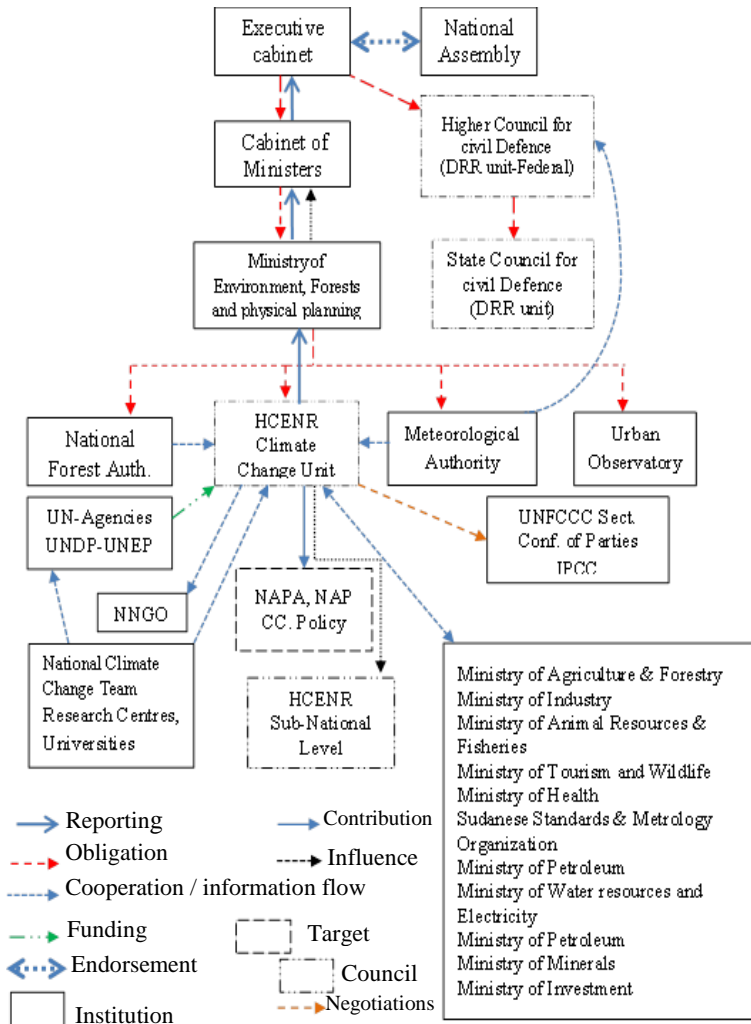


Figure I: Adapting to climate change linkages and relations.

HCENR is well connected to the UNFCCC Secretary, Conferences of Parties and IPPC. Through negotiations; HCENR was able to access some resources which have been allocated according to the UNFCCC and its following decisions by the Conferences of Parties; funding adaptation is a responsibility of developed countries, especially in the case of the least developed countries (LDCs) such as Sudan. Through communication reports submitted to IPCC and UNFCCC secretary, HCENR has been able to fulfill the country's commitment to the conferences of parties. From the literature reviewed, ties between HCENR and some regional influential institutions like African Union and

Arab League to coordinate the efforts to tackle climate change issues seems to be invisible.

At the local level, HCENR has membership in 26 ministries, a representative for environmental NGOs and two representatives of universities. In preparation of NAP, HCENR has involved 17 states out of 18 states of Sudan. NAP document is now being raised to the cabinet of ministers for mandating and later for deliberation and legislation by the legislative body (National Assembly) with ultimate aim to be endorsed by executive cabinet as a national climate change policy. However, four important elements emerged during carrying the interviews relating to climate change network in Sudan.

**Coordination:** Higher council for Environment and Natural Resources (HCENR) which lies under Federal Ministry of Environment, Forests and Physical planning is the hub of the process of adapting to climate change in Sudan; therefore, the whole set of governmental ministries and agencies that are concerned to the process of adapting to climate change are linked to this body. From the interviews and focus group discussions held during the fieldwork, there is coordination taking place between concerning ministerial departments and HCENR; the coordination means are reports, periodical publications and joint projects take place targeting adapting to climate change. However, as it has been stated by the interviewees that: *“the reporting mechanism is weak and ineffective”*. On the other side, the coordination mechanisms between HCENR, UN agencies and civil society organizations are remarkably vivid and continuous. From the interviews and discussions; it has been noticed that HCENR and the Higher Council for civil Defense – as a responsible body for disaster risk reduction- are in no direct coordination and there is no cooperation between them and this may weaken the process of adapting to climate change. Recently, there has been more discussion on the similarities between climate adaptation and disaster risk reduction approaches hence, coordinated responses between these disciplines have been proposed. Furthermore, as it has been stated by some active members of civil society organizations interviewed during carrying out of this study; adapting to climate change projects are lacking for monitoring and evaluation due to logistic and accessibility problems for some areas of Sudan.

**Participation:** In the process of adapting to climate change, HCENR has involved federal government, research, academia and civil society institutions, then moved into involving similar institutions in other four states in the preparation and implementation of National Adaptation Plan of Action (NAPA) which also involved wide range of stakeholders at the state-level including affected communities. Recently during the preparation of the National Adaptation plan (NAP), which is being finalized in 2013, HCENR involved all the 18 states of Sudan, three of these states have been established during the NAP preparation 2011-2014, still HCENR managed to get them involved. The preparation of both the NAP and NAPA, involved consultations at all levels, from local to state to national level involving all relevant stakeholders, not less than 2000 people participated in these processes selected through institutional approach. HCENR also worked with universities and research communities and now climate change, including adaptation is a subject in the curricula of many universities and in the research programs. NAPA

projects are being implemented now in six states covering wide range of affected communities. However, more work is needed at the community and grass root level to get more affected communities be involved in adaptation planning and implementation and to build their adaptive capacities and knowledge.

**Human resource:** From focus group discussions conducted with main actors; issues included availability of human resources and building their capacities, tend to be a pressing need facing the process of adapting to climate change in Sudan at national as well as sub-national level. Preparation, implementation and evaluation of NAPA and recently NAP projects depended mainly on qualified as well as long experienced academicians and bureaucrats however; there is still lack of dedicated full time staff who is dealing with climate change files. HCENR has only six fulltime staff members dealing with adaption to climate change. This staff shortage can contribute to undertake and coordinate the development of planning and implementation for the assigned projects. Most of interviewed actors stated that; either they have no specialized staff at all in climate change matters or have very limited number of qualified trained staff. Furthermore, some of the ministerial departments personal have shown little commitment to climate change issues due to lack of rewarding salaries, knowledge, and tools to implement the projects. In addition, availability of trained staff and well equipped with rewarding salaries considered by interviewees from Administration of Civil Defense – Khartoum state as prerequisites pace to enable the civil defense take sufficiently and effectively its role in disaster risk reduction.

**National funding resources:** Sudan has spent a lot of resources on adaptation - given the meager resources it has- from the regular budget allocation, some of the development interventions as well as in form of co-funding (local components) contribution to the donor-funded projects. The later in many cases far exceeded the outside funding. According to the UNFCCC and its following decisions by the conferences of parties, funding adaptation is a responsibility of developed countries, especially in the case of the least developed countries (LDCs) such as Sudan. So far Sudan was able to access some resources mainly through multilateral sources such as the Global Environment Facility (GEF), which is a financial mechanism for the UNFCCC and from very few bilateral sources. For political reasons, Sudan lacks the opportunity to access funding through bilateral sources. However so far support received is not adequate to enable an adequate adaptation response by Sudan, not sufficient even to implement its National Adaptation Program of Action (NAPA). So, Sudan is actually spending on adaptation in water, agriculture and health sector as part of its regular activities within these sectors. Sudan prepares its NAPA as required by the UNFCCC to access support for its urgent adaptation needs. But the developed countries so far failed to meet their convention obligations to support even to urgent and immediate needs of the most vulnerable group. The results gained from interviews and focus group discussions showed that a major weakness and threat to adapt to climate change in Sudan is lack and discontinuity of external funding in accordance to the UNFCCC obligations, while the existing institutional setup for mainstreaming

adaptation to climate change into development plans considered as a main strength.

#### IV. CONCLUSION

This study has concluded that; using the concepts of network analysis methodologies has helped in yielding a clear image of institutional and policy network of adapting to climate change in Sudan. The current institutional set up needs to be boosted with clear cut climate change policy while, major weakness and threat to adapt to climate change in Sudan is lack and discontinuity of external funding in accordance to the UNFCCC obligations, while the existing institutional setup for mainstreaming adaptation to climate change into development plans considered as a main strength.

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