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## “Climate change, geothermal and development in East Africa”

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**Hazard, B&Adongo, C**“Climate change, geothermal and development in East Africa”, version anglaise du texte publié en français sous le titre « La géothermie : entre développement et énergie verte en Afrique de l'Est », in *COP 21 Déprogrammer l'apocalypse*, ss. dir. de Raymond Woessner, éditions Atlante, 2015.

Sub Saharan Africa is predicted to face greater impacts of climate change, which could potentially hamper future developments. Eastern Africa countries have to contend with Climate change impacts, which have at times adversely impacted their economies, ecosystems and the livelihoods that depend upon them. Major droughts of 2005/6 in Tanzania and 1998-2000, 2004/2005 and 2009 in Kenya resulted in big economic losses. Kenya records this loss as being more than \$2.8 billion while Tanzania talks of 1% of GDP. Uganda on the other hand is already experiencing constraints on food security, affecting millions of her population as a result of prolonged and recurrent droughts and floods. Low adaptive and mitigation capacity in Eastern African countries further exacerbates their vulnerability to climate change. 83% of Kenya, for example, consists of already fragile Arid and Semi Arid lands inhabited by highly vulnerable populations, who are most vulnerable to climate change impacts.

Growing concerns over climate change impacts are today driving East African countries' policies towards green economies. This is not only seen as a mitigation strategy but also as a form of adaptation. The Kenyan and Tanzania's national climate change response strategies ascribe; “*that a low carbon growth future path will result in significant economic and huge environmental and social benefits*”. Thus, current plans are oriented towards green growth. The focus is on an economic growth trajectory, which avoids carbon emissions and has low environmental impacts. One sector targeted for this green growth is the energy industry. East African countries strive to comply with the Kyoto protocol, which calls for countries to commit to decreasing green house gases, and the World Summit on sustainable Development (WSSD) specifically requiring countries to commit to producing 10% of their energy from renewables. Several factors drive policies towards green energy: low carbon emissions, non-or low climate dependency, global and regional conventions compliance, contribution to the climate discourse (adaptation and mitigation) and international carbon finance. Renewable energy, the oldest energy in history is being projected as the energy of the future for Eastern Africa countries.

In Kenya particularly, in accordance with both Kenya vision 2030 policy and the National Climate change Response strategy, the focus is to zero rate taxes on renewable energy technologies and promote alternative renewable energy such as solar, bio fuels, wind and geothermal. Geothermal energy in Kenya has become a major electricity source and is currently being implemented under an ambitious plan to replace fossil fuels and hydropower. Firstly, this geothermal power production is projected to save 90600<sup>8</sup> tones of CO<sup>2</sup> /year and further reduce use of fossil fuels in electricity production. Secondly, Hydropower, on which Kenya depends for most of her electricity, is dependent upon climatic conditions and therefore highly vulnerable in the face of climate change. Thirdly, close to 80% of rural households and small businesses depend on biomass energy. Affordable electricity from alternative source – geothermal, seen as the most cost effective means of power production, could mean increased access to affordable electricity, decreased dependence on biomass energy

and consequently, declined deforestation. Fourthly, Non-annex 1 countries like Kenya; in undertaking mitigation projects can gain from 'carbon markets', which allows for trading in Certified emission Reduction (CER) credits.

However, much of the area targeted for geothermal development in Kenya falls within the central Rift Valley, most of which is occupied by pastoralists who have lived off the landscape for generations. These populations inhabiting areas earmarked for 'green energy' implementation and expansion projects have to contend not only with impacts of climate change itself, but also, those of green energy development projects. While geothermal energy is presented as clean energy, its relations to the sustainable development benefiting to local inhabitants remains unclear and need to be improve. In that way, geothermal energy raises the question of technologies that are able to reconcile ecology, social and cultural life and economy.

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