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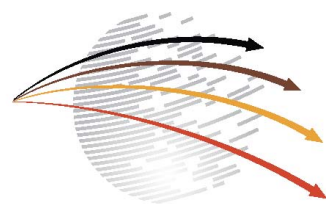
Provocateur Briefing Report

Forum on Development and Mitigation

DEVELOPMENT FOCUS

Land-Use Change

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M A P S

Mitigation Action Plans & Scenarios

From 27-29 January 2014, over one hundred professionals working mainly in the climate change mitigation field, in Southern contexts, gathered at the Cape Town Waterfront for the Forum on Development and Mitigation (the Forum). The event was hosted by the Energy Research Centre of the University of Cape Town, the Centre for Policy Research in New Delhi, and the international Mitigation Action Plans and Scenarios (MAPS) Programme. As a feature of the Forum nine South African development experts, the 'Development Provocateurs' were invited to participate in the event and write a short reflective piece afterwards. These briefing notes considered the discourse at the Forum from the perspective of each Provocateur's particular area of expertise, looking at shared priorities, disconnects and other points of contact.

This briefing note responds from the perspective of 'Land Use Change' by Emmanuel Sulle. The full set of briefings have been compiled into a compendium, available at www.devmitforum.ercresources.org.za and www.mapsprogramme.org.

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DEVELOPMENT AND MITIGATION: ADDRESSING LAND USE CHANGE IN SOUTH AFRICA

Summary

The impacts of land use changes on climate variability have been overlooked for many years in the climate change discussions and policy making processes. Additionally, given the significant impact of land use change on livelihoods, it is high time that the issue of land use change is fully integrated into the South African policy discourse and appropriate measures are put in place to address the issue. Livelihoods diversification strategies among the rural poor, recommended in this brief, include dedicated investments for smallholder farmers, institutional capacity building efforts by the state and local authorities, promotion of research and development, and promotion of conservation agriculture. Reduced impacts of land use change on livelihoods will facilitate national development, social cohesion, and balanced growth, thus reducing the income disparity and emissions associated with land use change. Based on the presentations and discussion held during the Development and Mitigation Forum in January 2014, this reflective brief provides an overview of the impacts of land use change on development and mitigation, its drivers, policy prioritisation and recommendations.

Land use change, drivers and impacts

A number of speakers at the Development and Mitigation Forum presented information on a wide range of existing tools necessary to address development and mitigation. However, apart from a few presentations, they did not provide detailed analysis of the impacts of land use change on the livelihoods of South Africans. In fact, the impact of land use change on climate variability has been overlooked for many years in climate change discussions and policy making processes (Pielke 2005). The leading scientists on climate change and atmospheric sciences, such as George Pielke Sr and Peter Hansen of NASA, explicitly state that it is high time that the impact of land use change on climate change are adequately addressed. "Change and variability in land use by humans and the resulting alterations in the surface features are major, but poorly recognized, drivers of long-term global climate patterns" (Pielke 2005: 1625). Pielke further faults the Intergovernmental Panel on Climate Change (IPCC) for not fully recognizing and addressing the impacts of land use change in its previous reports. Shortly after this however, an IPCC report did confirm that at the time 66% of the anthropogenic CO₂ emissions over the last 250 years were attributed to the burning of fossil fuels while the remaining (33%) was due to land use changes (IPCC 2007: 5).

Land use change is a dilemma (Foley et al 2005) for policy makers, particularly those working on development and mitigation plans. This is because land use change is absolutely critical for human development, yet the resulting negative impacts of this land use change, present potential challenges for the achievement of such development. Humans depend on land-based natural resources such as food, shelter, water, medicines and fresh water. The unsustainable use of these resources unfortunately results in degradation of their sources and the ecosystems at large, leading to resource scarcity. This in turn leads to supply shortages of these resources (food, water and fresh air) all of which are essential for economic growth. Therefore, addressing the negative impacts associated with land use change is not only in the interest of mitigation, but also promotes the intention of reducing development impacts associated with resource degradation.

In South Africa, available data indicates that in 2003, carbon emissions from land use change, agriculture and forestry, and waste amounted to approximately 90 million tons of CO₂, up from about 43 million tons of CO₂ in 1971 (Thapelo et al ud: 9). In response to these scientific findings, the Department of Environmental Affairs and Tourism (DEAT) commissioned a set of long-term mitigation strategies that were accepted by Cabinet in 2008. In addition to this, among the key resolutions adopted by the Climate Change stakeholders in South Africa is for the government to reduce greenhouse gas emissions from land-use change and housing developments and include mitigation actions in Integrated Development Plans (DEAT 2009 cited in Nel 2011). But how far these measures have been implemented on the ground needs to be the kind of issues discussed and debated at events like the recent Forum, in order to assess progress and build on these existing initiatives.

Drivers of land use change

Human activities and other natural factors are the key causes of land use change. NASA estimates that between one-third and one-half of our planet's surfaces have been transformed by human development¹. Scientific literature states that mankind is the primary cause of land use change, through various activities that lead to deforestation and eradication of vegetation. Indeed, a number of case studies around the globe, clearly indicate that the land-cover changes are the results of "people's responses to economic opportunities, as mediated by institutional factors" (Lambin et al 2001: 261). While these changes happen as a result of economic development such as the expansion of agricultural activities and settlements, leading to the clearing of forests and grasses, the resulting impacts negatively affect the sustainability of such economic activities. For example, unchecked agricultural activities and the use of forest products for energy generation in developing countries, have a significant impact on land use change. In South Africa, the National Land Cover project has reliably mapped out degraded rangelands, mostly found within the formerly communal lands (homelands) of South Africa (Wessels et al 2004; Fairbanks et al 2000). The reasons for this include over-utilisation of land for economic activities (grazing and farming) due to the fact that black South Africans during the Apartheid Regime were confined to these communal lands (Hoffman and Ashwell 2001). Research clearly indicates that the communal lands in South Africa are now overpopulated by humans and livestock, resulting in environmental degradation (soil erosion, loss of vegetation due excessive removal of grasses and woods) (Wessels et al 2007). As a result of land use change most of these areas are degraded making them less productive for economic activities such as agriculture and livestock keeping, leaving the rural communities with few livelihood options (see the section below).

Impacts of land use changes on livelihoods

The impact of land use change affects both urban and rural communities. Nonetheless, it is the poor majority of rural communities, who directly or indirectly depend on natural resources, who will carry the greater burden. In South Africa, the majority of rural communities still practise land-based livelihoods. Rural communities earn their livelihoods from a variety

¹ For details see Land Use Change and Climate Change <http://icecap.us/docs/change/Land%20Use%20and%20Climate%20Change.pdf>

of sources including remittances from family members, off-farm activities (small business, casual labour) and farming activities (livestock keeping and small-scale agriculture). But they also depend on a variety of natural resources for food security, medicine, building materials and fuel wood/charcoal.

Andrew et al (2003) observe that there is a misconception in the literature that land-based livelihoods that depend on subsistence agriculture are “wasteful, destructive and economically unproductive” (2003: 1). This observation, whilst largely ignored, does not take into account that rural communities are disadvantaged by the current market system, government policies and lack of access to strategic resources such as land and water.

For instance, in the northern part of South Africa, the impacts of land use change have been widely researched. Evidence clearly shows that the degraded areas have poor productivity levels (Wessels et al 2004). Climate change impacts affect crop yield due to drought and floods, reduce water availability and increase the spread of crop diseases (Levira 2009). And if these are not addressed in time, the IPCC report (2007) predicts that by 2020, up to 250 million people in Africa could be exposed to greater risk of water stress as a result of increased temperature and prolonged droughts.

Why is it a priority to address land use change in South Africa?

Historically, South Africa is a country with great inequality, high levels of poverty among rural and semi-urban communities and high levels of unemployment and crime. The country’s agricultural sector is highly mechanized and is owned and managed by a few multinational corporations and/or individuals. This leads to fewer jobs in an industry that could be far more labour intensive. For the past 20 years, despite the government’s reforms, this condition has remained virtually constant because of slow and small progress as a result of land reforms and restitution programmes. These facts were well presented at the Forum. It is clear that addressing land use change will improve productivity of land-based investments such as agriculture, livestock, and increase the availability of natural resources. There are different ways of doing this, but one is to enable smallholder farmers to increase their agricultural produce through public investments in goods and services, and by creating accessible markets. Both the central and local governments need to create an environment that promotes farming by smallholder farmers, by constructing irrigation and feeder roads infrastructure and creating market linkages between farmers and buyers from townships and cities. Smallholder farming, when done appropriately, is considered environmentally friendly due its use labour intensive techniques. In this way, smallholder farmers are able to improve their lives social status. The South African President recently noted that the government’s agricultural support programme to smallholder farmers “Fetsa Tlala”, is producing brand new exporters” (Zuma 2014: 7) and emphasises the point that smallholder farming is capable of improving the lives of those who depend on farming.

It is therefore evident that South African policy makers need to consider land use change as a top development priority because it creates employment opportunities and reduces income disparity, while at the same time reducing emissions associated with land use.

Recommendations

In conclusion, it is clear that there is no single solution to address the drivers of land use change in South Africa and internationally. However, a sufficient and effective multidimensional policy approach is worth adopting. This brief recommends that the coverage should aim to address broader socio-economic issues that result in land use change around the country, instead of tackling each item individually. This means that development efforts such as the empowerment of smallholder farmers must include important mitigation measures that not only reduce emissions, but which add value to

these economic activities. In this regard, it is mutually beneficial for development/economic planners to work hand-in-hand with mitigation experts, in order to identify how best they can align their efforts to address the impacts of land use change in South Africa. Other specific recommendations made in this this brief include:

- **Livelihood diversification strategies** are essential to address land use change and its associated impacts: the government and other stakeholders must incentivize smallholder farmers and livestock keepers to practice sustainable and conservative agriculture. More robust strategies are also needed to ensure that these communities earn income from other activities such as eco-tourism and other non-farming activities.
- **Institutional capacity building:** Strengthening institutions dealing with land and conservation issues is crucial amidst increasing land degradation and desertification in parts of the country. With strong local institutions, forest, grass and wood clearance can be reduced and possibly prevented.
- **Investment in research and development:** There is a need to have more studies that analyse domestic land use change and its contribution to climate change, in specific local contexts. Available literature in the global context should not be relied upon to make policy decisions, but should rather shed light on the specific research that needs to be undertaken to ensure efficient and effective domestic policy decisions.

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