

# **Environmental and Climate Change Policy Brief**

## ***Tanzania***

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## 1. Executive Summary

Tanzania is richly endowed with natural resources and a large majority of the population derive their livelihoods from agriculture, including livestock and fisheries. Together with higher agricultural productivity and development of agricultural value chains, non-renewable natural resources, such as minerals and gas can, if properly managed, contribute to economic development and poverty reduction. In addition sustainable management of Tanzania's wildlife is key for the development of a thriving tourism industry.

The key environmental problem in Tanzania is the degradation of natural resources such as land, forests, water and biodiversity. Increasingly, however, other problems such as waste, water scarcity and air pollution are growing in importance. Climate change adds to existing stresses and is expected to reduce agricultural productivity both as a result of changes in precipitation patterns but also due to higher temperatures. For instance coffee yields will fall significantly due to higher temperatures and more conflicts over land can be expected with greater frequency of extreme weather events.

It is the poor who are particularly vulnerable to climate change, environmental degradation and pollution. They disproportionately face problems of access to assets on which they depend, this can relate to land and water of good quality and quantity but also fisheries and grazing lands. Poor farmers are also more exposed to pollution from polluted water, indoor air pollution, waste, agro chemicals and outdoor air pollution.

Environment and climate has been relatively well integrated in previous National Development plans and the first five year development plan. That is environment is not only seen as a separate area but is to some extent part of sector strategies at the national level. Also key investment areas like the development corridor SAGCOT has strong preparatory work for environmental sustainability and national legal and policy frameworks are largely sufficient.

Implementation is the main challenge. Implementation capacity hinges on issues like administrative capacity, societal awareness, political will and financial resources. There are problems with coordination within government with insufficient attention to the means of implementation and responsibilities for various ministries, weak monitoring and inadequate use of decision making tools like environmental impact assessments etc. The capacity of local government (human and financial) to carry out their task is very limited which hinders implementation of existing laws.

As Swedish development cooperation strategy in Tanzania is now at midterm. Sweden is involved in areas that are of great importance for positive environment and climate outcomes for vulnerable groups in Tanzania; agricultural development, energy transition and democracy and human rights. Continued work in these areas is important. In these areas and beyond the following aspects should be considered; i) addressing insufficient political willingness; ii) promoting sustainable energy transition; iii) improving transparency and use of existing country systems and tools for decision making; iv) promoting land tenure formalisation and land use planning; v) promoting monitoring and data collection of environment and climate related information.

## 2. Introduction

The Swedish Embassy in Dar es Salaam requested the Helpdesk to write an environment and climate change policy brief to provide an updated overview of challenges, causes, impacts of environment and climate challenges. The brief also includes opportunities arising from sound management of environment and natural resources and climate adaptation and mitigation and a review of policy frameworks and institutional capacity for managing environmental challenges. Finally the Helpdesk makes suggestions on ways forward to strengthen environment and climate integration in Swedish development cooperation in Tanzania.

## 3. Key environmental problems and causes

The key environmental problem in Tanzania is the degradation of natural resources such as land, forests, water and biodiversity. Increasingly, however, other problems such as waste, water scarcity and air pollution are growing in importance.

**Deforestation:** With an annual deforestation rate of 1.1%<sup>2</sup> approximately 36.8 % of land in Tanzania is currently covered by forest which represents a decline from the 39.9 % measured in 2005<sup>3</sup>. Around 90% of the forest cover is represented by woodland, but there are also acacia forests, montane, mangrove and coastal woodlands. Forests provide valuable ecosystem services, such as purification and regulation of water, climate regulation, and carbon sequestration which means that deforestation is contributing to global climate change, through emissions of greenhouse gases. Furthermore it causes land degradation and erosion, siltation and affects water run-off. The main drivers of deforestation are population growth, urbanisation, trade, agriculture, and the use of forest products as a source of energy. Current Government efforts in the Agricultural Sector such as Kilimo Kwanza, SAGCOT and Big Results Now (BRN) together with recent discoveries of minerals and related infrastructure developments, accelerates the already high deforestation rate. Around 18 million hectares of Tanzanian forests are under protection as forest reserves; 4.1 million hectares are managed or protected under Participatory Forest Management and 50% of forest lands are to be found on General and Village Land<sup>4</sup>.

**Land degradation:** Land degradation (e.g. soil erosion, salinisation, and desertification) refers to a reduction of the utility of land. Land degradation is mainly caused by agricultural expansion and use of unsustainable agricultural practices<sup>5</sup> and deforestation. It has been estimated that 41% of the land can be classified as degraded and that 61 % is affected by soil erosion<sup>6</sup>. The central, semi-arid, parts of Tanzania are affected the most and the regions of Dodoma, in particular Kondoa district, Singida and parts of Mwanza and Shinyanga are seriously threatened by desertification and soil erosion<sup>7</sup>. From studies carried out in Kondoa Eroded Area (KEA) it is however evident that long-term soil conservation measures has halted the expansion of soil erosion to some extent<sup>8</sup>.

**Water and sanitation:** Tanzania has eight river basins and three large fresh water lakes that annually amount to 2,291 m<sup>3</sup> of renewable water sources per capita. Seen from this perspective

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<sup>2</sup> WB, 2015a, Little green data book

<sup>3</sup> URT, 2012b, National Strategy for Reduced Emissions from Deforestation and Forest Degradation

<sup>4</sup> Kideghesho, 2015, Realities on deforestation in Tanzania

<sup>5</sup> Slash and burn agriculture tend to contribute to land degradation unless the fallow periods are long enough for vegetation to recover. Increased competition for land has led to shorter fallow periods and increased land degradation.

<sup>6</sup> Kirui , 2016, Economics of Land Degradation and Improvement in Tanzania and Malawi

<sup>7</sup> Kangalawe, 2012, Land degradation, community perceptions and environmental management implications in the drylands of central Tanzania

<sup>8</sup> Ligonja & Shrestha, 2015, Soil Erosion Assessment in Kondoa Eroded Area in Tanzania

Tanzania has abundant water resources. The high degree of water resource variability across the nation however means that the majority of the rural population suffer severe water shortage<sup>9</sup>. Tanzania has not met the MDG target of a 78% access to water by 2015 as the overall access is still estimated at 55.6%, (urban 77.2 %, rural 45.5%) which is a slight improvement since the 2012 measurements of 53%.<sup>10</sup> The MDG target of 53% having access to improved sanitation lags further behind as figures are still at 16 % (urban 31%, rural 8%), compared to 13% measured in 2012<sup>11</sup>. Water is used most of all in the agricultural sector that stands for 89% of the total fresh water withdrawal in the country<sup>12</sup>. Water is vital in other sectors such as industries and mining operations but also in the tourism sector. Currently, population growth, intensified agriculture including use of pesticides, deforestation, eutrophication increased urbanisation, industrialisation, lack in proper sanitation and climate change has the potential to affect negatively the quality and availability of water in the country. Low water levels in dams have greatly contributed to the current electricity crisis.<sup>13</sup> In urban areas over abstraction of water flows upstream and degradation of water catchment areas are big problem<sup>14</sup>.

**Coastal and marine environment:** In Tanzania, the marine and costal environment contributes to the country's high biological diversity with its coastal forests (70,000 hectares), coral reefs (3,580 km<sup>2</sup>), sea grass beds, mangroves, and beaches. The coastal environment contributes with a vast amount of ecosystem services and serve as habitat for fish and birds but also function as buffer zone against wave action. The marine environment provides possibility for a number of economic activities such as fishery and tourism, and the major development priorities for the coastal area are exploration and exploitation of natural gas and petroleum, infrastructural (e.g. ports, or the gas pipeline from Mtwara to Dar es Salaam), mariculture and tourism. The marine and costal environment is threatened by extensive human and economic activates such as over harvesting of mangroves and coastal forests (for agriculture, firewood and tourism), overfishing, destruction of coral reefs, pollution: (e.g. fertilizers, pesticides) while at the same time facing threats of climate change in terms of increased water temperatures, weather variability, changing rainfall patterns and rising sea levels<sup>15</sup>.

**Loss of Biodiversity:** Tanzania is one of the world's richest when it comes to biodiversity but is currently experiencing a rapid loss in habitats and natural resources<sup>16</sup>. Biodiversity is key for the resilience of ecosystems and their services and a loss in biodiversity can thus have ramifications beyond the loss of individual species. The main drivers of biodiversity loss are habitat change through resource exploitation, pollution, including the use of pesticides, invasive species (such as Nile perch) and climate change<sup>17</sup>. In terms of wildlife hunting, both legal and illegal, demand for ivory and the pet trade are the main drivers of loss. One of the most visible and debated issue is the current decrease in the Tanzanian elephant population, which has dropped by 50% (from 109,051 to 50,894) since 2009.<sup>18</sup>

**Waste:** As the population grows the amount of waste generated is increasing, especially in the big cities. In Dar es Salaam it is estimated that 2,252 tons of **solid waste** are generated per day.

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<sup>9</sup> Arvai & Post, 2012, Risk management in a developing country context: improving decisions about point-of-use water treatment among the rural poor in africa

<sup>10</sup> Findings from a 2015 citizen survey reveal that about two thirds of the population lack access to piped water. The survey undertaken by Twawesa suggest that 44% spend more than 30 minutes collecting water for their needs and about 40 of rural population report problems with dirty water. (Taweza , 2015)

<sup>11</sup> 2012 figures: WB, 2015b, World development indicators; 2016 figures: CIA, 2016, World fact book

<sup>12</sup> WB, 2015a

<sup>13</sup> Telegraph, 2015, Tanzania turns off hydropower as drought bites

<sup>14</sup> Noel, 2001, The Economics of Climate Change in Tanzania: Water Resources

<sup>15</sup> Yanda , 2013, Coastal and marine ecosystems in a changing climate: The case of Tanzania

<sup>16</sup> Caro & Davenport, 2015, Wildlife and wildlife management in Tanzania

<sup>17</sup> Marchese, 2015, Biodiversity hotspots: A shortcut for a more complicated concept

<sup>18</sup> WWF, 2015, TAWA - The Tanzania Wildlife Authority is in

The coverage of the municipal waste services in Dar es Salaam is about 50% and as much as 26% of the remaining waste is burned or end up in the drains. The country lack proper facilities to manage collected solid which means that the end destination for the big part of it is in an open dumpsite. This poses a threat to the environment and public health alike<sup>19</sup>. The management of **liquid waste** is rapidly becoming a pressing environmental challenge as only 10–15 % of the urban population have access to the sewerage system<sup>20</sup>. **Electronic waste** is also increasingly becoming a problem and it was estimated in 2012 that by 2015, 9500 tonnes of e-waste will come from computers alone. Currently formal mechanisms to manage e-waste is missing<sup>21</sup>

**Air pollution:** Indoor air pollution caused by the burning of fuel wood, charcoal etc for cooking and heating has long been a large environmental health issue. Problems with fuel wood and charcoal are also linked to problems of deforestation, see above. Improved Cooking Stoves (ICS) can save 10-50% of biomass consumption<sup>22</sup> for the same cooking service and a switch to electric or LPG stoves virtually halts problems of indoor air pollution. It should be noted, however, that Sub-Saharan Africa is the part of the world with the highest biomass reliance<sup>23</sup> and the number of people relying on solid biomass fuels is expected to rise from the current estimate of 700 million to 900 by 2020<sup>24</sup>. Sub-Saharan Africa is also where the spread of Improved Cook Stoves have been less successful. It is estimated that only 10% of the population has access to modern fuels and that there is only a 14% penetration rate of ICS<sup>25</sup>. Increasingly other forms of air pollution are causing problems especially in Dar es Salaam. Vehicles and road dust together stands for the major part of the pollution but also the industry and the domestic sector contributes<sup>26</sup>. In Dar es Salaam, congestion is also a big problem as the existing road network is not dimensioned to accommodate the rapidly growing number of vehicles.

**Natural disaster risks and climate change:** In a global context the main drivers of climate change are (1) emission of greenhouse gasses through e.g. deforestation and burning of fossil fuels such as petrol (2) the distribution of atmospheric aerosols such as dust and particles from industries and agriculture and (3) land use change. The clearing of forests in favour of agriculture together with the irrigation of arid and semi-arid land for the same reason are the two most significant drivers of land use or cover change from a climate change perspective. Deforestation in tropical regions affects to a high degree the evapotranspiration rates which implicates on humidity. Since forests are carbon sinks deforestation also affects atmospheric levels of greenhouse gasses negatively<sup>27</sup>. As estimated in 2012 Tanzania contributes to the global CO<sub>2</sub> emissions with 9.295 million metric tonnes per year<sup>28</sup>. Compared to estimates of 7.3 in 2011<sup>29</sup> and 6.8 in 2010<sup>30</sup> this indicates a trend of increased emissions in the country. Although Tanzania has an emerging industry and vehicle fleet, the more regional or local drivers of climate change is instead largely connected to land use change. In Tanzania the overall impact of global climate change is likely to result in changing rainfall patterns and an increase in average temperature. The North-eastern highlands of the country will be severely affected as a decrease in rainfall by up to 12% is predicted by 2100. The southeaster parts are more likely to be most affected by a rise in temperature with an estimated warming form 0.5oC

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<sup>19</sup> Membe, 2015, Ppt presentation on Solid Waste Management in Dar es Salaam Tanzania

<sup>20</sup> URT, 2013b, National Environmental Action Plan

<sup>21</sup> URT, 2012d, A study on electronic waste management in Tanzania

<sup>22</sup> GIZ, 2016, Cooking Energy Compendium

<sup>23</sup> WB, 2015c, The state of the global clean and improved cooking sector

<sup>24</sup> SEI, 2015, Initiative on Behavior and Choice

<sup>25</sup> WB, 2015c

<sup>26</sup> URT, 2014a, Environmental and social management framework (ESMF)

<sup>27</sup> WMO, 2016, Causes of Climate Change .

<sup>28</sup> CIA, 2016

<sup>29</sup> WB , 2016, CO2 emissions: Tanzania

<sup>30</sup> WB, 2015b

in 2025 up to around 4°C in 2100<sup>31</sup>. These changes will impact negatively on the natural resource base, ecosystems, biodiversity as well as the economy. Furthermore the number and extension of extreme weather events such as floods and droughts are expected to increase and thus have the potential to aggravate the negative impacts of naturally occurring weather events<sup>32</sup>.

## 4 What are the effects of the environmental problems

### 4.1 Impacts on Poverty (vulnerability, security)

Poverty-environmental linkages are manifested through the vulnerability among poor people in relation to climate change and variability, as they lack the means necessary to mitigate and recover from climate induced shocks and stresses such as floods, storms and drought. The number of deaths due to natural disasters has been low <500 between 2000-2016, while about 3, 7 million have been affected by droughts and 170 000 have been affected by floods.<sup>33</sup> Close to 40% of children under the age of five years are affected by chronic malnutrition.<sup>34</sup> Tanzania is also vulnerable due to the high dependence on 'climate sensitive' sectors such as rain fed agriculture<sup>35</sup> and high poverty levels. 28.3 % of the Tanzanian population is considered income poor out of which 83% are to be found in rural areas<sup>36</sup>. Using a multidimensional measure of poverty that include health, education and living standard it is clear that the Central, Western and Lake regions, representing about 45 % of the population, are home to the most vulnerable groups. Urban residents are significantly better off than rural Tanzanians.<sup>37</sup> In extension, extensive use of natural resources such as overgrazing, overfishing or cultivation of marginal lands can lead to further degradation such as deforestation, with the potential to worsen the impacts of climate change. The manifestations of poverty and its environmental linkages differ in rural and urban areas and due to the division of labour, women and children are in general more vulnerable than men<sup>38</sup>

In urban areas the high number of people living in informal settlements (as much as 70% in Dar es Salaam) is a big environmental-poverty problem in terms of poor access to quality fresh water, lack in sanitation and waste management and the subsequent spread of disease (see section on public health). Many people in these areas live under a dollar per day. Also in urban areas people, usually women, have to walk far to fetch water that is often costly. Due to lack in proper infrastructure services, dwellers in informal settlements are also more vulnerable to climate variability such as floods and heavy rainfall<sup>39</sup>

As agriculture is the dominating source of income access to arable land is crucial, as well as land for grazing, forests to fetch fuel wood and hunt in and so on. Access to water is perhaps the most important of the poverty-environmental linkages. Change in rainfall patterns or increased temperature and through that decreased availability of water, would severely affect all natural resource based sectors and increase the likelihood of further environmental

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<sup>31</sup> URT, 2015a, Intended nationally determined contributions (INDCs )

<sup>32</sup> URT, 2012b, National climate change strategy

<sup>33</sup> EM-DAT, 2016, OFDA International Disaster Database: Tanzania country profile

<sup>34</sup> WFP, 2016, Implications of El Niño in Southern Africa from a flood and nutrition security perspective

<sup>35</sup> Agriculture stands for 1/3 of GDP and employs 2/3 of the population (AEO, 2015)

<sup>36</sup> AEO, 2015, African Economic Outlook: Tanzania Country Note

<sup>37</sup> OPHI, 2015, OPHI Country Briefing Dec 2015: Tanzania

<sup>38</sup> URT, 2014d, Poverty-environment report

<sup>39</sup> START, 2011, Urban Poverty & Climate Change in Dar es Salaam, Tanzania: a case study

degradation. It is evident that all aspects of climate change have the potential to decrease security and increase vulnerability<sup>40</sup>.

Furthermore the growing population and with that a greater demand for resources has resulted in increased competition for natural resources and between different land use practices e.g. between agricultural and pastoral activities, between large scale investments and small-holder farming, between conservation and between tourist based ventures and traditional land use practices. It is for example reported of severe clashes between farmers and pastoralists in the Rufiji valley. Drought and scarcity of water has forced large groups of pastoralists to move out of their home regions of Iringa and Morogoro to come towards the Rufiji Delta with thousands of their cattle<sup>41</sup>. Similar experiences are reported by villagers in Kigoma Region who account of severe brutality as they were “chased away like animals” from their land in favour of the large scale agricultural investment FELISA Ltd<sup>42</sup>. It is recognised that the lack in proper land use planning is one of the factors contributing the most both to resource degradation and to the above mentioned conflicts over land<sup>43</sup>.

## 4.2 Impacts on economic development

Poor management of environment and climate impacts negatively on economic development. At the same time the country’s natural resources provide great opportunities for economic development. If the right policies are in place and are implemented there is scope for maintaining the quality of the ecosystems to continue to provide food, energy, timber, water purification, climate regulation etc. In recent years Tanzania has experienced relatively high growth rates at around 7.4%. Agricultural growth is only slightly higher than population growth and is thus not sufficient to substantially bring down poverty levels.<sup>44</sup> Including forestry, fishing and hunting, agriculture stands for 31,5 % of GDP out of which 2.4% is represented by fishing. 25.0% of GDP comes from industry out of which 4.0% comes from mining, and 43,5% of GDP comes from the service sector.<sup>45</sup> Tourism and travel has been estimated to contribute with 12% of GDP<sup>46</sup>. In terms of exports, gold accounted for as much as 28 % of the total export revenue of \$5.59 billion in 2013<sup>47</sup>. The ability to attract tourists is dependent on how Tanzania is able to manage wildlife, water, electricity and waste and littering.

The cost of climate change is first related to the cost of a decrease in productivity of sectors such as agriculture and second to the cost of adaptation and mitigation. Given Tanzania’s high reliance on agriculture, a 15% decrease in rainfall might mean as much as a 16% decrease in yields by 2030 (1 million tonnes/year) which would implicate both on food security and economic growth. As an example, coffee exports are expected to be severely affected by higher temperatures where yields per hectare are expected to drop from 225 per hectare to about 145 by 2060. This will have large impacts on more than 2 million Tanzanians who rely on coffee production.<sup>48</sup> Furthermore, climate change might impact on biodiversity and ecosystems which might have consequences for the tourism sector. In turn, as much as 55% of Tanzania’s electricity is produced by hydropower which make the economy extra vulnerably to the impacts of climate change, in particular increased temperature and changing rainfall patterns, since substituting the loss of hydropower with other options would be expensive and have a direct

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<sup>40</sup> URT, 2014d; Noel, 2011

<sup>41</sup> Semberya , 2014, Farmers, pastoralist conflicts: Where have we failed?

<sup>42</sup> Wallin Fernqvist, 2015, The Ideological Symptom of Tenure Insecurity

<sup>43</sup> URT, 2014d; URT, 2013b; Caro & Davenport, 2015

<sup>44</sup> AEO, 2015

<sup>45</sup> AEO, 2015

<sup>46</sup> WTTC, 2016, Travel & Tourism: Economic impact 2016, Tanzania

<sup>47</sup> MIT , 2016, The Observatory of Economic Complexity: Tanzania country profile

<sup>48</sup> Craparo, et.al., 2015, Coffee Arabica yields decline in Tanzania due to climate change



impact on the GDP as well as on the productivity of other sectors. In extension an increase in temperature is expected to increase the national cost of cooling. The cost of adaptation is estimated to rise and by 2030 cost US\$1 billion per year while the total cost of climate change is predicted at 1-2% of GDP per year by 2030. The increase in extreme weather events alone has large impacts, it has been estimated that the cost of a drought year is around 1% or more of GDP<sup>49</sup>. Women's ability to exercise their rights regarding land and marriage law is constrained and customary law restricts women's inheritance of land<sup>50</sup>. Insecure tenure can reduce women's ability to make productive investments such as soil and water conservation measures in their land and hinder increased yields<sup>51</sup>. Mineral and mining sector has great development potential if environmental and social aspects are sufficiently considered<sup>52</sup> and if revenues are properly managed.

### 4.3 Impacts on Public Health

It is estimated that as much as one fifth on diseases in low-income countries could be attributed to various environmental risk-factors. Women are the ones engaging in tasks such as fetching heavy loads of water and firewood, together with indoor cooking exposing them to indoor air pollution, and are as such more affected by environmentally induced health problems than men<sup>53</sup>. Poor sanitation practices in rural and urban areas alike further impact on water quality and it is reported that a high percentage of domestic use water is commonly "contaminated with an array of viruses, bacteria, and protozoa" giving rise to water-borne diseases such as typhoid, cholera and shigellosis. It is suggested further that as much as 17% of deaths under the age of five in the country can be attributed to diarrheal diseases<sup>54</sup>, a fact mirrored by UNICEF<sup>55</sup> who state that in Tanzania "70 percent of the health sector expenditures being utilized for treating preventable WASH [water, sanitation and hygiene] related diseases". Poor waste management, in particular in urban areas, impact further on water quality and health, electronic, hospital waste and other forms of hazardous waste in particular. Such waste pose risks to health and safety in terms of leaching of heavy metals from landfills and incinerator ashes to workers in recycling operations and communities alike<sup>56</sup>.

There are large health and environmental risks from the largely unmonitored and uncontrolled use of pesticides.<sup>57</sup> Both women, men and children are exposed to pesticide related health risks. More than 90% of smallholder farmers surveyed in the Arusha region had experienced pesticide poisoning and there was a strong correlation between low educational level and high frequency of self-reported acute poisoning.<sup>58</sup> Women play a central role in small-holder agriculture but often receive less training on for example pesticide management than men.<sup>5960</sup>

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<sup>49</sup> URT, 2011a, The Economics of Climate Change in the United Republic of Tanzania

<sup>50</sup> Dancer, 2015, Women, land and justice in Tanzania

<sup>51</sup> Secure tenure does not equal individual titling. Insecure tenure can be that you don't feel certain that you will reap the benefits of your investment.

<sup>52</sup> AEO, 2015

<sup>53</sup> URT, 2014d

<sup>54</sup> Arvai & Post, 2012

<sup>55</sup> UNICEF, 2016, Tanzania Country Profile: Water, sanitation and hygiene

<sup>56</sup> URT, 2012d

<sup>57</sup> Slunge et al, 2015, Assessment of safeguarding systems for the use of pesticides within Swedish financed programs in Tanzania

<sup>58</sup> Lekei et al 2014, Characterization and Potential Health Risks of Pesticides registered and used in Tanzania

<sup>59</sup> London et al, 2002, Pesticide Usage and Health Consequences for Women in Developing Countries

<sup>60</sup> Naidoo et al, 2010, Pesticide safety training and practices in women working in small-scale agriculture in South Africa

## 5. Policy framework and institutional capacity for managing environmental challenges

### 5.1 Integration in policy frameworks

Tanzania was commended for how environment was integrated in the national plan for growth and poverty reduction 2006-2010 called MKUKUTA. Also the successor, MKUKUTA II, with the aim to achieve the Millennium Development Goals showed a high degree of integration. This means that there is not only an environmental section but that environment, natural resources management and climate change aspects are integrated in relevant sections of the plans related to themes like energy, agriculture, extractives etc. The MKUKUTA II also had a number of relevant indicators to track progress on poverty environment related issues. The government's first Five Year Development plan 2011/12 aimed to achieve the Vision 2025 focused on fewer issues but with a relevant focus on strengthening enforcement of environmental management in development initiatives such as growth corridors, extractives etc. The successor, the FYDP II "Nurturing Industrialization for Economic Transformation and Human Development" builds on the FYDP I and the MKUKUTA II (the Second National Strategy for Growth and Reduction of Poverty) and provides a single national planning document. It acknowledges that the FYDP I and MKUKUTA II were "overambitious resulting in weak resource prioritization and allocation" and therefore proposes "a few high return investments, effective policy coordination and implementation, and a robust Monitoring and Evaluation (M&E) system."<sup>61</sup> Examples of priorities include; (a) Special Economic Zones and Export Processing Zones; (b) Industrial parks; (c) Agro-industries; (d) Minerals beneficiation and value addition; but also (e) better business environment; (f) sustaining and consolidating current social development achievements. Environment and climate aspects are unevenly integrated in the various parts of the document. For instance pollution risks associated with extractives are not sufficiently raised and sustainable tourism and securing the wellbeing of wildlife is highlighted in some parts but less visible in other parts. Concrete performance indicators and targets are provided for Environment and natural resources management but it is not clear how these will be achieved. See Annex 2.

Tanzania is party to relevant multilateral international agreements and has developed national legislation to promote sustainable use of the country's resources and to protect citizen's health. Ratified multilateral international agreements include the Convention on Climate change, International trade in endangered species (e.g. ivory from elephants) and Bamako convention (Control of transboundary hazardous waste within Africa) and the Convention on Biodiversity. For a full list see Annex 3.

The Environmental Management Act from 2004 sets up the Institutional Framework for environmental management in the country. A new environmental policy is expected during 2016. The Ministry responsible for Environment, i.e. the Vice President's Office has the task overall coordination and policy articulation and National Environment Management Council, NEMC has responsibility of enforcement. Regional and Local government authorities oversee implementation at local levels. There are regulations for Environmental Impact Assessments and Strategic Environmental Assessments.

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<sup>61</sup> URT, 2016, National five year development plan 2016/7-2020/21 –Nurturing industrialization for economic transformation and human development

Sector related legislation that also relate to environment and natural resources management include Forestry, Wildlife, Fisheries, Water, Energy, Petroleum, Extractives etc. As an example the Petroleum Act from 2015 stipulates that a strategic assessment of the social and environmental impact of the potential petroleum activities must be undertaken and evaluated prior to opening of areas for petroleum activities. Public disclosure of implementation of environmental management plans in extractive industries is required by the Extractive Industries Transparency and Accountability Act from 2015.

The National Environmental Action Plan from 2013-18 contains a long range of issues including to strengthen enforcement of legislation related to land use, water resources management and urban pollution; promote sustainable agricultural practices, sustainable utilization of aquatic resource and implementation of the national climate change strategy and action plan. A key weakness is that the plan does not include budget lines and only partly indicators.

To address climate change Tanzania has adopted various other policies, legislations, strategies, plans and programmes e.g. the National Adaptation Programme of Action (2007); the Renewable Energy Strategy (2014); the National Transport Master Plan (2013); the National REDD+ Strategy and Action Plan (2013). In 2015 Tanzania presented its Intended Nationally Determined Contribution (INDC) which explores how Tanzania intend to work on climate adaptation and mitigation. Adaptation priority sectors are: Agriculture, Livestock, Coastal and Marine Environment, Fisheries, Water resources, Forestry, Health, Tourism, Human Settlement and Energy. Identified mitigation priority sectors are: Energy, Transport, Forestry and Waste management. Priority interventions include: promoting integrated water resources management practices, improvement of agricultural land and water management, protecting small holder farmers against climate related shocks including through crop insurance, promoting climate resilient pastoralism, enhancing the use of renewable energy, promoting livelihood diversification for coastal communities, promoting sustainable tourism and mass rapid transport systems. The Green Climate Fund under the UN Climate convention is expected to be an important vehicle for channelling climate finance to Tanzania. Tanzania has applied for support to strengthen their National Designated Authority (in practice the Vice President's Office) and strategic frameworks for engagement with the Green Fund.<sup>62</sup>

Tanzania has improved its capacity to respond to disasters by better early warning systems, development of flood contingency plans, emergency coordination mechanisms in place at local levels and special disaster risk reduction units at various ministries, and investments in social protection schemes etc. Disaster risk reduction is incorporated in the MKUKUTA II and an Emergency and preparedness and response plan and Disaster communication strategy were prepared in 2012.<sup>63</sup>

Development Partners Group on Environment, Natural Resources and Climate Change works primarily with the Vice-President's Office (VPO), the Ministry of Natural Resources and Tourism (MNRT) and the Ministry of Livestock and Fisheries Development (MLFD) with the aim to build a coordinated development partner response to the Government's Joint Assistance Strategy for Tanzania (JAST), within the overarching framework of the National Development Plan (MKUKUTA). UNDP and Germany/GIZ are co-chairs.

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<sup>62</sup> URT, 2015b, Tanzania readiness and preparatory support proposal

<sup>63</sup> URT, 2014b, National progress report on the implementation of the Hyogo Framework for Action 2013-2015

## 5.2 Governance, implementation and enforcement

Overall there seems to be agreement that the legal and policy frameworks are sufficient and that implementation is the main challenge. Implementation capacity hinges on issues like administrative capacity, societal awareness, political will and financial resources. A recent study<sup>64</sup> on institutional, legal and budgetary bottlenecks on implementation of poverty-environment objectives in Tanzania also points to problems of coordination within government with insufficient attention to the means of implementation and responsibilities for various ministries, weak monitoring and inadequate use of decision making tools like EIA etc. The capacity of local government (human and financial) to carry out their task is very limited which hinders implementation. Better integration of poverty aspects in environmental objectives and policies is also suggested.<sup>65</sup> Heavy reliance on international environmental funding can create incentives for project management and reduce incentives for environmental institutions to monitor and engage with other sector ministries.

Related to agricultural intensification the EU notes in the National Indicative Programme 2013-17 that the Tanzanian government is increasingly aware of the needs to address environmental risks and constraints but also of the opportunities offered by agriculture to promote green growth. “However, considerable effort remain to be done to ensure that these considerations are translated into practice and integrated into investments in agriculture and farming systems.” Capacity to enforce regulation regarding sale and safe use of pesticides is inadequate.<sup>66</sup>

Efforts to mainstream climate change into development policies and plans show only limited progress<sup>67</sup> and “while a National Climate Change Strategy is already in place in Tanzania, there is a lack of overarching and binding climate change legislation to support implementation and enforcement for climate mitigation and adaptation activities.”<sup>68</sup>

Related to Disaster risk management, overall preparedness levels are hampered by inadequate early warning systems, poor coordination in preparedness and response activities etc.<sup>69</sup> Lack of financial resources and operational capacity, low awareness among the public, poor risk and hazard database and absence of emergency operation centre are key overall challenges for disaster risk management.<sup>70</sup>

Environmental governance is depending on an enabling environment which includes aspects like government planning, coordinating, budgeting, and implementing capacity and the rule of law. Other elements that tend to promote good environmental and climate governance are an informed and empowered civil society, political will and access to finance. Natural resources sectors are prone to corruption (extractives, land issues) and illegal activities (logging, fisheries). Tanzania continues to suffer from rampant corruption which risks undermine the benefits of oil, gas and mineral discoveries.<sup>71</sup> Looking at the period from 2010-2014 Tanzania did not make any clear improvements in its score on the World Bank Governance indicators that cover issues like Voice and Accountability, Political Stability and Absence of, Violence/Terrorism, Government Effectiveness, Regulatory Quality, Rule of Law, Control of

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<sup>64</sup> Ecom Research Group (ERG), 2014, Identification of institutional, legal and budgetary bottlenecks on implementation of P-E objectives

<sup>65</sup> ibid

<sup>66</sup> Slunge et al, 2015

<sup>67</sup> URT, 2015

<sup>68</sup> Daly et al, 2015, Climate change policy inventory and analysis for Tanzania , Cicero report 2015:05

<sup>69</sup> WFP, 2016

<sup>70</sup> URT, 2014b

<sup>71</sup> U4, 2014, Tanzania: overview of corruption and anti-corruption

Corruption.<sup>72</sup>In the case of control of corruption and political stability the performance was significantly worse at the end of the period. See table in Annex 4.

Tanzania is an EITI compliant country since 2009 and has made significant advances with the new bill on transparency in the Extractives sector mentioned above. Other examples of enforcement and anticorruption include the new ban on hunting permits and exportation of wildlife products<sup>73</sup> and examples of court cases and sentences for illegal fishing methods (use of dynamite).<sup>74</sup>

The system for environmental impact assessment and strategic environmental impact assessment is in place. However the effectiveness of the system low, it is found to contain institutional weaknesses, low awareness, poor allocation of resources for implementation and weak enforcement.<sup>75</sup> The independence of NEMC is questioned is sufficiently strong vis-à-vis business interest and central government to take “unpopular” decisions by fear of being seen as anti-development.<sup>76</sup> These problem are not unique for Tanzania and requires concerted efforts to become efficient including greater transparency, institutional incentives for sector ministries and NEMC and sufficient number of competent independent impact assessment specialists.

## 6. Opportunities for a green economy

There is a risk that policy briefs like this one focus too much on the environmental risks and the negative impacts of current development paths on people’s health, availability of natural resources, quality of ecosystems and economic development. It is critical to underscore that while these challenges are very real, the benefits of a necessary transformation to a greener growth offers great prospects for a country like Tanzania, endowed with rich natural resources. The transition towards green growth is global in nature and has already led to numerous technological and social innovations that Tanzania can benefit from. This is perhaps best illustrated by the rapidly improved performance of solar and wind technologies that on several markets now successfully compete with conventional technologies even without subsidies.<sup>77</sup>

In Tanzania green growth is about making better use of its natural resources, including better value addition in agriculture and forestry, sustainable tourism and fisheries, investments in better access to and more efficient use of energy, electricity and water. Another key aspect is a more efficient transportation system, including public transportation systems in urban centres, an area where environmental and congestions problems can be addressed jointly. The transition towards a greener growth can also create new jobs e.g. renewable energy technologies employ more people than conventional technologies<sup>78</sup>.

OECD defines green growth as “Fostering economic growth and development while ensuring that natural assets continue to provide the resources and environmental services on which our well-being relies.” In general this requires proper pricing of pollution and natural resource, removal of perverse subsidies, infrastructure investments and good governance and capacity to implement reforms.

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<sup>72</sup> See also similar trend in 2015 Ibrahim Index of African Governance

<sup>73</sup> WWF, 2015

<sup>74</sup> URT, 2014, An overview of the fisheries sub sector

<sup>75</sup> Nyihirani et al, 2014, Performance of environmental impact assessment regime in Tanzania

<sup>76</sup> Sosovele, 2013, Governance challenges in Tanzania’s environmental impact assessment practice

<sup>77</sup> Parkinson, 2016, India energy minister says solar power now cheaper than coal

<sup>78</sup> A 2015 study by UNIDO and Global Green Growth Institute finds that, per \$1 million in spending in each country, clean energy investments generate, on average, about 37 jobs in Brazil, 10 jobs in Germany, 100 jobs in Indonesia, 70 jobs in South Africa, and 15 jobs in the South Korea. For all countries this is more jobs than the same amount spent on investments in fossil energy systems (UNIDO , 2015).

The Tanzanian government has in the 2013 Draft Energy Subsidy Policy stated not to provide subsidies for production, storage, delivery or consumption of petroleum products. However for natural gas they will provide capital subsidies for transmission of natural gas to Dar and the development of a national market for natural gas. The area of electricity involves opportunities for subsidies in a number of cases, such as connections to the grid, support to renewable technologies etc. However the government will not provide recurrent subsidies to any consumers of electricity.<sup>79</sup> The draft 2015 National Energy Policy allows for targeted, objective based and transparent subsidy regime and capital subsidy to promote development of energy infrastructures. Feed in tariffs for renewable energy were updated in 2015.<sup>80</sup> It will be important to track the development of energy tariffs and subsidies not least related to natural gas.

Contrary to countries like Ethiopia and Rwanda, Tanzania's political leaders have to a lesser degree given their backing to the concept of Green economy or green growth. However in the flagship public private partnership, the Southern Agricultural Growth Corridor (SAGCOT) Investment Project the concept is strongly promoted highlighted. A number of project documentation promoting green growth investment blue print and sustainable agricultural practices are available on SAGCOTs website as is a well written draft Strategic Regional Environmental and Social Impact Assessment<sup>81</sup>. The proposed environmental and social management system for SAGCOT is old but promising if implemented. However, there is little data on implementation.

## **7. Other issues (identified by the Embassy)**

### **7.1 Sustainable industrialisation**

It is envisioned by new President John Magufuli and his administration that Tanzania has the potential to achieve poverty reduction and prosper through the building of an industry-driven economy<sup>82</sup>. With abundant resources<sup>83</sup>, the utilisation of the natural resource base is at the core of the industrialisation of the nation. Logistics and transportation is another sector targeted and Tanzania envisions being the logistic hub of East Africa. In addition there are seven target sub-sectors in the industrialisation of Tanzania<sup>84</sup>. The exploration and extraction of resources is expensive and rely on the existence and/or development of proper infrastructure, technology, an adequate energy supply and an available work force. Lack in these factors has caused the industry sector to lag behind.<sup>85</sup>

The current policy framework for industrialisation is built upon the Sustainable Industrial Development Policy (SIDP) – 1996-2020. The SDIP is split into three phases and currently the third phase (Phase III: Long Term Priority Programme (LTPP) 2010 – 2020) is being implemented. Also feeding in to the industrialisation framework is Vision 2025 and the three Five Year Development Plans. Currently the second FYDP is on the drawing board with the plan for “Industrialisation to be one of the pillars of socio-economic and political development”. In addition there is the government initiated Integrated Industrial Development Strategy (IIDS) 2011-2025 that works to “deepen” the implementation of SIDP and Vision 2025. As such the IIDS feeds into the general focus of Vision 2025 and aims to support efforts such as Kilimo Kwanza and SACGOT to tap into the agricultural sector to promote resource-based

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<sup>79</sup> URT, 2013a, Energy subsidy policy, revised draft December 2013

<sup>80</sup> EWURA, 2015, Policy notice: The second generation small power producers framework for Tanzania , April 2015

<sup>81</sup> URT, 2012c, SAGCOT: Strategic Regional Environmental and social assessment, interim report

<sup>82</sup> Daily News , 2015, Tanzania has tools to transform its economy

<sup>83</sup> Such as nickel, iron, copper, gold, uranium, titanium, tanzanite, vanadium, gas, oil, arable land and forests

<sup>84</sup> fertilizer and chemicals, iron and steel, textiles, agro-processing (edible oil, cashew-nuts processing, fruits processing, milk and milk products), leather and leather products, light machinery and tourism

<sup>85</sup> URT, 2011b, Integrated Industrial Development Strategy 2011-2025

industrialization (ADLI)<sup>86</sup>. Investments into education and vocational training to foster a more productive workforce together with investments in to technology and infrastructure, including energy, is thus what is needed for Tanzania to realise their plan of an industry-driven economy. The 2025 vision, the FYDP and the IIDS all recognises that industrialisation necessarily impact on the environment in a negative way, and sustainability is already mainstreamed into the general policy documents'. However, there is no explicit statement regarding how the environment should be considered in relation to industrialisation. The systems of Environmental Impact Assessment and Strategic Environmental Assessment are in theory seen as the means to ensure that environmental impacts and risks are managed. As highlighted above, this system have to date not been sufficiently strong.

## 7.2 Energy

The section below describes the current situation, challenges policies and opportunities for sustainable energy in Tanzania. Given the critical choices to be made regarding the energy transition for Tanzania, the long term impacts of those decisions and the Swedish engagement in the sectors will be further developed in a separate study.

**Current energy use** Tanzania has abundant energy resources such as hydro (estimated at 4.7 GW<sup>87</sup>), natural gas (proven reserves at 53.28 TCF<sup>88</sup>), solar radiation (187 W/m<sup>2</sup>), wind 100 MW, coal reserves (estimated to 1,200 million tonnes), uranium, biomass, and geothermal which is estimated to generate about 650 MWe<sup>89</sup>. Energy consumption in rural areas accounts for about 85% of the total primary national energy consumption. The national energy balance is dominated by biomass-based fuels (88%), particularly wood (charcoal and firewood), which is the main source of energy for both rural and urban areas. Commercial energy sources such as oil, gas, electricity, and coal, as well as non-biomass renewable energy, account for the remaining 12%. Coal, wind and solar account for about 1% of the energy used.

**Plans for expansion:** Since the late 1990s, Tanzania has sustained an average rate of 6-7 % economic growth<sup>90</sup> But the growth rate has been estimated to have been one percentage point higher if the electricity supply had been sufficient<sup>91</sup>. The government plans to increase the use of natural gas for power generation, and diversify to other sources such as wind, geothermal, coal and solar. In recent years there has been great interest for the private sector to invest in renewable power projects, especially wind and solar. Progress is delayed as the government not yet has launched a clear policy for renewable energy with adequate funding in place, thus there is no favourable environment and clear incentives to attract investment from the private sector to the renewable sector. The country's Power System Master Plan, PSMP, for 2012-2035<sup>92</sup> indicates that Tanzania will achieve a 75% connection of electricity for households up to the year 2033.

**Socio-economic aspects of energy use and distribution:** Out of Tanzania's 52 million inhabitants only about 19 million<sup>93</sup> have access to electricity (36% - 46% of the urban population, only 11 % rural ). The low level of access<sup>94</sup> to electricity leads to restrictions on

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<sup>86</sup> *ibid*

<sup>87</sup> All statistics in this paragraph from EU, 2015, Tanzanian energy sector under the universal principles of the Energy Charter

<sup>88</sup> Trillion (10<sup>12</sup>) cubic feet

<sup>89</sup> Megawatt electricity

<sup>90</sup> USA, 2015, Tanzania Investment Climate Statement 2015

<sup>91</sup> URT, 2013d, Power system master plan 2012 update

<sup>92</sup> *ibid*.

<sup>93</sup> *ibid*

<sup>94</sup> Comparison with other countries on levels of access is sometimes difficult as sometimes Tanzania makes distinction in statistics between connection and access. E.g. you are counted as having access if someone in your village have electricity

national growth and individual income generation. Tanzania also has a low electricity consumption per capita: 133 kWh per year, compared to the world average - 2500 kWh per year - and the average fuel consumption in the developing countries of sub-Saharan Africa - 550 kWh per year.<sup>95</sup>

A reliable electricity supply for rural healthcare facilities can raise the quality of medical services - which can be extended to the evenings. Medicines can be kept refrigerated and more advanced equipment can be used. Higher electricity delivery security will encourage investment in electrically-powered capital goods, which in turn enable the establishment of processing industries in rural areas, such as sugar production, dairies, mills and canning plants leading to job creation. Women, who shoulder a disproportionate responsibility for household fuel and water collection, food preparation and agriculture, are especially affected by an insufficient and unreliable energy supply.

**Challenges for Tanzania's energy sector:** Demand is increasing rapidly owing to accelerating productive investments. Installed capacity is projected to increase seven-fold to meet demand. The country is also developing a SE4All<sup>96</sup> Action Agenda, setting its energy objectives for access, renewables and energy efficiency for the year 2030. To meet this demand Tanzania's energy sector faces a number of significant challenges. Amongst the most crucial are:

- *Risk of disruption to generation and associated electricity price shocks due to the increasing unpredictability of hydropower.*

Changing rainfall patterns and recent droughts have dramatically reduced large hydropower output. This has resulted in extensive load shedding and the running of expensive emergency fossil fuel-based power plants as base load. Large hydro currently comprises 35%<sup>97</sup> of total generation capacity, down about two-thirds from a decade ago.

- *Low access to reliable electricity.*

Access to modern energy services is vital to agricultural productivity, income generation and education. In addition, improved access to electricity can mean cleaner cooking as an effective tool for improved health by reducing smoke indoors. It can also reduce extreme hunger by improving the preparation of foodstuffs, as well as minimise crop losses through cold storage.

- *The vastness of the country<sup>98</sup> coupled with low population density makes grid extension too expensive for many difficult-to-reach areas.*

This, in turn, creates significant market potential for off-grid electrification schemes that could be implemented with the participation of SPPs.

- *Health risks and environmental degradation from household reliance on biomass energy*  
The incomplete combustion of fuel wood in traditional biomass stoves results in indoor air pollution, which is linked to respiratory and other diseases. The loss of forest cover from charcoal production, with nearly 1 million tons consumed annually, is estimated at about 100,000-125,000 hectares<sup>99</sup>. Deforestation also contributes to land degradation, soil erosion which also negatively impacts on storage capacity of hydropower dams. Using forests for

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<sup>95</sup> IEA, 2014, Africa Energy Outlook: A focus on energy prospects in sub-Saharan Africa

<sup>96</sup> se4all, 2016, Sustainable energy for all, (read more at <http://www.se4all.org/>)

<sup>97</sup> AfDB, 2015, Renewable Energy in Africa: Tanzania Country Profile

<sup>98</sup> Twice the area of Sweden

<sup>99</sup> Ibid.



fuelwood/charcoal to some extent also result in foregone revenues from more valuable use of forest resources.

- *Lack of capital for investments in Renewable energy*

Lack of national capital makes investments in Renewable energy dependent on international funding. The limited funds available from donors in the new budget-constrained context can at least in the short run not be compensated by grants from the Green Climate Fund as the fund suffers from both low capacity to process and fund proposals (only 196 MUSD were distributed globally in 2015 of which half for adaptation projects).

**Opportunities for moving towards a long-term sustainable energy sector:** In early 2014, Tanzania's electricity installed capacity on the main grid was 1,591.02 MW<sup>100</sup>. Should business as-usual prevail, 9 GW<sup>101</sup> of additional power will be needed by 2035 to meet demand and replace older facilities. According to the PSMP<sup>102</sup>, future energy needs will be met by coal (41%), large hydro (35%), and oil and gas (21%). Much of the early capacity requirements would be met by oil and gas generators; both require shorter lead times than coal and large hydro, which would predominate in later years. However despite providing quick solutions to the energy supply crisis investments in these technologies can provide unwanted lock-in effects and put the country on a high-carbon path.

Despite the high potential of other renewable energy to provide lower-cost electricity using locally available resources, only 3% is considered in the PSMP. This is partly due to insufficient resource information needed for investments.<sup>103</sup>

Hopefully Tanzania can promote its renewable energy plans by participation in the new regional platform "the African Renewable Energy Initiative" (AREI). AREI was launched at COP 21<sup>104</sup> and aims to deliver 10 GW in 2020, and no less 300 GW in 2030 while supporting capacity building on how a low-carbon development in Africa can be implemented without negative consequences for economic development and energy security.

### 7.3 Fisheries

In Tanzania, the fisheries sub-sector contributes by around 2.6% of GDP<sup>105</sup> and the fish export contributes with around \$223M<sup>106</sup>. Since the majority of the fishing is artisanal it is however difficult to estimate the exact contribution but it is estimated that the sector employs more than 177,527 people directly and as much as 4,000,000 people indirectly, e.g. through boat building and other related activities. As much as 70% of the national protein intake comes from fish which in extension means that close to 5 million people are dependent on fishing for their livelihoods<sup>107</sup>.

The country's fresh water lakes contribute with about 85% of the total annual fish landings while marine waters contribute about 15%. Lake Victoria (Nile Perch) followed by Lake Tanganyika (Sardines) have highest fisheries potential. Aquaculture is currently developing in

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<sup>100</sup> AfDB, 2015

<sup>101</sup> Ibid

<sup>102</sup> URT, 2013d, Power system master plan 2012 update

<sup>103</sup> ibid

<sup>104</sup> UNFCCC, 2015, Joint Statement on Advancing of the Africa Renewable Energy Initiative

<sup>105</sup> AEO, 2015

<sup>106</sup> MIT, 2016

<sup>107</sup> URT, 2013c, National fisheries policy draft

the country and the sector grew from a value of Tshs 8.5 billion in 1998 to Tshs 34 billion in 2012 and the number of fish farmers increased from 9,500 in 1998 to 18,286 in 2012<sup>108</sup>

It has been suggested that climate change affects the fishing sector through coral reef bleaching, changes in water temperature, wind velocity, sea level increase and wave action, which can bring ecological and biological significant change to both fresh water and marine ecosystems<sup>109</sup>. Due to climate change, in particular rising temperatures, deep tropical lakes as the ones found in Tanzania are experiencing reduced algal abundance and declines in productivity. It is estimated that since 1913, the surface waters of Lake Tanganyika have increased from 0.9 to 1.3° C, resulting in a decrease in primary productivity of 20 percent or more thus threatening the sustainability of Lake Tanganyika's fishing industry as catches of sardine species in the lake has declined by 30 to 50 percent since the late 1970s<sup>110</sup>.

Between 2007 and 2012 there was a decline in the contributions from the fish sector with 0.3% caused by decreases in fish catches<sup>111</sup> linked with climatic impacts on lake ecosystems<sup>112</sup> together with factors such resource environmental degradation, over fishing, change of species distribution and increased human in population<sup>113</sup>. The total catch from Lake Victoria has increased between 1979 from an annual catch of 100 000 tonnes to over one million tonnes in 2007. Now however, Lake Victoria faces a decline in fish stock as the Nile perch stock has declined substantially in the 2000s, prompting dedicated efforts to recover the stocks through a 'Nile perch recovery plan' in 2008<sup>114</sup>. Efforts to promote sustainable fisheries in Lake Victoria have only targeted to regulate fishing.<sup>115</sup> Regulations and management options need to include other aspects affecting the health of the lake ecosystem and in particular over fertilization, e.g. nutrient loading caused by land burning, urban centres etc.<sup>116</sup> In 2013 came a new National Fisheries Policy with the aim to "increase the fisheries sector's contribution to the GDP and alleviate poverty by integrating the fisheries industry with the rest of the economy"<sup>117</sup>.

Fisheries are negatively affected by coastal development that often encroaches on mangroves that are a critical breeding ground for fish. Breeding grounds for fish are threatened by construction, industrial and urban pollution and is also affected by climate change. Despite all mangrove forests in Tanzania being reserved the legislation is not sufficiently enforced.<sup>118</sup>

According to the Tanzanian Fisheries Research Institute, the availability of shallow water demersal fish stocks along the Tanzanian coast has declined by three times from the 1980s to the 2000s.<sup>119</sup>

## 7.4 Knowledge base

There is insufficient awareness of linkages between environment-poverty –development and information about the state of pollution levels, fish stocks etc. Under the Big Results Now programme Tanzania has increased efforts to improve the education system in terms of

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<sup>108</sup> *ibid*

<sup>109</sup> Yusuf et.al, 2015, Climate Change Impacts on Fishing in Coastal Rural of Tanzania

<sup>110</sup> CHM, 2016, Climate Hot Map: Lake Tanganyika, Tanzania

<sup>111</sup> Yusuf et.al, 2015

<sup>112</sup> WWF, 2016, Climate change impacts in Tanzania

<sup>113</sup> Yusuf et.al, 2015

<sup>114</sup> Nunan, 2014, Wealth and welfare? Can fisheries management succeed in achieving multiple objectives ?

<sup>115</sup> Downing et al, 2014, Coupled human and natural system dynamics as key to the sustainability of Lake Victoria's ecosystem services

<sup>116</sup> *ibid*

<sup>117</sup> URT, 2013c

<sup>118</sup> Kimirei, et al, 2016, Small estuarine and non-estuarine mangrove ecosystems of Tanzania

<sup>119</sup> Kuguru, B et al, 2013, Demersal fish stock in the SWIOFP countries: the shallow water demersal fish trawl survey in Tanzania

enrolment and quality. The country has previously made efforts to integrate education for sustainable development in curricula but it has been difficult to find evidence on progress in this regard. Special guidelines for education for sustainable consumption were developed in 2014 but this gives the impression of an odd and externally driven exercise and does not show evidence of progress on education for sustainable development.<sup>120</sup> We have not included information about how integrated these aspects are at the University level or in vocational trainings. This could for instance look into how opportunities arising from new greener technologies and social or technological innovations are being captured by various actors in Tanzania.

## 8. Issues for Sida to consider

The Swedish strategy for development cooperation in Tanzania 2013-2019 is now at mid-term. The Embassy has therefore asked the Helpdesk to reflect on possible implications of the findings of this brief for the second part of the Strategy period. Possible implications and opportunities to strengthen environment and climate integration are discussed below and are hoped to fuel the debate at an upcoming workshop during Spring 2016. It should be kept in mind that these comments are based on a desk review only, that the Helpdesk lacks in-depth knowledge about the current Swedish portfolio or current budget constraints.

It remains clear that Tanzania's environment and climate-related challenges impact most on the livelihoods of poor and vulnerable groups in both rural and urban settings in terms of a) access to water, land and other services from nature for livelihoods and b) impacts on health (air and water pollution). Many ecosystems are being degraded and their resilience is uncertain where critical levels might be approaching for instance in Lake Victoria. Climate change adds onto existing stresses.

In order to solve current environment-related problems requires action across sectors including modern energy, promotion of alternative livelihoods, education, gender equality, tenure issues, good governance and cannot be confined to the environmental sphere.

Therefore continued efforts in the current Swedish result areas are important. As an example it is important to act on the recommendations made in the study regarding chemical use in the agricultural sector in Tanzania (Slunge et al, 2015) and discussions from follow-up meetings at Sida. See recommendations in Annex 5.

**1. Lack of political willingness** to address the environmental problems is a key problem. Efforts that concentrate on trying to get existing systems and policies to be implemented will be important but we also suggest that Sweden also look for opportunities to increase the political interest for better management of the country's natural resources, to reduce risks associated with pollution and degradation and for climate resilience.

Where there are opportunities, the greatest need is further elaboration. Better pricing and opportunities for a more stable tax base? Access to climate finance? Access to export markets for sustainably produced commodities? Higher agricultural productivity and lower energy prices through irrigation and integrated water resources management? Productive employment in new sectors, such as production and maintenance of solar energy?

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<sup>120</sup> NEMC, 2015, National guidelines on education for sustainable consumption for Tanzania - Given that the problems of consumption are relatively small in Tanzania the focus of these guidelines appears odd and externally driven. Surprisingly little information is provided on status of and lessons from previous efforts to integrate education for sustainable development in the education system.

These are some ideas, discussion of actors to work with could range from civil society, the private sector or government.

**2. Sustainable energy transition:** In the case of energy there is still need for a better policy environment which will be critical if renewable energy sources are to play the important role that seem possible and desirable. This entails a more reliable energy system but also opportunities for employment for women and men in the relatively labour intensive renewable energy sector. Ideas on how to further adjust and improve current support within the area will be further developed in the stand alone study. Both working with the Ministry to ensure good quality input to decisions for the energy transition and an enabling policy environment for investments is important. But also working with other actors and supporting investments is important as government players don't have the same incentives for change as other actors may have.

**3. Better transparency and use of existing country systems and tools for decision making** which can be addressed through various contributions and may require a broad approach to be effective:

- A) *In private sector programmes*, where Sweden in various forms promotes agricultural productivity, trade, industrial zones etc ensure that the systems are understood and used and that capacity is provided to properly assess environment, climate and social aspects of alternatives. This contributes to better systems and better learning. For programmes promoting better agricultural practices it would be important to ensure that good standards are used by implementing partners with sufficient capacity, not least related to integrated pest management and safe use of chemicals.
- B) *With regard to democracy and human rights* there are substantial opportunities to make better use of existing systems including EIA, SEA to hold government and private sector to account. Particularly important for development projects involving extractives but also for industrial zones and different types of concessions that are hoped for in the FYDP II. As stated NEMC is too weak for monitoring if what has been agreed is upheld. By increasing transparency where civil society have a right to environmental information Sweden could contribute to create new incentives for follow up and debate around these issues. Not framed as environment but framed around peoples access to resources, impacts on health and livelihoods, and revenue transparency. By supporting CSO capacity and the media to make use of such information the systems are more likely work as intended and hold both government and business to account. Use of ICT can greatly facilitate this. Better use of information generated around the Extractive Industries Transparency Initiative and possibly looking into opportunities to join Fisheries Transparency Initiative, possibly jointly with EAC members around Lake Victoria might be another interesting area, potentially with synergies from Swedish regional support.
- C) *Working with government* on energy, perhaps with industrialisation, agriculture, anti-corruption it would be very important to make use of opportunities to ensure that those sectors have capacity to undertake and make use of relevant decision-making tools. And to promote their transparent use. It may be considered to work more extensively on anti-corruption measures either directly with the natural resources sectors (logging, minerals, oil and gas, land) or on a generic basis thereby contributing to an enabling environment for better environmental governance.

**4. Land tenure formalisation and land use planning:** Industrialisation through natural resources sector including extractives, urbanisation and demographic growth will put tremendous pressure on land. Issues relation to land tenure are crucial in this regard. The question is how this is best achieved. Sweden is supporting the Land Tenure Support Programme (LTSP). We suggest that Sida try to influence the LTSP so that a greater focus is put on sustainable Land Use Planning rather than the demarcation of private plots.. The LTSP has a strong focus on Land Use Planning that could be used in progressive ways at village level. The need for proper land use planning, both in terms of conflict over land and sustainable land use management, is also highlighted in two recent government reports on the environmental situation in Tanzania<sup>121</sup> This can be further motivated by the fact that the majority of community land in Africa is not constituted by individual farm lands but that as much as 90% are instead off farm resources (e.g. fuel wood, herbs, clay for bricks). A focus on sustainable land use planning might thus be a better way to go, both in terms of sustainable management and the over-all security of access to those resources for the people who depend on them.

**5. Monitoring and data collection.** Better data could improve environmental governance and current systems are weak. There appears to be a strong interest for natural capital accounting among donors and the VPO. This might be a strategic avenue to help build awareness and political will for better environmental governance. However it is not without risks as it might be quite resource intensive and risks for being over complicated. It is critical that actors like the Ministry of Finance and the National statistics bureau are clearly on-board and that different options for providing better analytical input to decision making processes are discussed. Sweden and Sida supports the WAVES programme and other relevant initiatives where lessons can be learned from.

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<sup>121</sup> URT, 2014b; URTb, 2013

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## Annex 1 Multidimensional poverty index

The University of Oxford has developed a multidimensional measure of poverty. It is made up by ten indicators from three categories; health, education and living standard. Indicators include aspects like nutrition, child mortality, school attendance, cooking fuel, sanitation, water etc. Using a multidimensional measure of poverty that include health, education and living standard it is clear that the Central, Western and Lake regions, representing about 45 % of the population, are home to the most vulnerable groups. Urban residents are significantly better off than rural Tanzanians.

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J. Multidimensional Poverty across Sub-national Regions

Region	MPI (H x A)	H (Incidence) k ≥ 33.3%	A (Intensity)	Percentage of Population:			Inequality Among the MPI Poor	Population Share
				Vulnerable to Poverty k = 20%-33.3%	In Severe Poverty k ≥ 50%	Destitute		
Tanzania	0.332	65.6%	50.7%	21.0%	53.4%	24.2%	0.174	100%
Urban	0.154	34.6%	44.7%	24.2%	10.9%	-	-	22.8%
Rural	0.385	74.7%	51.5%	20.0%	40.1%	-	-	77.2%
Zanzibar	0.200	41.9%	47.7%	28.7%	17.0%	16.0%	0.163	3.0%
Eastern	0.220	45.6%	48.2%	22.7%	19.9%	12.3%	0.158	13.7%
Northern	0.269	55.3%	48.6%	25.8%	25.9%	19.2%	0.152	15.2%
Southern Highlands	0.316	65.7%	48.1%	22.0%	28.6%	18.6%	0.119	13.4%
Southern	0.339	68.2%	49.7%	22.0%	33.6%	24.0%	0.177	9.0%
Lake	0.375	72.7%	51.6%	19.3%	37.7%	30.1%	0.185	19.1%
Western	0.408	76.8%	53.1%	17.4%	43.2%	30.5%	0.185	17.8%
Central	0.434	81.0%	53.6%	15.9%	51.1%	37.1%	0.199	8.8%

Oxford Poverty and Human Development Initiative (2015). "Tanzania Country Briefing", Multidimensional Poverty Index Data Bank. OPHI,

A person is identified as **multidimensionally poor** (or 'MPI poor') if they are deprived in **at least one third** of the weighted indicators shown above; in other words, the cut-off for poverty (k) is 33.33%.

The proportion of the population that is multidimensionally poor is the **incidence** of poverty, or headcount ratio (H). The average proportion of indicators in which poor people are deprived is described as the **intensity** of their poverty (A). **The MPI** is calculated by multiplying the incidence of poverty by the average intensity of poverty across the poor (MPI = H x A); as a result, it reflects both the share of people in poverty and the degree to which they are deprived.

If a person is deprived in **20-33.3%** of the weighted indicators they are considered '**Vulnerable to Poverty**', and if they are deprived in **50% or more** (i.e. k=50%), they are identified as being in '**Severe Poverty**'.

Those identified as 'Destitute' are deprived in at least one third of more extreme indicators described at the back of this briefing; for example, two or more children in the household have died (rather than one), no one in the household has at least one year of schooling (rather than five years), the household practises open defecation, the household has no assets (rather than no more than one). Data on destitution are currently available for 100 of the 101 countries analysed in the Global MPI 2015, and more will be added soon; where it is not available, it is not reported in the table below. For detail, see Alkire, Conconi and Seth (2014), available at: [www.ophi.org.uk/multidimensional-poverty-index/](http://www.ophi.org.uk/multidimensional-poverty-index/).

The level of **inequality** among the poor is calculated using a separate, decomposable inequality measure to capture inequality in deprivation counts among the poor and disparities across groups. For details of the measure and how it is applied, see Seth and Alkire (2014), available at <http://www.ophi.org.uk/measuring-and-decomposing-inequality-among-the-multidimensionally-poor-using-ordinal-data-a-counting-approach/>. Total equality takes a value of zero, and the higher the value, the greater the inequality. The highest inequality in the 100 countries analysed is 0.3.

[http://www.dataforall.org/dashboard/ophi/index.php/mpo/download\\_brief\\_files/TZA](http://www.dataforall.org/dashboard/ophi/index.php/mpo/download_brief_files/TZA)

## Annex 2 FYDP II Targets and indicators for Environment and Natural resources

**Table 4.5 Overall Performance Indicators and Targets for Environment and Protection**

S/N	Indicator/Target	By 2025/26	2014/15	2020/21
1.1	% share of GDP Income from sustainable utilization of forest, water and marine resources	20%		10%
1.2	% of energy derived from Renewable Green Energy	70%	36%	50%
1.3	No. Of Commercial Forest Plantations established			
1.4	Increase the percentage of forest cover (Ha)	200,000	60,000	130,000
1.5	Reduced charcoal consumption in Urban areas	60%	90%	30%
1.6	% of large projects complying with approved Environmental Impact Assessment (EIA) and audit regulations	90%		60%
1.7	% Contribution from sustainable tourism to GDP	13.2%	4%	8%
1.8	% of water for House and commercial use supplied from the natural ecosystems	80 %		60%

Specific Interventions geared towards the realization of the targets are as follows: Promotion of renewable green energy technologies (biogas, LPG, Solar Energy), Climate change adaptation, enforcement of EIA, and SEA, tourism and hospitality industry as well as natural resources conservations and strengthening of contribution of natural resources and products. Details are provided in Table AII.5.

## Annex 3 Governance indicators

Trends in Worldwide Governance indicators: Tanzania

	2010	2014
Voice and accountability	43,6	41,9
Political stability and absence of violence/terrorism	46,2	27,2
Government effectiveness	33,5	26,9
Regulatory quality	36,8	41,3
Rule of law	38,4	39,4
Control of corruption	34,8	22,6

<http://info.worldbank.org/governance/wgi/index.aspx#countryReports>

The score ranges from 0-100 where a higher number indicates a better outcome.

## Annex 4 Tanzania and multilateral environmental agreements

Convention/ Treaty	Year of ratification
1.The Convention on Biological Diversity, 1992	1996
2.The United Nations Convention to Combat Desertification,1994	1997
3.The Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and their Disposal, 1989	1993
4.Bamako Convention on the Ban of the Import into Africa and the Control of Transboundary Movements of Hazardous Wastes Within Africa,1991	1993
5.The United Nations Framework Convention on Climate Change (UNFCCC), 1992	1996
6.The Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES), 1973	1979
7.The Kyoto Protocol to United Nations Framework on Climate Change,1997	2003
8.The Vienna Convention for the Protection of the Ozone Layer,1985	1993
9.The Montreal Protocol on Substances that deplete the Ozone Layer, 1987	1993
10.The SADC Protocol on Wildlife Conservation and Law Enforcement, 1999	2003
11.The World Heritage Convention, 1972	1977
12.The Lusaka Agreement on Cooperative Enforcement Operations Directed at Illegal Trade in Wild Fauna and Flora, 1994	1994
13.The Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region,(Nairobi Convention) 1985	1996
14.The Convention on Migratory Species (CMS) (Bonn), 1979	1999
15.The Convention on Wetlands of International Importance (Ramsar Convention), 1971	1999
16.The Agreement on the Conservation of African-Eurasian Migratory Water birds (AEWA), 1999	1999
17.The Convention on sustainable management of Lake Tanganyika, 2003	2004
18.The Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade,1998	2002
19.The Stockholm Convention on Persistent Organic Pollutants (POPs), 2001	2004
20.The Cartagena Protocol on Biosafety, 2000	2003
21.African Convention on the Conservation of Nature and Natural Resources, 1968	1974
22.The United Nations Convention on the Law of the Sea, 1958	1985

Source: URT, 2013b, National Environmental Action Plan

## **Annex 5 Recommendations from study on pesticides**

Excerpt from Slunge, D. et al, 2015, Assessment of safeguarding systems for the use of pesticides within Swedish financed programmes in Tanzania – Final report

### **Recommendations**

Clarify Sida's position on the use and management of pesticides. One possibility is to follow the requirements on pesticide use and management in the IFC performance standard on environment and social sustainability. This includes promotion of IPM and safe use of pesticides as well as restrictions on the use of certain pesticides.

Programme appraisal and selection. Make it mandatory for partner organisations to conduct an assessment of health and environmental risks for programmes involving pesticides. Involve expertise in the review of these assessments. Assure that there is a plan to monitor and manage the identified health and environmental risks.

Contractual agreements with partner organisations. Include requirements about monitoring and management of pesticide related risks in the contract with the agreement partner. The agreement partner should make sure that fund grantees or other supported actors adhere to the requirements on pesticide use and management in the IFC performance standard on environment and social sustainability (or other benchmark defined by Sida). Consider the possibility of including funds for capacity development support for the management of environment and health risks in the agreement.

Monitoring and management of health and environmental risks during programme implementation. Partner organisations should present a plan on how health and environmental risks will be monitored and managed. The effects on women and children should be given special attention. Desk reviews of training materials used by grantees; surveys among farmers trained by grantees; and third party monitoring teams can be effective means.

Supporting materials for Sida staff and partner organisations. Update Sida's guidelines on environmental impact assessment and develop supporting information on environmental management systems for partner organisations.

Strengthen pesticide management policies and capabilities in partner countries. Consider if partner organisations can include components in their programmes which aim at strengthening government agencies and other actors involved in pesticide management. Complement current programmes with support to government capacity to regulate agrochemicals. Explore synergies between the funding to the Swedish Chemicals Agency through the Global Programme and bilateral programmes.