

## The Economics of Climate Change in Tanzania

### Key Messages

- Current climate variability already leads to significant economic costs in Tanzania.
- Future climate change is likely to increase these costs.
- Adaptation can reduce climate impacts, but it has a cost, and requires significant finance.
- Accessing these funds requires development of effective policy, institutions and mechanisms.
- Low carbon growth is in Tanzania's interest and has strong economic benefits.
- Tanzania should prepare a national climate strategy, get ready, and act now.

### **1. Current climate variability has significant economic costs in Tanzania.**

□ Periodic floods and droughts (extremes) cause major macro-economic costs. The 2005/6 drought alone affected millions of people and had estimated costs of at least 1% of GDP. The continued annual burden of these events reduces long-term growth. Tanzania it is not adequately adapted to deal with existing climate risks.

### **2. Future climate change will lead to additional and potentially high costs.**

□ Future economic costs are highly uncertain. However, aggregate models indicate additional net economic costs (on top of existing climate variability) could be equivalent to a loss of 1.5% of GDP each year by 2030 in Tanzania.

□ Costs include potential threats to coastal zones (sea-level rise), health burdens, energy demand, infrastructure, water resources, agriculture and loss of ecosystem services. For example, sea level rise, without adaptation, might cost US\$35 to 42 million per year in 2030, rising rapidly to over US\$100 million per year by 2050.

□ There is a need to plan robust strategies to prepare for the future, rather than using uncertainty as a reason for inaction.

### **3. Adaptation can reduce these economic impacts but it has a cost.**

□ Adaptation will require significant additional finance, related to both development and climate change.

□ An initial estimate of **immediate needs** for building adaptive capacity and to enhance resilience is US\$100 – 150 million per year. To address **current climate risks**, US\$500 million per year or more is warranted. This will also provide greater resilience for future change and is essential in reducing future impacts.

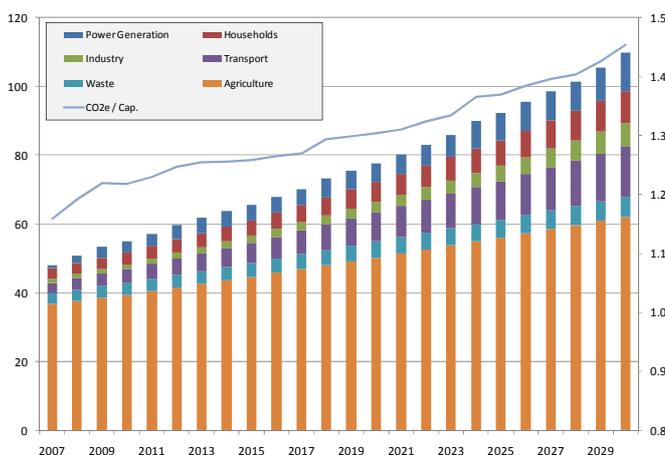
□ The cost of adaptation in future years increases rapidly. By 2030, the costs are estimated to be up to US\$1 billion per year.

□ The study has prioritised early adaptation across sectors. It demonstrates that adaptation has potentially very large benefits in reducing present and future damages. However, while adaptation reduces damages, it does not remove them entirely. Residual impacts in Tanzania, particularly for some regions and groups, will need to be managed.

□ Accessing adaptation funds will require the development of effective mechanisms, institutions and governance structures.

#### 4. Low Carbon Development is in Tanzania's self interest

□ The analysis has considered future emissions for Tanzania, consistent with planned development. Emissions of greenhouse gases (GHG) could more than double between 2005 and 2030 (see below). Moreover, plans across the economy could 'lock-in' the country into a higher emission pathway with fossil-fuel based emissions set to increase by 7 times by 2030.



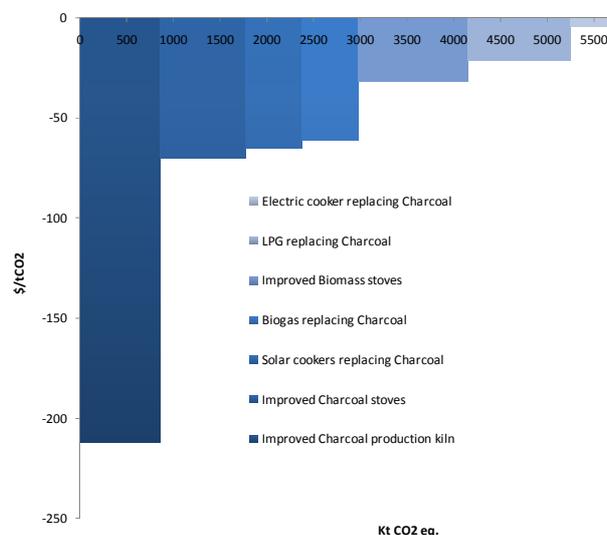
*Projected GHG for Tanzania MtCO<sub>2</sub>e (excluding LUCF) and per tCO<sub>2</sub>e per capita, 2007-2030*

□ Growing demand for energy will further risk the sustainability of forests, with demand for biomass and charcoal continuing to grow. If these are included as well, then total per capita emissions are projected to increase from 2.3 (in 2007) to 3.6 tCO<sub>2</sub>e by 2030.

□ The study has investigated a low carbon alternative pathway. This finds that a large number of 'no regrets' or low cost options exist that would enhance economic growth, as well as allowing further access to international carbon credits. They also have economic benefits from greater energy security and diversity, reduced air pollution, and reduced environmental impacts.

□ Opportunities include development of renewable generation options, improved efficiency of biomass use and charcoal production / use (see below for example marginal

abatement cost curve), forest protection and improved vehicle technologies.



*Marginal cost curve for the domestic sector – showing the large number of no regret options.*

□ Whilst opportunities exist, there are technical, economic and institutional barriers exist that need to be addressed, such as upfront costs, technology access and cultural preference.

□ Overall, because of its location, availability of resources and socio-economic conditions, the study concludes there are significant economic benefits for Tanzania in following a low carbon development path, as well as large environmental and social benefits.

#### Background and contacts

The development partners group, with support from UK (DFID) Government, are funding this study on the 'Economics of Climate Change in the United Republic of Tanzania', assessing the impacts and economics costs of climate change, the costs and benefits of adaptation and pathways of low carbon growth. The work is led by the Global Climate Adaptation Partnership, working with international and local partners. For information, contact Paul Watkiss or Tom Downing (info@ClimateAdaptation.cc).

