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Policy Brief

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CLEANER COOKING SOLUTIONS:

MOVING FROM CHARCOAL TO NATURAL GAS IN TANZANIA

by: Thelma Ako, PhD Fellow - UNU-INRA

Keywords: Tanzania, charcoal, cooking fuel, natural gas, deforestation

● Executive Summary:

Tanzania is set to revolutionize its cooking fuel sector with massive deployment and high penetration of Liquefied Petroleum Gas (LPG). Following the discovery of large volumes of gas, the Tanzanian government committed to increasing access to LPG not only to drive its industrialization agenda but also to accelerate access to clean cooking solutions. More and more people in Tanzania's capital city Dar es Salaam is one of the fastest-growing cities in Sub-Saharan Africa are shifting to the use of LPG which currently offers a cheaper and more convenient alternative.

Holding more than 40% of global gas discoveries for this decade (International Energy Agency, 2019), Africa is set to move away from the traditional use of biomass that currently accounts for almost half of final energy consumption (ibid.). Tanzania has taken the lead and is now one of the very few countries successfully disseminating clean and improved cooking solutions on a broad scale to address the devastating impact of charcoal production that uses wood from natural forests.



FIGURE 1: BAGS OF CHARCOAL TRANSPORTED INTO DAR ES SALAAM

SOURCE: AUTHOR

Gas is becoming cheaper, easily accessible and more convenient to use, while charcoal is increasingly becoming scarcer and more expensive (Malimbwi & Zahabu, 2008). The high dependence on charcoal is becoming a thing of the past, with implications for reducing deforestation and the restoration of Tanzania's severely degraded lands.



FIGURE 2: A RETAIL OUTLET FOR GAS IN TANZANIA
SOURCE: AUTHOR

Biomass has consistently figured around 90% of national energy demand for over 30 years (MNRT, 2015; MEM, 2015b; World Bank, 2009; Camco Clean Energy, 2014; UNIDO, 2015; Adam, 2011). About 8 million households in Tanzania cook with charcoal. Cumulating to an annual consumption of over 1 million tonnes (UNIDO, 2015). Charcoal has been the single largest source of cooking energy for urban households (World Bank, 2009; Rajabu et al., 2014).

Until 2019, 91% of urban households in Tanzania consumed charcoal (Camco Clean Energy, 2014). Dar es Salaam alone consumed nearly 70% of all the charcoal produced in the country (Kees Mokveld & Steven von Eije, 2018; Msuya et al., 2011) at 1500 tonnes per day (World Bank, 2009) which amounts to over 500,000 tons of charcoal annually (World Bank, 2009).



FIGURE 3: TYPICAL COOKING PRACTICE IN DAR ES SALAAM

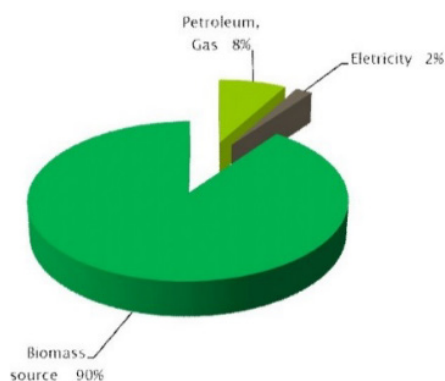


FIGURE 4: PERCENTAGE BIOMASS CONSUMPTION IN TANZANIA
SOURCE: BANK OF TANZANIA, ECONOMIC BULLETIN FOR QUARTER ENDING SEPTEMBER 2013



FIGURE 5: BAGS OF CHARCOAL PRODUCED FOR SALE IN TANZANIA

Projections by the World Bank and International Energy Agency indicated a continuous increase due to unaffordable fossil-fuel-based alternative energy resources (World Bank, 2009). These predictions have been defied by the recent discoveries of large quantities of gas resources in Tanzania.

Tanzania has 48.1 million ha of forest and woodlands (MNRT, 2015). 26 million hectares of this has been designated as wildlife reserves and water catchment protection forests (Camco Clean Energy, 2014). Over 30 million m³ of wood (AFDB, 2015) was used each year for charcoal production. This high dependence on biomass for cooking (EUEI PDF, 2016) led to extremely high rates deforestation and degradation (Malimbwi & Zahabu, 2008; Luoga, Witkowski, & Balkwill, 2000; UNIDO, 2015).

Increased demand for charcoal was driven by rapid urbanization and high relative prices, scarcity, or unavailability of alternative fuels such as electricity, biogas, biomass briquettes, and LPG (UNIDO, 2015). Given the projected rapid expansion of Dar es Salaam's urban population, urban charcoal consumption was expected to rise rapidly (Hosier, Mwandosya, & Luhanga, 1993) to around 3,300 tons per day by 2030 (World Bank, 2009; UNIDO, 2015), with concerns about the total disappearance of the natural woodland cover within the districts if the trend continued (World Bank, 2009).

Charcoal consumption exceeded the sustainable supply, causing an annual loss of about 100,000–125,000 hectares can be attributed to the charcoal sector (World Bank, 2009; AFDB, 2015). Water sources were drying up, agricultural productivity decreased and biodiversity diminished (Msuya et al., 2011). The high rate of deforestation also contributed significantly to increasing GHG emissions, releasing 20–50 million tons of CO₂ emissions each year (AFDB, 2015). This situation is changing now, with massive gas discoveries and effective policy interventions.

Africa can adopt clean cooking solutions if these alternatives are provided at an affordable price. The clean cooking revolution happening in Tanzania demonstrates how a shift to cleaner fuels can be incentivized. The increasing dependence on charcoal can be reduced by:

1. Encouraging the domestic utilization of natural gas resources within African countries.
2. Instituting fiscal measures, as demonstrated by the Tanzanian government to discourage the continued patronage of charcoal.
3. Increase environmental awareness about the devastating impact of charcoal use and educate the public on cost-saving, economic and health benefits of gas for cooking.
4. Government to discourage the continued patronage of charcoal.
5. Increase environmental awareness about the devastating impact of charcoal use and educate the public on cost saving, economic and health benefits of gas for cooking.

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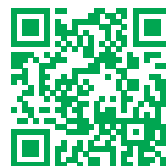
Institute For Natural Resources In Africa

For more information contact:

International House
Annie Jiage Road
University of Ghana, Legon Campus
Accra, Ghana.

T: +233-302-500396
F: +233-302- 500792

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