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## **ENABLING REFORMS:**

A Stakeholder-Based Analysis of the Political  
Economy of Tanzania's Charcoal Sector and the  
Poverty and Social Impacts of Proposed Reforms





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June 2010



Photographs by Klas Sander. Layout & design Petra Sutula





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## ABBREVIATIONS

CBFM	Community Based Forest Management
DoE	Division of Environment, in the Vice President's Office
HBSa	Household Budget Survey
IFPRI	International Food Policy Research Institute
LPG	Liquefied Petroleum Gas
MEM	Ministry of Energy and Minerals
MLHSD	Ministry of Lands, Housing and Human Settlements Development
MNRT	Ministry of Natural Resources and Tourism
MoF	Ministry of Finance
MOHW	Ministry of Health and Social Welfare
NGO	Non-Governmental Organization
PE	Political Economy
PMO-RALG	Prime Minister's Office–Regional Administration and Local Government
PSIA	Poverty and Social Impact Analysis
TaTEDO	Tanzania Traditional Energy Development and Environment Organization
TRA	Tanzania Revenue Authority
TZS	Tanzanian Shilling
VPO	Vice President's Office

Conversion rate: 1 US Dollar = 1,397 TZS (May 20, 2010).



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The analysis and recommendations presented in this paper are based on focus group discussions and key informant interviews with 200 stakeholders, conducted in Tanzania between December 2009 and March 2010. We would like to express our sincere appreciation for the time and effort these groups and individuals took to meet with the study team, and for sharing their views, ideas and suggestions with us. The meetings would not have been possible without the tireless support from the TaTEDO team and Faith-Lucy Matumbo in the World Bank country office.

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## EXECUTIVE SUMMARY

Although charcoal is the single most important energy source for millions of urban dwellers in Tanzania, being used by all tiers of society from laborers to politicians, it seems to be politically neglected and even unwanted, given that it is not considered as a possible mean to achieve long-term sustainable development, for example as a low-carbon growth option contributing to energy security, sustainable forest management, and poverty alleviation strategies. A coherent policy framework governing charcoal production, trade and use does not exist, and reliable statistics on the sector are not available. As a consequence, the charcoal sector remains highly informal with regulations either unclear, not or only partially enforced, or easily bypassed due to pervasive corruption. While the total annual charcoal business volume in Dar es Salaam alone is estimated to be worth US\$ 350 million, the government is incurring an estimated revenue loss of US\$ 100 million per year due to unregulated and unregistered activities in charcoal production and utilization. Overall, it is estimated that only 20 percent of the taxes and fees due on charcoal-related activities are presently being collected and paid.

**The largely unregistered and unregulated production and use of charcoal give reason to serious environmental concerns that call for a comprehensive reform of the sector:** with Tanzania's total annual charcoal consumption being estimated at 1 million tons, the annual supply of wood needed to meet this demand is about 30 million cubic meters. In some areas of the country, especially around the main urban areas, the production of charcoal results in significant degradation of forest land and – in combination with other land use changes – to permanent deforestation.

**Systematic initiatives trying to halt forest degradation and to make the sector more environmentally and economically sustainable are missing or have remained largely ineffective.** One example for such an initiative was the ban on charcoal, imposed by the Minister for Natural Resources and Tourism in January 2006, to discourage the production and consumption of charcoal. However,

charcoal is without alternative for most urban consumers who cannot afford or do not have access to the more expensive alternatives. Therefore the protest from urban charcoal users was predictable and loud, and the measure was short-lived. The ban was lifted after only two weeks, with charcoal production, trade and consumption continuing almost unabatedly – albeit under more difficult conditions.

**Building on the World Bank's recent policy note on potential reforms of the charcoal sector in Tanzania<sup>1</sup>, this report aims to facilitate the policy dialogue around charcoal sector reforms by providing analytical information on the political economy of the charcoal sector and on the potential poverty and social impacts of a sustainability-oriented reform agenda.** The research team employed a participatory analytical approach, based on IFPRI's Net-Map tool for social network analysis. The findings presented in this paper are based on focus group discussions and key informant interviews with 200 individuals from government and non-governmental stakeholder groups relevant to charcoal sector policy making. For the poverty and social impact analysis, an exploratory quantitative approach was chosen due to very limited data availability and the informal nature of the charcoal sector business. Therefore, the findings and recommendations presented in this report should be treated with care.

**The formal governance framework of the charcoal sector in Tanzania is characterized by weak institutionalization, law enforcement, and other regulatory capacity, as well as regulatory overlaps and gaps.** There is no comprehensive policy, strategy, or legal framework in Tanzania addressing the charcoal sector. Four ministries share responsibility and over the years each of these ministries has issued a range of legal and policy documents that directly or indirectly pertain to the charcoal sector, but that are rarely known in their entirety to governmental or non-governmental charcoal sector stakeholders. As a result, substantial uncertainty governs most transactions along the charcoal value chain.

<sup>1</sup> World Bank 2009.



**There is little incentive for government bodies at the district or village level to implement and monitor (unclear) charcoal-related policies due to a lack of legal and fiscal empowerment, combined with low monitoring and enforcement capacity.** Despite Tanzania's remarkable success in adopting Participatory Forest Management approaches, land use rights and ownership of forest assets often remain unclear or unknown to government officials and non-governmental stakeholders at the village or district level. As a result, few communities proactively engage in managing the forest areas that surround them. While district and village level authorities have the primary responsibility for licensing and regulating charcoal production and trade, very little of the total revenue can be legally retained at these subnational levels. All charcoal revenues, fees and fines are remitted to back to the Ministry of Finance and Economic Affairs. Therefore there is little revenue that can be reinvested in sustainable charcoal production or sector monitoring (many district forest offices lack the vehicles and resources to effectively oversee their mandated forest area). The lack of an effective benefit-sharing mechanism is a key factor in accounting for the chronic under-collection and under-reporting of charcoal revenues across the country and provides a disincentive to effective policy implementation.

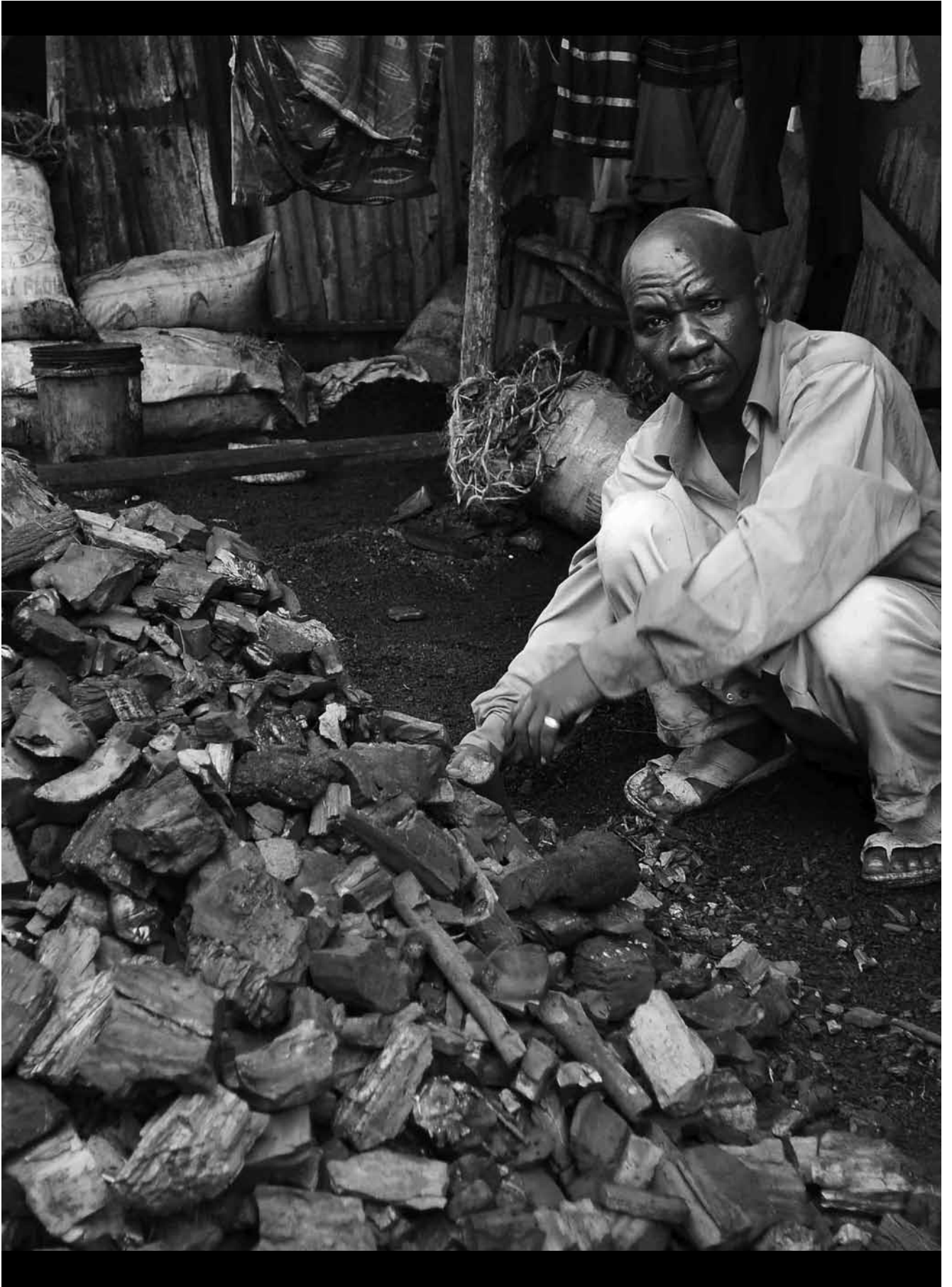
**District level authorities face a potential conflict of interest when monitoring compliance with charcoal sector rules and regulations.** The share of forest revenues that can legally be retained at the district level, combined with the revenue that is informally collected from charcoal-related activities, are an important source of "untied" funding for district level authorities. However, through their role in approving village by-laws and management plans, district councils also play a key role in the approval and legalization of village land forest reserves. This creates a potential conflict of interest because the approval of measures that empower village governments results in valuable sources of local revenue being transferred downwards and away from district councils.

**The levy and fee structure of the current governance framework does not provide incentives for sustainable forest management.** Forest law enforcement and

governance practices in the country follow a "command and control" system that needs urgent adaption to the realities required to achieve sustainable forest management. Without minimal forest management plans in place, even legal forest utilization is generally not following sustainable forest management practices. A modernized governance framework would need to put an emphasis on sustainable versus unsustainable forest management, requiring Tanzania's Forest Service to shift from policing the forest to a true service delivery agency. Central government agencies, first and foremost MNRT-FBD, are faced with a mixed incentive structure. They regard Tanzania's charcoal sector as a threat to the country's natural resource base and thus as an undesirable energy source. However, they profit from the structural setup of the status quo as revenues from harvesting royalties make up a major share of their annual budget. Fiscally empowering district and village governments would imply – at least partly – giving up an important stream of revenue.

**The *de facto* control over the charcoal sector is largely in the hands of influential charcoal dealer-transporter-wholesaler networks.** They dominate an informal governance system that is characterized by their own strong pricing power; the weak bargaining power of charcoal producers; collusion with government officials at all organizational levels; and that is driven by the unrelentingly high demand for charcoal by urban consumers.

**The dealer-transporter-wholesaler networks would be strongly opposed to reform elements that aim at increasing the share of official payments to be made (currently estimated at 10 to 20 percent) while decreasing the discretion with which the dealers currently navigate all transactions along the charcoal value chain.** However, the dealers' dependence on charcoal trade and transport also implies that they may find those components of the reform program favorable that intend to make charcoal production more sustainable because this would ensure continued business opportunities in the future. Hence, the support or opposition of this stakeholder group to a sustainability-oriented reform agenda partly depends



on how the anticipated benefits and risks of the policy reforms are communicated.

**A comprehensive approach to reforming Tanzania's charcoal sector requires as a first step an open dialogue within and among key government agencies and a subsequent strategic decision that clearly states where the charcoal sector should be moving, i.e. in the direction of sustainability-oriented reforms, or towards a stricter sanctions regime.** New policies (or changes in existing policies) would need to be based on realistic goals and expectations as to what can be achieved, and they require a coherent communication strategy that effectively translates the legal provisions of the policy into actionable instructions to district or village governments, even in remote areas of the country.

**To create an incentive for better policy implementation and monitoring at the sub-national level, it seems imperative to match institutional responsibilities of village and district governments to implement and enforce charcoal sector policies with the right to retain a percentage of charcoal revenues seems imperative.** In this respect, vertical accountabilities and reporting mechanisms within existing systems and structures in MNRT, PMO-RALG and MEM should be strengthened to ensure compliance with centrally formulated policies and directives at the sub-national level, and to gather real-time information about the *de facto* functioning of the charcoal sector in practice.

**MNRT, MEM and other key central government agencies need to scope out a mode of engagement with the dealer-transporter-wholesaler networks who exercise substantial *de facto* control over the charcoal sector.** Converting the currently irregular and informal interactions with this stakeholder group (mainly through village and district level authorities) into a more formal relationship with regular meetings, also including central government agencies, might contribute to gain a better understanding of how the sector functions in practice and to include this critical stakeholder group in the design of charcoal sector policy reforms.

**The magnitude of the likely poverty and social impacts of potential policy reforms depends on the expected**

**changes in the fiscal and regulatory framework.** Presently, it is estimated that only 20 percent of all payable taxes and fees on charcoal-related activities are being collected and paid. A realistic short to medium term goal might be to double the enforcement rate so that 40 percent of payable taxes and fees are being collected, and to impose a sustainability premium of 10 percent, encouraging sustainable forest management and charcoal production while discouraging the production, trade and use of unsustainably produced charcoal. This scenario could result in a 7 percent increase in the overall retail price of charcoal, which charcoal consumers might still be able to absorb. Otherwise households might be forced to cut back on essential food expenditures or reduce their expenses on non-food items such as school fees or health care fees. However, looking at the sizable margins of wholesalers and retailers, one should engage in a deliberative process of developing policy measures that include wholesalers and retailers in sharing the higher costs of a more sustainably operating sector.

**The non-governmental stakeholders in the charcoal sector need to be empowered through information campaigns, promotion of more efficient technology, ownership of production assets, and more sustainable management practices.** This would allow them to take more actively part in shaping the sector's rules and practices, and to counter the pricing and bargaining power of the powerful dealer-transporter wholesaler networks. This applies first and foremost to producers, but also to charcoal consumers, women, as well as bicycle transporters, improved stove producers and alternative energy providers. Giving stakeholders ownership over production assets – especially secure, long-term property rights of wood resources grown in small-scale plantations and woodlots – would not only provide direct economic benefits and financial income to rural stakeholders contributing to economic development and poverty alleviation, but is also expected to have positive spillover effects on providing local public goods with respect to sustainable land and watershed management. A favorable property rights structure with regard to tree resources could also trigger investments in enhanced charcoal production technology, a current bottleneck in promoting an improved and more efficient charcoal value chain.





# 1 INTRODUCTION

## THREE OBSERVATIONS ABOUT TANZANIA'S CHARCOAL SECTOR – AN URGENT NEED FOR ACTION

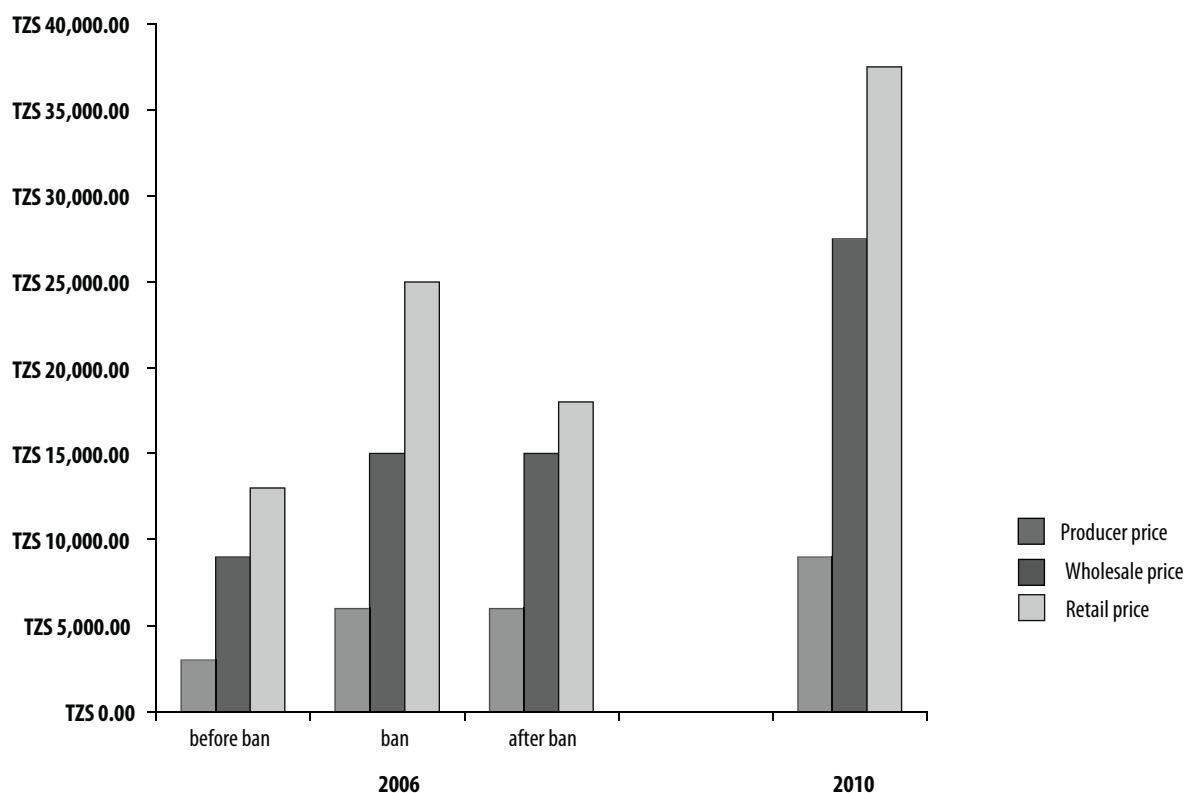
Looking at Tanzania's charcoal sector from an outsider's perspective yields three interesting observations: first, although charcoal is the single most important energy source for millions of urban dwellers in Tanzania, being used by all tiers of society from laborers to politicians, it seems to be treated politically as something unseen or unwanted. A coherent policy framework governing charcoal production, trade and use does not exist, and reliable statistics on the sector are not available. As a consequence, the charcoal sector remains highly informal with regulations either unclear, not or only partially enforced, or easily bypassed through informal and sometimes extra legal practices by both non-governmental and governmental stakeholders. This situation leads to a second observation: while the total annual charcoal business volume in Dar es Salaam alone is estimated to be worth US\$ 350 million (and US\$ 650 million to the wider economy), the government is incurring an estimated revenue loss of US\$ 100 million per year due to unregulated and unregistered activities in charcoal production and utilization.<sup>2</sup> Hence, charcoal is one of the biggest business sectors in the country but contributes little to the national accounts budget relative to its significance for the national economy. Both the lack of effective political management and the shortage of resources available for reinvestment into sustainable charcoal production explain the third observation that calls for a comprehensive reform of the sector: since Tanzania's total annual charcoal consumption is estimated at 1 million tons, the annual supply of wood needed

to meet this demand is about 30 million cubic meters. Despite Tanzania's remarkable success in adopting Participatory Forest Management (PFM) approaches, the production of charcoal results in significant degradation of forest land and – in combination with other land-use changes – to permanent deforestation in some areas of the country, especially around the main urban areas.<sup>3</sup>

Although the rate of deforestation is substantial and the need to take action seems imminent, systematic initiatives trying to make the sector more environmentally and economically sustainable are missing or have remained largely ineffective. One example for such an initiative was the ban on charcoal, imposed by the Minister for Natural Resources and Tourism in January 2006, to discourage the production and consumption of charcoal. However, charcoal is without alternative for most urban consumers who cannot afford or do not have access to alternatives such as kerosene, LPG or electricity to satisfy all their energy needs. Consequently, the outcry from urban charcoal users was predictably loud, and the measure was short-lived. The ban was lifted after only two weeks. Even while the charcoal ban was in effect, the production, trade and consumption continued – albeit under more difficult conditions. Since all charcoal use was officially illegal, transactions had to be carried out in hiding or at night. As a result, corruption at the checkpoints increased. The higher transaction costs were simply passed on to the consumer, with charcoal prices nearly doubling during the time of the ban. Charcoal prices have generally remained at these higher levels, even after the ban was revoked (see graph 1). Why this is the case has not yet been fully understood but will be explored in more detail in this paper.

<sup>2</sup> World Bank 2009.

<sup>3</sup> Through a simple modelling exercise it was estimated that an average annual loss of forest area of about 100,000–125,000 hectares may be attributed to charcoal production. These figures should be treated as rough estimates due to the complexity of the modeling exercise and limited data availability (World Bank 2009, p. 36 and pp. 49–51). Tanzania's total annual deforestation rate is estimated at 91,000 to 500,000 hectares (Milledge et al. 2007), but if and how much deforestation is only attributable to charcoal remains unknown.

**Figure 1 Trends in charcoal prices (in Tanzanian Shillings)**

Source: van Beukering et al. 2007; spot survey 2010.

The three observations made above call for a strategic effort to make the charcoal sector more environmentally sustainable while acknowledging the important role of charcoal for satisfying the energy needs of urban households in Tanzania, poor and non poor alike. Since charcoal cannot be easily replaced in the short term with alternative energy sources that are comparably affordable, policy measures are needed that aim at making charcoal

production and use more environmentally sustainable while avoiding to push the price of the product to a level that is prohibitive for poorer consumers. A strategic approach to reforming the charcoal sector would also be an opportunity to readjust its regulatory framework so that the sector's contribution to the government's revenue base would more adequately reflect its overall contribution to the country's economy.

**Figure 2 Economic and Environmental Issues and Challenges related to Tanzania's Charcoal Sector<sup>4</sup>**

The Central Role of Charcoal in Tanzania	Contribution to the National Economy	Environmental Challenges
<ul style="list-style-type: none"> <li>The contribution of wood fuels to total energy supply is estimated to be close to 95%, while this share is generally considered to be lower (60–90%) in most other Sub-Saharan African countries.</li> <li>Charcoal is the single largest source of household energy in urban areas, as it is considered cheap and easy to transport, distribute, and store.</li> <li>Between 2001 and 2007, the proportion of households in Dar es Salaam using charcoal climbed from 47 percent to 71 percent (see Figure 3 below).</li> <li>Approximately half of Tanzania's annual consumption of charcoal takes place in Dar es Salaam, amounting to approximately 500,000 tons.</li> </ul>	<ul style="list-style-type: none"> <li>The contribution of Tanzania's charcoal sector to employment, rural livelihoods, and the wider economy is estimated to be in the region of US\$ 650 million per year, providing income to several hundred thousand people in both urban and rural areas.</li> <li>These tend to be members of poorer households who work as small-scale producers or traders, and who often have limited alternatives for earning a living.</li> <li>Due to widespread evasion of licensing fees as well as production and transport levies, the contribution of the charcoal sector to government revenues and the broader tax base is limited.</li> <li>National and local governments are estimated to lose about US\$100 million per year due to their failure to effectively regulate the charcoal sector.</li> </ul>	<ul style="list-style-type: none"> <li>It is estimated that 30 million cubic meters of wood are needed annually to satisfy Tanzania's total annual charcoal consumption of 1 million tons per year.</li> <li>Although some wood for charcoal is harvested from forest reserves under license from the government, the bulk is harvested in unreserved forest areas on village land, or on farmland being cleared for agriculture.</li> <li>Continual, unregulated tree removal can result in deforestation and forest degradation, depending on the degree to which the wood production potential of the harvesting site is affected by the harvesting method and the subsequent land management regime (e.g. burning; grazing or browsing).</li> <li>This, in turn, can have negative impacts on the protection of water catchments and watersheds, affecting energy and water supplies alike.</li> </ul>

## KEY QUESTIONS GUIDING THIS ANALYSIS

Three key questions emerge from the discussion above: First, what are effective, environmentally sustainable policy measures to halt the rapid rate of deforestation and to address the loss of government revenue due to unregulated charcoal production, trade and utilization? Second, which of these policy measures could be feasibly and successfully implemented, given the political economy of the charcoal sector? Lastly, what would be the poverty and social impacts of such policy measures if they were to be implemented with the aim of making the sector more socially sustainable?

While the more technical aspects of desirable policy reforms in the charcoal sector have been analyzed and

documented in abundance – and for Tanzania have been summarized and updated in detail in the recently completed World Bank Policy Note on Transforming the Charcoal Sector in Tanzania<sup>5</sup> – the political economy is only poorly understood and mainly based on anecdotal “evidence.” Experience from other countries has clearly demonstrated that even already advanced reform processes or pilot programs are likely to fail in the medium to long term if the political dynamics that persist in the charcoal sector are neglected in the policy dialogue and program design.

The standstill with regard to charcoal sector reforms in Tanzania is often attributed to the enormous complexity and informality of the sector and thus its unmanageability, the lack of viable and affordable alternative energy sources,

<sup>4</sup> Adapted from World Bank 2009.

<sup>5</sup> Ibid.



or simply a lack of political will. These statements may or may not hold true, but they fall short of an explanation of why the sector seems so unmanageable, why fuel switching seems still out of reach, and why there seems to be little appetite to tackle the many challenges posed by an unsustainably producing charcoal sector in a politically comprehensive manner. In short, the challenge for policy makers, civil society, and development partners is to identify the drivers behind the sectoral standstill. This will allow for identifying entry points for a strategic engagement with charcoal sector stakeholders to find deal makers and breakers to facilitate much needed reform processes. Policy reforms that aim at making the charcoal sector more environmentally sustainable are hardly conceivable without increases in the price of charcoal. This raises concerns about the ability of poor and vulnerable groups in society and whether they would be able to pay the ‘sustainability premium’ that a sustainably operating charcoal sector would most likely require.

## OBJECTIVES OF THIS REPORT

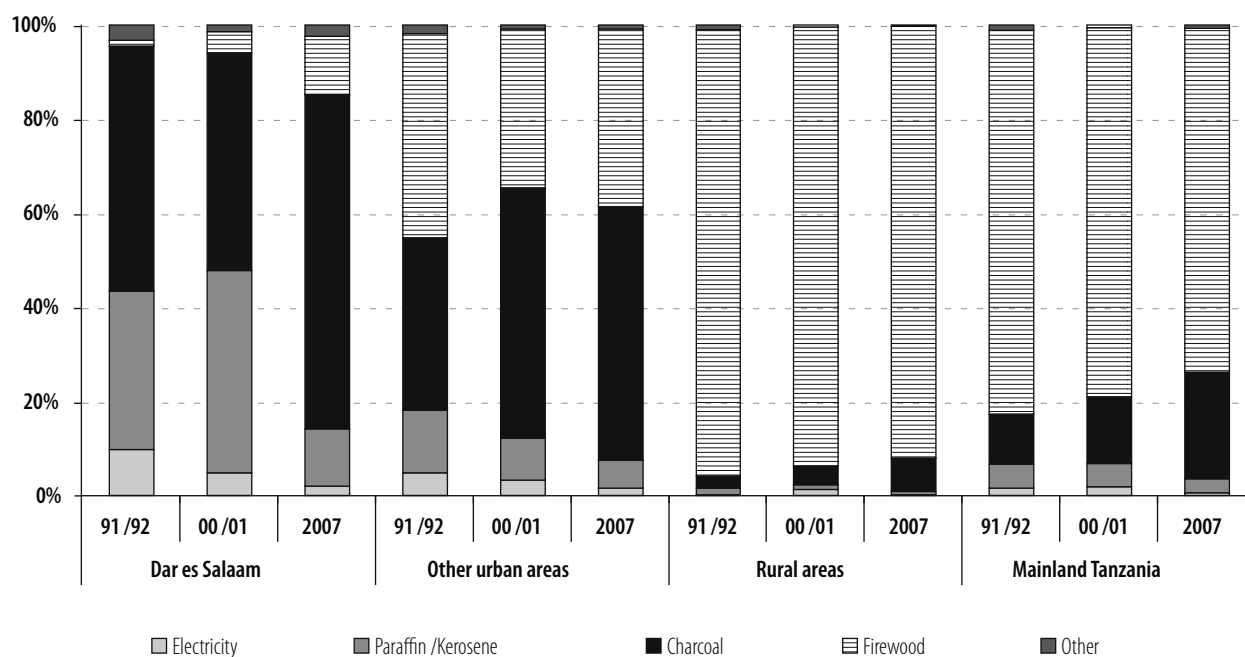
The main objective of this report is to explore the sensitive political economy issues surrounding charcoal sector reform in a systematic way, thereby underpinning anecdotal evidence with analytical results and finding explanations for otherwise unexplained social, political, and economic phenomena. Hence, this paper will contribute to answering the key questions posed above by

analyzing the political economy surrounding the charcoal sector in Tanzania, mapping out existing networks and power relations persistent in the sector and asking how they influence reform design and implementation. A potential reform agenda has already been laid out in the recent World Bank policy note<sup>6</sup>. This paper will assess the viability of these reforms based on the political economy analysis and by looking at their poverty and social impacts, with a particular focus on the poor and vulnerable.

The value added of this short note is to look at the charcoal sector as a whole with a political economy lens, trying to identify factors that pose an obstacle to reform design and effective implementation. The information about the political economy drivers behind sector reform or standstill can hardly be found in household budget surveys or national accounts datasets. Rather, this information lies embedded in the knowledge of the stakeholders in the sector, from government policy makers, district and village level authorities, to producers, dealers, transporters, wholesalers, retailers and consumers. The participatory approach underlying this analysis taps their knowledge systematically to provide analytical information to decision makers who are interested in adopting a realistic reform strategy. Furthermore, the poverty and social impact analysis will reveal whether and how much room there is for increases in the price of charcoal, whether households will be able to absorb higher prices, or whether there are ways to buffer potential price increases.

<sup>6</sup> Ibid.



**Figure 3 Sources of energy for cooking in Tanzania, 1991 to 2007**

Source: Government of Tanzania 2008: Household Budget Survey 2006/07



# 2 METHODOLOGY: POLITICAL ECONOMY AND POVERTY AND SOCIAL IMPACT ANALYSIS

This analytical work builds on a number of studies on Tanzania's charcoal sector that have been conducted in the recent past: some are more descriptive in nature, identifying the main actors, the business processes and transactions involved in charcoal production, trade and consumption<sup>7</sup>. Given the sector's high degree of informality and diversity, this is a much needed contribution to the debate around charcoal sector reforms. Other studies have explored the impact of the charcoal business on Tanzania's forests and woodlands, and the country's environment more generally.<sup>8</sup> Again others have set out to formulate concrete proposals for how to "green the charcoal chain" by promoting and implementing fuel switching, making charcoal production more efficient through improved kilns, promoting more efficient consumption with improved stoves, and piloting approaches to sustainable charcoal production such as community based forest management (CBFM) and establishment of wood lots.<sup>9</sup>

What is still missing is an analysis of the key political economy factors that can facilitate or inhibit a comprehensive political approach to reforming the charcoal sector to make it environmentally and socio-economically sustainable. The main objective of this

report is to provide a better understanding of the political economy of the charcoal sector, and of the likely poverty and social impacts on the poor and vulnerable that can be expected from implementing the most feasible policy reform measures. A case study approach was adopted with Dar es Salaam and the surrounding districts as the main study site since the by far largest share of charcoal utilization and production in Tanzania takes place in and around the country's most populous city.<sup>10</sup>

## 2.1 NET-MAP: AN INNOVATIVE APPROACH TO POLITICAL ECONOMY ANALYSIS

Political economy (PE) analysis is concerned with the interaction of political and economic processes in society: the distribution of power and wealth between different groups and individuals, and the processes that create, sustain and transform their relationships over time. Political economy analysis looks at how actors use their position to protect or strengthen their political or economic interests. PE analysis can reveal the conditions and processes under which political actors or political entrepreneurs maneuver within institutional contexts to build coalitions, negotiate, build consensus, and bargain

<sup>7</sup> For example CHAPOS 2001; CHAPOS 2002; Hoiser and Kipondya 1993; Malimbwi et al. 2007; Mwampamba 2007; Schlag and Zuzarte 2008; PREM 2007; van Beukering et al. 2007; World Bank 2006.

<sup>8</sup> For example Allen 1985; Hofstad 1997; Kilahama 2008; Luoga et al. 2000; Malimbwi and Zahabu et al. 2008; United Nations Environment Programme 2007.

<sup>9</sup> For example, Blomley 2006; ESD 2007; Evans 2004; FAO 2006; Palmula and Beaudin 2007; Heltberg 2004; Howells et al. 2006; Karekezi 2002; Mugasha and Chamshama 2008; Pender et al. 2006; Sanga and Jannuzzi 2005; Sawe 2005; Sepp 2008a and 2008b; The United Republic of Tanzania 2007, 2007a, 2007b, 2007c and 2008; World Bank 2007; WWF 2008; ZeinElabdin 1997.

<sup>10</sup> For more detailed information on the methodological approach taken in this analytical activity, see Annex 1.

to create, maintain or change policies, legislation, and institutions.

The political economy analysis in this study aims to identify and understand existing networks that prevail in the charcoal sector in Tanzania, assessing their interests and influence, and thereby identifying potential obstacles and opportunities to designing and implementing necessary policy reforms. By mapping out the key actors in the sector, determining their linkages, levels of influence, and goals, one can determine which groups are the most or least influential, identifying disempowered stakeholders who might stand to lose from reform implementation, determining who supports or who opposes a certain reform agenda, whether the links to an influential potential supporter would need to be strengthened, or whether one has to be aware of an influential actor who does not support the reform agenda.

This study employs the social network analysis tool *Net-Map*, developed by the International Food and Policy Research Institute (IFPRI) to analyze the actors and influence networks in the charcoal sector in Tanzania.<sup>11</sup> *Net-Map* is an innovative empirical research tool developed to better understand stakeholder networks by gathering in-depth information about stakeholders and their relationships, their goals, and their power and influence. *Net-Map* merges social network analysis with the methodology of power mapping in a participatory process. It has been tested and applied successfully by IFPRI and other institutional stakeholders.<sup>12</sup>

## KEY HYPOTHESES TO BE TESTED

Two key hypotheses to be tested were identified at the planning stage of this analytical activity, derived from the prevailing anecdotal evidence which suggests that:

(1) Influential networks in the charcoal sector maintain a system of informal institutions (i.e. rules, processes, organizations) that effectively undermines the establishment and/or enforcement of formal charcoal sector governance.

(2) The incentive structure that governs the charcoal sector both from bottom up (local governments not partaking in charcoal revenue collection) and top down (policy makers involved in the charcoal business profiting from the status quo) inhibits the design and enforcement of effective sector regulation.

## 2.2 POVERTY AND SOCIAL IMPACT ANALYSIS OF PROPOSED CHARCOAL SECTOR REFORMS

Poverty and Social Impact Analysis (PSIA) is an approach with the objective to assess intended and unintended consequences of policy reforms on the wellbeing or welfare of different social groups. The approach considers the effects of policy initiatives on all income groups, but particular focus is given to the poor and vulnerable. PSIA includes exante analysis of the likely impacts of specific reforms, analysis during reform implementation, and ex post analysis of completed reforms. Each of these has a specific utility: exante PSIA can inform the choice, design, and sequencing of alternative policy options. During implementation, the monitoring of a reform and its impacts can lead to refinement of the reform, a reconsideration of the pace/sequencing or institutional arrangements of the reform, or the introduction or strengthening of mitigation measures. Finally, ex post PSIA assesses the actual distributional impacts of a completed reform, which helps analysts understand the likely impacts of future reforms.

PSIA aims to identify winners and losers of reforms before they are implemented, thereby allowing decision makers to consider the trade-offs between different policy options and to reduce the risk of negative impacts of policies on the welfare situation of the population. In cases where potential negative impacts are identified, mitigating measures can be included in the design of the policy from the outset. The process of conducting a PSIA, which can comprise consultative and participatory processes including a wide range of stakeholders, has the potential to open up space for public policy dialogue and debate, to raise public awareness of important policy issues, and to build coalitions for reform.

<sup>11</sup> Schiffer and Waale 2008.

<sup>12</sup> For a brief but more detailed description of the *Net-Map* process and methodology, see Annex 1.

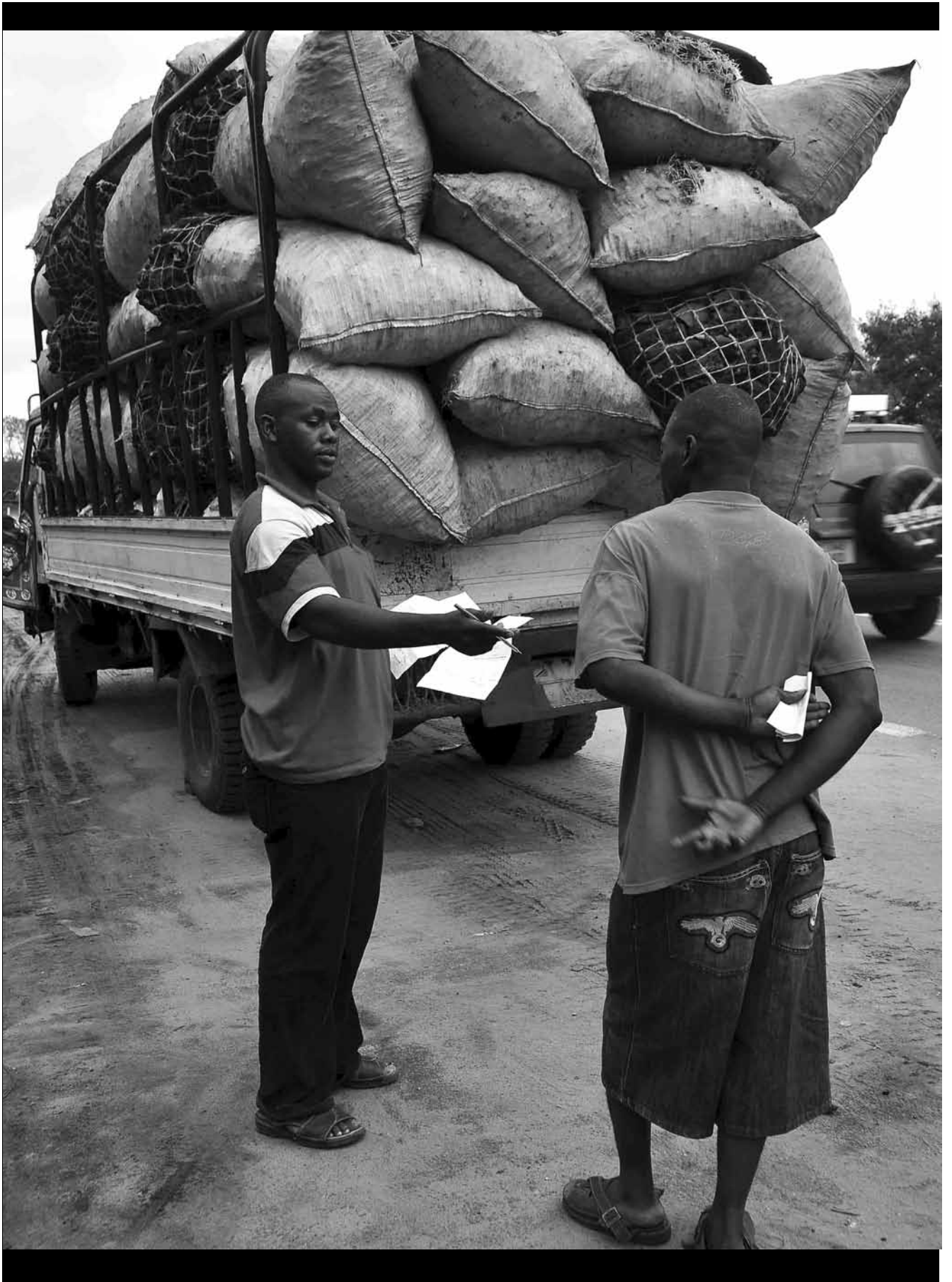




### KEY HYPOTHESES TO BE TESTED

Based on an initial assessment of the current business processes and governance structures in the charcoal sector, and informed by experiences with charcoal sector reforms in other countries, the following hypotheses were formulated:

- (1) Influence and profits in the charcoal value chain are concentrated in the hands of a limited number of powerful actors or institutions.
- (2) Implementation of the proposed key reforms in Tanzania's charcoal sector will result in a more equitable distribution of profits along the charcoal value chain, given that rules governing the sector will be effectively enforced.
- (3) Implementation of reforms and effective enforcement of rules will result in higher consumer prices, thus negatively affecting poorer households and their ability to pay for energy supply.



# 3 PROPOSED POLICY REFORMS FOR A MORE SUSTAINABLE CHARCOAL SECTOR

The objective of this paper is to assess the viability of policy reforms that have been proposed to make Tanzania's charcoal sector more environmentally, economically and socially sustainable, based on an analysis of the political economy of the sector and by looking at the likely poverty and social impacts of the proposed reforms. A variety of policy measures has been suggested by different actors and institutions; for the purpose of this analysis the various policy options are summarized in a coherent reform framework that covers four broad areas and a more detailed action framework as given in Table 1 below<sup>13</sup>

## STRENGTHENING MARKET TRANSPARENCY

The high degree of informality of the charcoal sector in Tanzania results in substantial uncertainty governing all transactions along the value chain. This not only increases transaction costs and imposes a significant burden on most stakeholders in the sector; it also makes collecting information about stakeholders, business processes and business volumes in the sector difficult. As a result, the sector is notoriously resistant to oversight, regulation and political management. Fully legalizing charcoal use and clarifying the regulations that govern the sector in one coherent framework would be a necessary first step that could have a catalytic effect for facilitating all subsequent reform steps.

## STRENGTHENING REGULATORY, FISCAL AND PRICING FRAMEWORKS & INCENTIVES

As many regulations currently governing the charcoal sector are either unclear, inconsistently enforced or regularly bypassed, the regulatory regime for charcoal production, trade and transport would need to be revised and simplified.<sup>14</sup> The revised regulations would then need to be communicated effectively to all relevant stakeholders in the sector. Producers and rural communities are particularly uncertain about their rights and obligations with regard to land and forest use for charcoal production, which creates a strong disincentive for sustainable forest management and charcoal production. Therefore, a first priority would be to legally clarify the roles, rights and obligations of producers and rural communities.

A second key element of the reform design would be to provide local and district government authorities with an incentive to be knowledgeable about charcoal sector regulations and to monitor and enforce these regulations effectively in charcoal production and trade. At present the largest share of the fees and taxes collected by these government entities has to be transferred directly to the central government, leaving them with little or no official reward for effective rule enforcement. This step would also require making the payment of fees and licenses easier,

<sup>13</sup> This section summarizes the policy reform options as put forward in the World Bank's recent policy note (World Bank 2009).

<sup>14</sup> A more detailed assessment of the formal governance framework of Tanzania's charcoal sector and its shortcomings is provided in section 4.1 (page 19).

more transparent, and easier to enforce and monitor, while minimizing the opportunities for corruption along the value chain. One possibility to achieve this would be through introducing fixed charcoal trading sites around urban centers that allow for easier trade and transport monitoring and oversight.

### MAKING CHARCOAL PRODUCTION MORE SUSTAINABLE

The current rate of deforestation points to a need to make charcoal production more environmentally sustainable. Measures to achieve this include scaling up community-based forest management, introducing management plans that meet management capacities of local institutions and people, incentivizing the establishment of small-scale plantations and woodlots at the household level including the planting of trees

outside forests, increasing the efficiency of wood conversion to charcoal through capacity building and training and the introduction of new kiln technology, and introducing fiscal incentives for sustainably produced charcoal making unsustainably produced charcoal more expensive. This again would require clearly delineating and communicating the rights and obligations of charcoal producers and local government.

### PROMOTING SUSTAINABLE AND EFFICIENT CHARCOAL CONSUMPTION

On the side of charcoal utilization, the easiest way to slow down the rising demand for charcoal is to promote more fuel efficient stoves that burn less charcoal for the same energy output. Other policy measures would be to promote fuel switching and alternative fuels. These, however, would incur greater investment costs.

**Table 1 Short and long term policy interventions as part of a comprehensive charcoal sector reform strategy**

OBJECTIVES	INTERVENTIONS	KEY INSTITUTIONS
<i>Addressing the regulatory, fiscal and pricing frameworks</i>		
<ul style="list-style-type: none"> <li>Creating incentives for sustainable charcoal sector management by allowing districts to retain a portion of licenses and fines collected from licensing charcoal</li> <li>Supporting districts to retain and reinvest charcoal revenues in revenue collection and sustainable forest management</li> <li>Fiscal incentives that reward sustainably produced charcoal and place additional fines on illegal products</li> <li>Creating a larger revenue base from which investments in sustainable forest management can be made</li> </ul>	<p><b>Short Term</b></p> <ul style="list-style-type: none"> <li>Identification of pilot districts with commitment and political will to reform charcoal trade</li> <li>Written authorization from MNRT to allow selected districts to retain percentage of charcoal fees and provide fiscal incentives for sustainably produced charcoal (CBFM or planted trees)</li> <li>Establishment of checkpoints at key points supported by training and supervision of checkpoint staff</li> <li>Technical support to districts on financial management procedures that encourage reinvestment of natural resource revenues</li> </ul> <p><b>Long Term</b></p> <ul style="list-style-type: none"> <li>Assessment of effectiveness of pilot program on increasing revenue base, improving forest services, and reducing deforestation</li> <li>Promotion of “success stories” and positive publicity for districts with political will, followed by expansion to other areas</li> <li>Establishment of a “Forest Fund” to manage increased revenues from charcoal</li> </ul>	<ul style="list-style-type: none"> <li>Forestry and Beekeeping Division</li> <li>PMO-RALG</li> <li>Ministry of Finance and Economic Affairs</li> <li>Selected “lead” districts within catchment area of major urban center with political will to reform finances</li> </ul>



OBJECTIVES	INTERVENTIONS	KEY INSTITUTIONS
<ul style="list-style-type: none"> <li>Moving toward transport based fees for charcoal</li> <li>Building fixed trading sites for the transport and trade of charcoal</li> <li>Increasing the number and effectiveness of fixed checkpoints</li> </ul>	<p><b>Short Term</b></p> <ul style="list-style-type: none"> <li>The gazettement of legal rules on transport based fees for charcoal by FBD</li> <li>Public information campaign on new rules and training of law enforcement staff</li> <li>Identifying suitable sites for trading around Dar es Salaam and supporting construction</li> <li>Construction of checkpoints around Dar es Salaam and targeted training and supervision for staff</li> </ul> <p><b>Long Term</b></p> <ul style="list-style-type: none"> <li>Expansion of activities piloted around Dar es Salaam to other regions of the country based on an evaluation of lessons learned</li> </ul>	<ul style="list-style-type: none"> <li>Forestry and Bee keeping Division</li> <li>Police</li> <li>Judiciary</li> </ul>
<b><i>Making Charcoal Production More Sustainable and Efficient</i></b>		
<ul style="list-style-type: none"> <li>Developing harvesting plans for forest areas administered by central or local governments</li> <li>Securing tenure for rural producers by scaling up community-based forest management in urban catchment areas</li> </ul>	<p><b>Short Term</b></p> <ul style="list-style-type: none"> <li>Identifying forest blocs on village land of sufficient size and condition that would support extensive charcoal management under community management</li> <li>Undertaking village land use mapping and planning exercises that secure village land tenure and identify areas of village forest suitable for community management</li> <li>Developing charcoal harvesting plans in village forests</li> <li>Supporting selected villages to reserve and declare village land forests</li> <li>Preparing harvesting plans in local authority and national forest reserves in selected areas</li> <li>Monitoring harvesting levels to ensure they are in line with agreed off-take levels</li> </ul> <p><b>Long Term</b></p> <ul style="list-style-type: none"> <li>Scaling up to other areas</li> </ul>	<ul style="list-style-type: none"> <li>Forestry and Bee keeping Division</li> <li>National Land Use Commission</li> <li>PMO-RALG</li> <li>Local governments</li> <li>NGOs with capacity in facilitating PFM (Tanzania Forest Conservation Group, Wildlife Conservation Society of Tanzania, etc)</li> <li>Ministry of Agriculture</li> </ul>
<ul style="list-style-type: none"> <li>Increasing supplies of wood for charcoal through plantations and woodlots</li> </ul>	<p><b>Short Term</b></p> <ul style="list-style-type: none"> <li>Developing a performance-based grant scheme that supports the establishment of plantations</li> <li>Design of silvicultural packages (seed sources, species, management, etc.) that can be rolled out in target areas</li> <li>Identifying individuals and groups with significant areas of land and interest in tree planting</li> <li>Launching grant scheme and ensuring close monitoring and compliance</li> </ul> <p><b>Medium Term</b></p> <ul style="list-style-type: none"> <li>Enhance property rights of households to their planted trees</li> </ul> <p><b>Long Term</b></p> <ul style="list-style-type: none"> <li>Linking producers to markets and technology (improved kilns) and supporting them through fiscal incentives (see above)</li> <li>Scaling up to other urban charcoal catchment areas</li> </ul>	<ul style="list-style-type: none"> <li>NGOs with capacity in tree planting and production</li> <li>FBD</li> <li>Community groups</li> <li>Individuals</li> <li>Private sector tree growers</li> <li>Support services</li> </ul>

OBJECTIVES	INTERVENTIONS	KEY INSTITUTIONS
<ul style="list-style-type: none"> <li>Increasing efficiency of converting wood to charcoal</li> </ul>	<p><b>Short Term</b></p> <ul style="list-style-type: none"> <li>Identifying suitable designs from other countries (e.g. Kenya)</li> <li>Training informal artisans to produce quality stoves</li> <li>Marketing support</li> </ul> <p><b>Long Term</b></p> <ul style="list-style-type: none"> <li>Expansion to other urban centers</li> </ul>	<ul style="list-style-type: none"> <li>Informal artisans in the private sector</li> <li>NGOs</li> </ul>
<b>Reducing Charcoal Consumption</b>		
<ul style="list-style-type: none"> <li>Promotion of fuel-efficient, domestic charcoal stoves</li> </ul>	<p><b>Short Term</b></p> <ul style="list-style-type: none"> <li>Identifying suitable designs from other countries (e.g. Kenya)</li> <li>Training informal artisans to produce quality stoves</li> <li>Marketing support</li> </ul> <p><b>Long Term</b></p> <ul style="list-style-type: none"> <li>Expansion to other urban centers</li> </ul>	<ul style="list-style-type: none"> <li>Informal artisans in the private sector</li> <li>NGOs</li> </ul>
<ul style="list-style-type: none"> <li>Exploring opportunities for commercially viable briquetting</li> <li>Fuel switching</li> </ul>	<p><b>Short Term</b></p> <ul style="list-style-type: none"> <li>Undertaking market survey for possibility of briquetting in Dar es Salaam or Arusha</li> <li>Linking entrepreneurs to financing sources</li> </ul>	<ul style="list-style-type: none"> <li>Private sector enterprises</li> </ul>

These detailed action steps would then feed into a communication strategy that should – ideally – be part of any policy reform agenda from the outset. This is particularly relevant in the case of charcoal sector reforms in Tanzania as some reform elements can be expected to trigger considerable resistance if policy makers fail to explain the rationale behind such expansive sector reforms. The following section will analyze the political economy surrounding charcoal sector reforms in detail.

# 4 THE POLITICAL ECONOMY OF THE CHARCOAL SECTOR IN TANZANIA

The analysis below is based on the Net-Map discussion meetings and key informant interviews conducted with 200 stakeholders in Tanzania between December 2009 and March 2010. As the formal governance framework of the charcoal sector has been described elsewhere in sufficient detail, the following section only provides a brief overview and then steps directly into the analysis of the *de facto* processes, relationships, interests and influence of the actors and institutions relevant for designing and implementing charcoal sector reforms.

## LESSONS LEARNED FROM THE CHARCOAL BAN IN 2006

Tanzania's experience with the two week-long ban on charcoal in 2006 constitutes a unique experiment that exposes the limited effectiveness of the formal governance framework of Tanzania's charcoal sector:

- The ban was imposed by the Minister of Natural Resources and Tourism for a period of two weeks; yet the production, trade and use of charcoal continued almost unabatedly, albeit under more difficult conditions. This points to the fact that MNRT officers (who share responsibility of implementing charcoal-related government policies in the districts) unsuccessfully attempted to enforce the ban, or colluded with charcoal entrepreneurs during the time of the ban.
- The purpose of the ban was to discourage the production, trade and use of charcoal. These issues

do not fall under the sole responsibility of MNRT, but are also the concern of several other government agencies, as will be explained in more detail in the following section. The fact that the charcoal ban was largely ineffective means that either (a) the policy measure to ban charcoal was not well coordinated among the different government agencies who are – at least partly – responsible for the subject matter; or (b) the monitoring and enforcement machineries of the other government agencies were as ineffective as MNRT's bureaucracy to successfully enforce the complete ban on charcoal.

- The points previously made support the proposition that the effective control over the charcoal sector does not lie with the government agencies formally mandated to govern the sector, but that effective decision making power lies elsewhere.

This chapter will analyze the formal governance framework of Tanzania's charcoal sector and explore possible explanations for why it is so ineffective. First, the regulatory overlaps and gaps will be examined; second, the incentives and disincentives this framework poses for government agencies at different organizational levels will be assessed; and third, the Net-Map methodology will be used to trace who has the *de facto* decision making power in the sector. As far as possible, recommendations for action to government will be derived from these analytical components.

<sup>15</sup> For example World Bank 2009; Malimbwi et al. 2007; van Beukering et al. 2007.

<sup>16</sup> We also limit ourselves to describing the stakeholder and institutional characteristics that are immediately relevant to the subject of this analysis and do not go into detail describing the functional roles of the various actors in the sector (e.g. what are the typical characteristics of households that produce charcoal). This background information has been provided competently by others in more detail than space would permit here, for example Malimbwi and Zahabu 2008; CHAPOSA 2002.

#### 4.1 THE FORMAL GOVERNANCE FRAMEWORK – REGULATORY OVERLAPS AND GAPS

The charcoal sector is characterized by weak governance, law enforcement, and other regulatory capacity. There is no comprehensive policy, strategy, or legal framework in Tanzania addressing the charcoal sector. Four ministries share responsibility, including the Division of Environment (DoE) within the Vice President's Office (VPO), the Ministry of Energy and Minerals (MEM), the Ministry of Natural Resources and Tourism (MNRT) – particularly its Forestry and Beekeeping Division (FBD), and the Prime Minister's Office–Regional Administration and Local Government (PMO-RALG). Over the years, each of these ministries has issued a range of legal and policy documents that directly or indirectly pertain to the charcoal sector (see box 1).

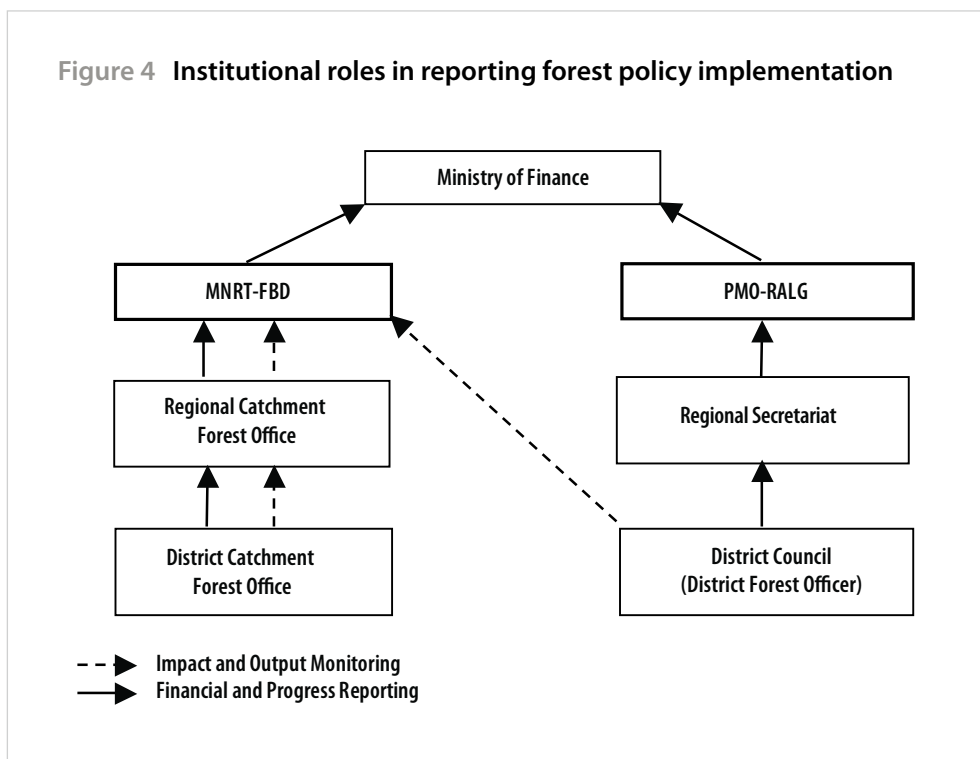
##### **Box 1 Selected key legal and policy documents relating to the charcoal sector in Tanzania**

- Guidelines for Sustainable Harvesting and Trade in Forest Produce, MNRT-FBD, 2007
- New Royalty Rates for Forest Products, MNRT-FBD, November 2007
- Community-Based Forest Management Guidelines, MNRT-FBD, April 2007
- Joint Forest Management Guidelines, MNRT-FBD, April 2007
- Charcoal Regulations, MNRT-FBD, 2006
- Environmental Management Act, VPO, 2004
- Forest Act, MNRT, 2002
- Subsidiary Legislation to the Forest Act, MNRT, 2002
- National Forest Programme, MNRT, 2001
- National Forest Policy, MNRT, March 1998
- National Land Policy, Ministry of Lands and Human Settlements Development, 1997
- National Environmental Policy, VPO, 1997

At the national level, FBD is presently the primary policy lead with regard to charcoal production. However, as wood is converted to and then used for energy, policy responsibility becomes more complicated. FBD remains responsible for managing charcoal transportation and trade, while MEM becomes involved as the primary policy lead on energy use. As such, MEM is responsible for the promotion of efficient charcoal burning stoves, supporting biomass energy projects (such as alternative briquette producers), and alternative energy sources (e.g. LPG, electricity, etc). The DoE has authority to oversee and coordinate the aforementioned line ministries to ensure protection of the environment, including requirements for environmental impact assessments. Hence, there is a substantial amount of shared responsibilities and overlaps.

At the sub-national level, FBD in the past had the primary responsibility for all forests in Tanzania and worked through its staff posted within different levels of local government, while vertical reporting lines were retained to the parent ministry – MNRT. Since the adoption of the Local Government Act (1982), forest officers have been decentralized and are now directly accountable to locally elected councils through the District Executive Directors, whose vertical line of reporting goes through the Regional Secretariat back to PMO-RALG at the central government level. This setup is complicated by the fact that forest reserves exist in many districts that are administered by central government due to their regional or national biodiversity or water catchment values. Such areas fall outside the domain of local government; their management is vested in District Catchment Forest Officers who work alongside District Forest Officers but are answerable to central government. This creates a situation where, as depicted in Figure 4,<sup>17</sup> similar duties related to forest policy and law implementation fall under the responsibility of two different ministries with different lines of accountability for planning and reporting.

<sup>17</sup> Adapted from Blomley 2006, p.8.

**Figure 4 Institutional roles in reporting forest policy implementation**

At the district level, the Charcoal Regulations and the Guidelines for Sustainable Harvesting require – among other things – the establishment of a harvesting committee. This committee includes participation from village representatives for areas where charcoal production occurs (§ 4c). The responsibilities of the harvesting committee are outlined in these regulations, but a number of provisions are insufficiently specified:

- The harvesting committee has the responsibility to develop district harvesting plans. **No guidance** is given in the regulations as to how a district should develop such a plan or what lands it should cover.
- The committee defines standards for granting permits to produce charcoal under section 7. It is **unclear**

whether permits for “harvesting” forest products, which the committee has authority to require, and a permit to “produce” charcoal are the same.

- The harvesting committee helps “local area authorities” to develop special areas for charcoal production. It is **unclear** whether these “local area authorities” include village governments.

The overlapping responsibilities between different central government agencies are visualized in Figure 5 below. It shows a Net-Map of all relevant stakeholders in the charcoal sector, with the arrows indicating formal lines of authority running from one actor to another actor.<sup>18</sup> On the left hand side are the relevant governmental stakeholders (in yellow), in the bottom middle are

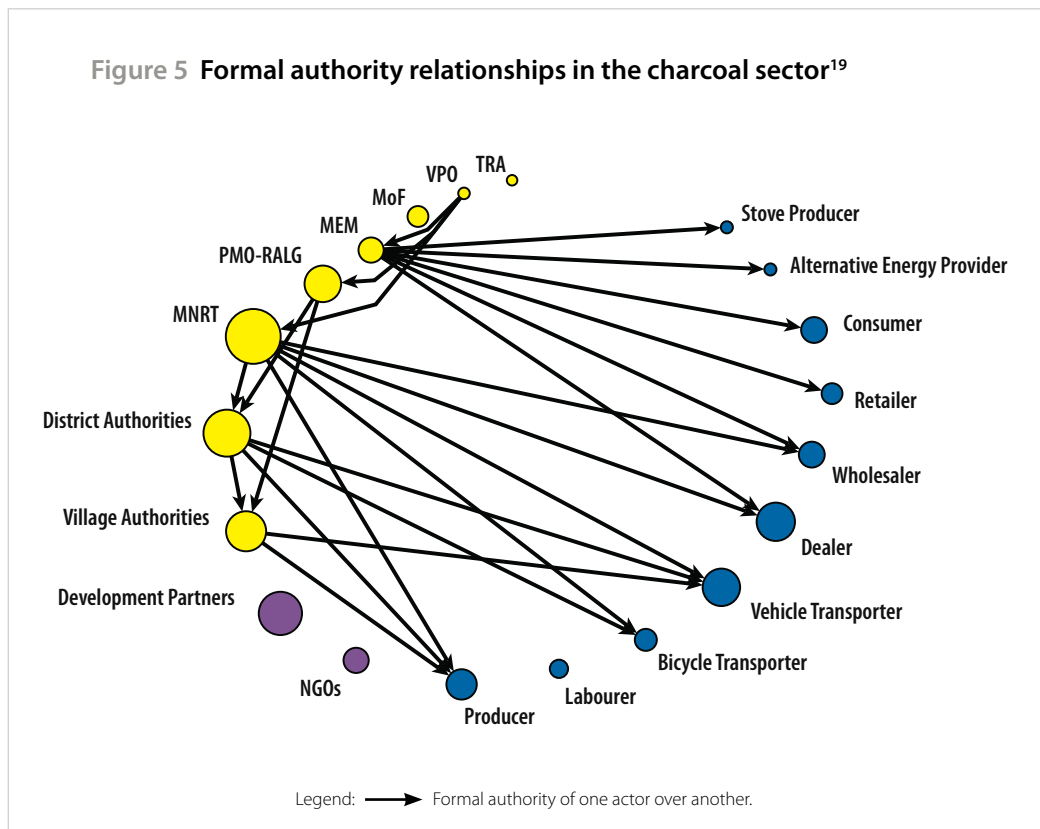
<sup>18</sup> Authority here is the legal mandate of one actor to set or enforce rules on another actor; it also manifests itself in the mandate to issue or withhold licenses and collect fees and taxes from stakeholders. In the charcoal sector, MNRT issues business licenses to stakeholders who commercially trade or transport charcoal, at a cost of TZS 205,000 per year (approx. US\$ 145). MNRT also issues charcoal production licenses, to be obtained in the districts from the District Forest Officer, at a cost of TZS 50,000 (US\$ 36) annually. When transporting charcoal, separate MNRT permits (TZS 4,000-6,000 per bag) and transit passes (TZS 1,000 per truck) need to be obtained from MNRT officials; bicycle transporters pay slightly different fees, depending on the size of the bags they carry. MNRT and district officials man checkpoints on the roads to urban centers to check whether the appropriate licenses and permits have been obtained, and to collect harvesting royalties (TZS 2,000 per 80-100 kg bag of charcoal, fully paid to MNRT) and a district levies (typically TZS 1,000-1,500 per bag). District Forest Officers are also tasked to monitor that charcoal is not illegally produced, i.e. without a production license or in protected forest reserves. Village level authorities usually decide where charcoal can be harvested (or at least where it is not to be harvested), and they collect forest royalties of TZS 200 per bag of charcoal, usually from the transporter.



development partners and NGOs (in purple), and on the right hand side are the sector stakeholders involved in charcoal production, trade or utilization, as well as the manufacturers of improved charcoal stoves and providers of alternative energy sources (e.g. briquettes, kerosene, LPG), in blue. The figure shows an overly complex governance structure of authority relationships between governmental and non-governmental actors, as well as

within the government system. The intricate composition of accountabilities creates an intransparent governance framework that facilitates the active (e.g. by making side payments) or passive (e.g. by accepting such payments) bypassing of formal sector regulations and poses a disincentive for implementing policy reforms that would make the practices in the sector more sustainable, as will be argued in the following section.

**Figure 5 Formal authority relationships in the charcoal sector<sup>19</sup>**



<sup>19</sup> All Net-Maps presented in this paper were drawn with Visone version 2.5.1, a software program for analyzing and visualizing social networks. The software is free for academic and research purposes and can be obtained from <http://visone.info>.

## 4.2 (DIS-)INCENTIVES FOR SUSTAINABLE CHARCOAL SECTOR MANAGEMENT AT DIFFERENT ORGANIZATIONAL LEVELS

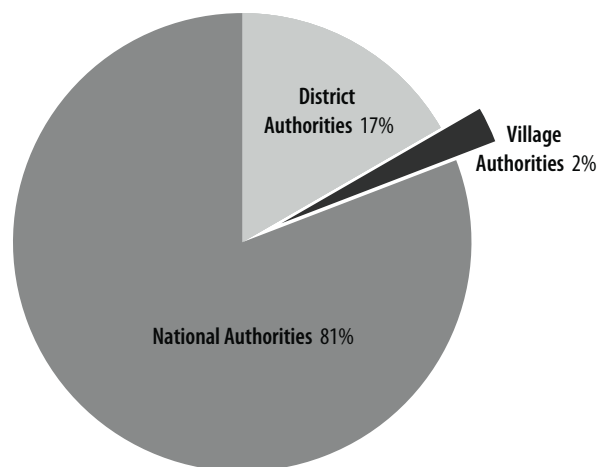
At the heart of the incentive problem regarding a more effective and sustainable management of the charcoal sector are three issues, stemming from the present regulatory setup of the sector:

**a) There is a lack of fiscal empowerment:** While district and village level authorities have the primary responsibility for licensing and regulating charcoal production and trade, very little of the total revenue can be legally retained at these sub-national levels (see Figure 6). All charcoal revenues, fees and fines are remitted to back to the Ministry of Finance and Economic Affairs (MoF). The lack of an effective benefit-sharing mechanism is a key factor in accounting for the chronic under-collection of charcoal revenues across the country.

**b) Legal empowerment: land use rights and ownership of forest assets are often unclear or unknown** to village and district level stakeholders, both government officials and non-governmental stakeholders. This includes information about the rights to declare a state or communal forest area as protected reserve or open for wood harvesting, e.g. for charcoal production. As a result, few communities proactively engage in managing the forest areas that surround them. Instead, the largest share of wood needed for charcoal production is harvested in unreserved forest areas on village land, or on farmland being cleared for agriculture. In such situations, little attention is given to considerations of sustainable harvesting or longer-term forest management objectives. Such continual, unregulated tree removal results in deforestation and forest degradation.

**c) Low capacity for policy implementation and enforcement** by government entities exacerbates stakeholders' uncertainty about which regulations apply to charcoal production, trade, or utilization. Forest offices in the districts rarely have the financial means (vehicles, fuel, etc) to monitor the area officially under their

**Figure 6 Retention of charcoal-related revenues, by level of government**



Source: van Beukering et al. 2007; spot survey 2010.

mandate. There is also little oversight from the central ministries as to how the regulations pertaining to the charcoal sector are enforced at the local and district level. The low capacity to enforce regulations and effectively collect revenues is further undermined by corruption at the checkpoints along charcoal transport routes. As a result, it is estimated that around 80 percent of the charcoal trade takes place outside the formal market.<sup>20</sup> Instead of obtaining the necessary licenses or paying the required fees, the majority of producers and traders choose to evade payments and, where necessary, pay bribes when challenged at government checkpoints or by traffic police, as reported frequently in the stakeholder focus group discussions.

As a consequence of these three factors, there is little incentive for national, district and village level authorities to engage proactively in sustainable management of charcoal production, trade or utilization:

**At the central government level,** MNRT and MEM – being the key central government agencies in this regard – view

<sup>20</sup> Malimbwi et al. 2007; spot survey 2010.

charcoal production, trade and utilization as a serious threat to Tanzania's natural resource base, as stated in the Net-Map discussion meetings with these actors. Hence, they have a **strong motivation to support charcoal sector reforms from an environmental point of view:**

- Charcoal is largely regarded as an unwanted energy source; in their view the country should move away from using charcoal as an energy source as quickly as possible.
- The government revenue collected from charcoal-related activities is seen as an unneeded contribution to MNRT's budget – a somewhat surprising observation given that harvesting royalties (from trees felled for charcoal production or for timber) account for over 90 percent of FBD revenues in the period 2001 through 2008.<sup>21</sup>
- However, for purposes of reporting, the royalties received from trees felled for charcoal production and those felled for timber are grouped together under "Forest Products" by the MoF. This makes it difficult to tell how much of FBD's revenue is generated from charcoal-related royalties, and it obscures the significance of the contribution of the charcoal sector to overall government revenue.
- These considerations constitute a strong incentive to impose a sanctions-oriented policy reform agenda that aims at discouraging charcoal production, trade, and use, rather than a sustainability-oriented, business-enabling reform agenda (as outlined in section 3 above).

However, while MNRT and MEM do not seem to have a strong formal incentive to support sustainability-oriented charcoal sector reforms, there are **incentives for them to support the informal nature of the status quo:**

- As part of the national authorities overseeing charcoal sector regulations, they get a major share of the (admittedly limited) government revenue that is generated from charcoal business (see also Figure 6)

- Central government stakeholders are at times perceived to be informal 'shareholders' in the business side of the charcoal sector, i.e. having an interest in the profits of dealers, vehicle transporters or wholesalers.

**District level authorities** neither systematically enforce nor substantially shape charcoal sector regulations or processes. This is no surprise given the incentive structure they face:

- Most charcoal-related revenues collected at the district level go directly into the budget of central government entities; little can be retained at the district or local level, e.g. for re-investment in sustainable charcoal production (establishment of tree plantations, more efficient kilns, etc) or other sub-national investment schemes.
- The share of forest revenues that can legally be retained at the district level are an important source of "untied" funding for district level authorities.<sup>22</sup>
- District councils play a key role in the approval and legalization of village land forest reserves, through their role in approving by-laws and management plans.
- This creates a potential conflict of interest as it results in valuable sources of local revenue being transferred downwards and away from district councils.
- Therefore, district level authorities have little incentive to monitor compliance with rules and regulations closely, let alone to proactively engage in sustainable management of the charcoal business.

**Village level authorities** see the forest resources in their communities shrink and have few options to counteract forest degradation and deforestation. While this would strongly speak for stricter rule enforcement with regard to charcoal production, there are a number of disincentives:

- Village governments are either unclear or unaware of their rights and obligations regarding the forest areas in and around their communities.

<sup>21</sup> Registration fees, compounding fees and export permits account for the remainder.

<sup>22</sup> It was frequently reported in the Net-Map discussion meetings that district officials create an informal stream of forest revenues, thanks to the informal nature of the status quo: first, passively as the recipients of side-payments from dealers (or transporters or wholesalers) to not interfere in their business processes; and second, actively when marketing confiscated forest products (such as illegally produced charcoal) informally for private profit, or even actively colluding with dealers to 'commission' illegal charcoal production and collecting a share from the final profit.

- They have no alternative but letting members of their communities produce charcoal unsustainably because there are few livelihood alternatives.
- The Net-Map discussion meetings in rural communities also showed that stakeholders were not aware of alternative means of forest management and charcoal production, such as Participatory Forest Management (PFM) or Community Based Forest Management (CBFM), or they heard of it being rolled out in certain pilot areas but perceived themselves as not having the means, the rights, or the know-how to implement such measures themselves.
- Village level authorities do not have the resources to invest in sustainable charcoal production. With a village revenue rate of about TZS 200 (US\$ 0.15) per bag of charcoal, village governments get only marginal shares of the charcoal-related revenues (see Figure 6).

A number of actionable recommendations to government emerge from the discussion of the complex governance structure of the sector and the resulting (dis-)incentives for sustainable charcoal sector management due to the lack of fiscal empowerment, uncertainty about land rights and forest asset ownership, and limited rule enforcement capacity:

## RECOMMENDATIONS FOR ACTION

### FISCAL EMPOWERMENT

- Diversify and strengthen the reporting on charcoal-related revenue collection within existing government systems and structures (including differentiated reporting on harvesting royalties collected from trees felled for charcoal production or for timber). This would create more transparency at all organizational levels of government as to what share of government revenue is generated from charcoal, and hence it would expose the contribution of the charcoal sector to the national economy.
- Match institutional responsibilities of village and district governments to implement and enforce charcoal sector policies with the right to retain a percentage of charcoal revenues, to be re-invested in sustainable charcoal production.

### STREAMLINING THE GOVERNANCE FRAMEWORK

- Close existing gaps in the formal regulation of the charcoal sector, as outlined in section 4.1 (e.g. the responsibilities of district harvesting committees) and establish a government 'roundtable on charcoal sector governance' to minimize the overlaps in charcoal sector regulation by different agencies. The roundtable could be coordinated by MNRT-FBD and include MEM, VPO, MLHSD, the National Land Use Planning Commission, as well as selected civil society organizations and development partners in an advisory role.
- MNRT, together with MEM, VPO, MLHSD, and the National Land Use Planning Commission issue, gazette and comprehensively communicate guidelines to village and district level authorities that clarify who owns the forest assets under question and that outline a process for (a) declaring or transferring ownership of such assets or (b) making use of these assets by way of passing by-laws and management plans.
- Fiscal empowerment is necessary to precede this step as otherwise the conflict of interest at the district level (approving / legalizing by-laws and management plans while giving up sources of revenue) can systematically inhibit the efforts of village governments at the district level.

### STRENGTHEN CAPACITY FOR POLICY IMPLEMENTATION AND ENFORCEMENT

- Educate village, district and central government actors about their rights and obligations regarding charcoal production, trade and use.
- Promote sustainable forest management practices such as PFM and CBFM, and provide training on sustainable production and utilization technologies to stakeholders in both rural and urban communities.
- Establish fixed trading sites around the urban centers in which charcoal is mainly consumed to simplify the collection and verification of charcoal-related fees and taxes while reducing the opportunities for informal business practices in interaction with government officials between the production and the trading site.
- Strengthen vertical accountabilities in MNRT, PMO-RALG and MEM to ensure compliance with centrally

formulated policies and directives at the sub-national level (and to avoid implementation failures such as the ban on charcoal in 2006).

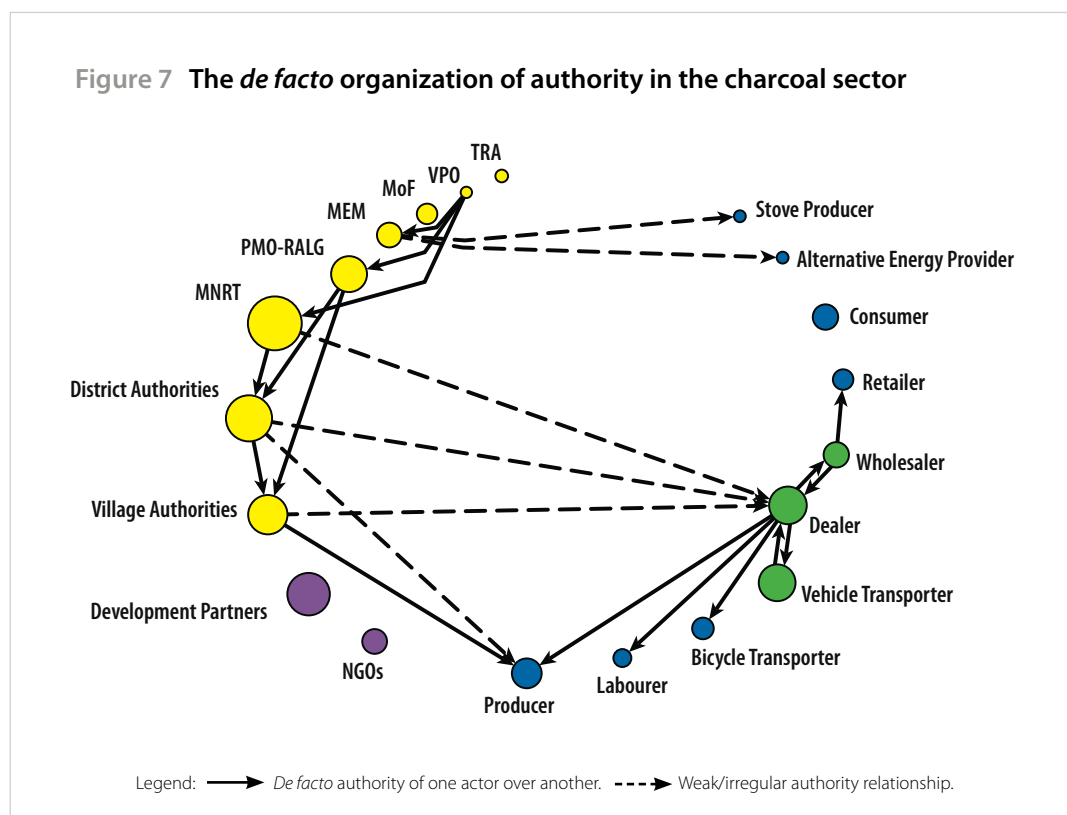
The question remains who are the *de facto* influential stakeholders who control the business practices in the charcoal sector. The experience from the (unsuccessful) ban on charcoal in 2006 has shown that it is most likely not the government agencies who solely control whether and how the charcoal sector operates. This question will be explored in the following section.

### 4.3 DE FACTO CONTROL OVER THE CHARCOAL SECTOR

The discussion of the complex, formal governance framework of the charcoal sector in Tanzania, the incentives

and disincentives associated with it, and the failure to enforce a complete ban on charcoal in 2006, suggest that Tanzania's charcoal sector does not function as written on government policy paper. Instead, one needs to look at the constellation of actors and institutions, their relationships and their influence to understand who commands the *de facto* decision making power in the sector.

Figure 7 shows the actors relevant to Tanzania's charcoal sector, with the size of the circle depicting the actor's relative influence in the sector. Influence is understood here as the power to shape processes and outcomes related to charcoal production, trade or utilization.<sup>23</sup> The arrows in Figure 7 show the authority relationships between the actors in the charcoal sector. *De facto* authority is the power of one actor to influence another actor to do something by compulsion or persuasion. Solid lines indicate strong *de facto* relationships of authority, exercised in and through



<sup>23</sup> The level of influence assigned to an actor naturally varied by discussion group. Since it can be assumed that governmental actors know more about government-internal processes and power relations than non-governmental actors (and vice versa), a discussion group's assessment of the influence levels of an actor belonging to a different activity sphere than their own (governmental or non-governmental) were discounted by a factor of 2/3. An actor's overall influence is the average level of influence of this actor (with the discount factor taken into account), normalized into an influence index as presented in Table 2. The size of the actor circles in Figure 7 is based on the value of the influence index.



regular interactions. Dotted lines represent weak links of authority through irregular interaction. The authority patterns displayed in Figure 7 were identified by overlaying the Net-Maps of producers, transporters, wholesalers, retailers, and government discussion groups which all showed similar or virtually identical features.

**Table 2 Stakeholder Ranking by Influence**

ACTOR	INFLUENCE INDEX
MNRT	0.90
District Authorities	0.66
Development Partners	0.56
Village Authorities	0.48
Dealer	0.44
Vehicle Transporter	0.42
PMO-RALG	0.40
Producer	0.37
Bicycle Transporter	0.30
Consumer	0.20
Wholesaler	0.20
NGOs	0.19
MEM	0.19
Alternative Energy Providers	0.16
Improved Stove Producer	0.14
Retailer	0.13
MoF	0.13
Laborer	0.10
TRA	0.05
VPO	0.04

The left hand side in Figure 7 shows the relevant governmental stakeholders (in yellow / light shading), in the bottom left are development partners and NGOs (in purple / dark shading), and on the right hand side are the sector stakeholders involved in charcoal production, trade or utilization, as well as the manufacturers of improved charcoal stoves and providers of alternative energy sources (e.g. briquettes, kerosene, LPG), in blue and green.<sup>24</sup>

A number of observations stand out:

- **Looking at the authority relationships between governmental and non-governmental actors**, one can compare Figure 7 with Figure 5 and immediately see that the complex authority relationships between the government and the non-governmental side of the charcoal sector have largely disappeared. They are replaced by brittle links of weak authority running between governmental (left) and non-governmental (right) actors in the charcoal sector; the only firm link of *de facto* authority runs from village level authorities to charcoal producers. Overall, the government seems to have lost its handle on the business side of the charcoal sector.
- **Among governmental actors**, the authority relationships remain *de facto* unchanged and run along the lines of formal institutional hierarchies.
- **The Ministry of Natural Resources and Tourism (MNRT)** is considered to be the most influential player in the sector (represented by the biggest dot on the map), which is understandable given the ministry's mandate to regulate most aspects of charcoal production, trade and utilization. It also has the power to change the policy framework of the charcoal sector.
- The next highest-ranked actors are the **district and village-level authorities** who have an important role in implementing and monitoring charcoal-related policies and who have the power to pass and approve by-laws that can alter the district-level policy framework for charcoal production and trade to a limited extent.
- **PMO-RALG** oversees the decentralization of government authority and is therefore in an important position to monitor how centrally formulated policies are implemented at the regional level and beyond.
- **Other governmental stakeholders** are not deemed to be very influential because they are seen to fulfill

<sup>24</sup> Not all actors were mentioned by all Net-Map focus groups, although a core set of actors was mentioned by all groups. Figure 7 is a summary map that includes all actors and institutions that were ever mentioned in any of the Net-Map discussion meetings, and their overall influence level as visualized by the size of their circle on the Net-Map.

mainly oversight and revenue collection roles that are in essence derived from the policy framework set by MNRT.

- On the side of the **stakeholders who produce, trade or use charcoal**, the dealers, vehicle transporters and wholesalers assume a central role as the authority relationships on the non-governmental side of the sector seem to run entirely through them. They are also seen as the most influential non-governmental actors by a quite substantial margin, followed by charcoal producers, as indicated by the size of the dots assigned to these actors.

Based on the Net-Map approach to political economy analysis, the following section analyzes why the government has limited control over how the charcoal sector functions in practice; it explores the central role of charcoal dealers, transporters and wholesalers, and it assesses the implications of this situation for designing and implementing effective, sustainability-oriented charcoal sector reforms.

## THE LIMITED CONTROL OF GOVERNMENT AUTHORITIES OVER TANZANIA'S CHARCOAL SECTOR

For the vast majority of non-governmental stakeholders who participated in the Net-Map discussion meetings, the authority MNRT and other central government actors is of rather 'atmospheric' quality. Policy changes, even fundamental ones such as the ban on charcoal in 2006, are felt distinctly, but only in certain activity spheres (production and transport became more difficult and hence more costly during the time of the ban) while the way the sector operates in practice remains *de facto* unchanged (trees were still being harvested without any payments for these forest resources, production and transport still took place, side-payments were still being made and accepted). Figure 7 exemplifies this with the weak authority links that run from the government to the non-governmental actors in the sector.

District level authorities are seen as influential actors who can have a discernable impact on the livelihoods of

producers, if only sporadically (e.g. when District Forest Officers fine illegally producing stakeholders, or when illegally produced charcoal is confiscated – keeping in mind that it is not always clear what constitutes 'illegal' charcoal production, given the uncertainty about and lack of clarity in sector regulations). However, they neither systematically enforce nor substantially shape charcoal sector regulations or processes, as discussed in section 4.2 above.

The only definitive link of *de facto* authority runs between the village level authorities and the producers. Charcoal producing households are typically embedded in rural communities where the orders of the village leaders are regarded as authoritative by all members of the community. Directives from district or central government authorities are regarded as far less imperative. For example, during the two weeks of the charcoal ban in 2006, charcoal producers looked to their village leaders for a decision on whether they really had to give up charcoal production and therewith a vital source of income, or whether they could continue producing charcoal.

The relatively intangible character of MNRT's and other central government agencies' authority over the charcoal sector stems from three main factors:

- New policies (or changes in existing policies) are practically not implementable because they pursue unrealistic goals (such as the total ban on charcoal in 2006, disregarding that charcoal is presently without alternative for most urban consumers) or they lack a coherent communication strategy that effectively translates the legal provisions of the policy into actionable instructions to district or village governments, even in remote areas of the country.
- Charcoal policy implementation and control of the sector is mediated through government institutions and officials who are either unclear about the full range of regulations, or who have an incentive to actively translate formal fee or tax payments into informal side-payments, bypassing official regulations for personal profit.<sup>25</sup>
- There is a lack of real-time information on the side of

<sup>25</sup> This incentive stems from the fiscal disempowerment of village and district level governments, and the weak vertical lines of accountability in MNRT, MEM, and other central government agencies, as discussed in section 4.2 above.

the government about how the non-governmental side of the charcoal sector functions in practice. Figure 14 and Figure 15 (Annex 2), both Net-Maps of central and local government discussion groups, visualize the exchange of information between the charcoal sector stakeholders. These figures show that there is virtually no exchange of information between governmental and non-governmental stakeholders, as perceived by the government.

The central role played by charcoal dealers, vehicle transporters and wholesalers is clearly discernable in Figure 7. The authority links indicate that government agencies mainly interact with these three key actors in their efforts to control the sector. Hence, the following section will analyze their roles, interests and influence in greater detail.

### **CHARCOAL DEALERS, TRANSPORTERS AND WHOLESALERS – WHO REALLY CONTROLS THE CHARCOAL BUSINESS**

Charcoal dealers, vehicle transporters, and wholesalers are the linchpin on the non-governmental side of the sector: In fact, these three actors are frequently one and the same, or one actor takes on the functions of another actor for a limited amount of time or for a certain number of transactions.<sup>26</sup> This is illustrated by the common lighter shading of their actor dots in Figure 7. It can therefore be difficult to engage with these actors, even if only for informational purposes, and more so when it comes to issues of sector governance and rule enforcement. One might be able to identify individual stakeholders in these dealer-transporter-wholesaler networks by looking at who obtained a charcoal business license, but this may only bring up the name of a person who is licensed to operate a charcoal truck or to run a wholesale site (licenses which are frequently shared by several individuals). It does not uncover the powerful networks these stakeholders belong to, held together by a common interest and sustained by patterns of regular communication, collaboration and support.

Key facts about dealer-transporter-wholesaler networks:

- Charcoal dealers (or vehicle transporters and wholesalers together with dealers, or acting as dealers, in the following referenced as dealers-transporters-wholesalers) are brokers and facilitators.
- They finance production, buy charcoal from rural producers, pay for transport, and are thus the main link between rural producers and their urban consumers.
- Dealers serve as the cash source to the sector. Apart from purchasing or financing charcoal, they hire transportation, labor, and typically pay all necessary licenses, registrations and permits, including for the transporter.
- The dealer owns the charcoal throughout the marketing process and is responsible for any marketing-related (or non-vehicle related) expenses en-route to the wholesaler or the market. Charcoal dealers therefore command substantial bargaining power and exercise considerable informal authority over the non-governmental actors in the charcoal sector.
- Dealers are well connected among each other and exchange information on production sites, charcoal prices and unfavorable government interventions (such as raids at illegal production sites). If a dealer finds the price charged by rural producers in a certain area too high or encounters roads that are impassable for transport vehicles, they direct their efforts towards other areas where prices are more favorable or roads are easier to pass.

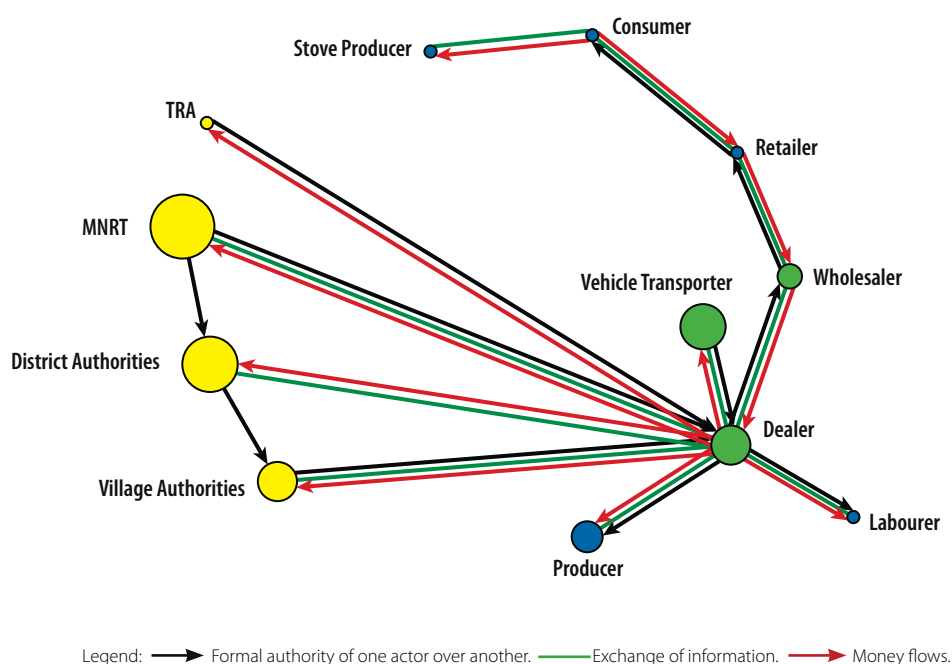
The central role played by dealer-transporter-wholesaler networks in the charcoal sector is further illustrated in Figure 10. It presents the Net-Map from a discussion meeting with wholesalers (some of whom stated to function as dealers). While the Net-Maps previously discussed (Figures 7 – 9) visualized either links of formal and *de facto* authority (black) or exchange of information (green), the Net-Map in Figure 10 shows both types of

<sup>26</sup> A person owning a truck for charcoal transportation might act as a dealer or might lend money to the dealer to procure charcoal in the villages to be transported to town using the truck owner's business. Or someone running a wholesale site might broker a charcoal deal in a charcoal-producing village, hire transport and bring the charcoal to town to be sold at his wholesale site. Every combination of actors and functions exists. For details see Malimbwi, and Zahabu 2008.

links in one map and introduces a third type of link – the exchange of money (one actor giving money to another actor, displayed in red). Although Figure 8 is the result of a discussion with charcoal dealers and wholesalers, the Net-

Map displays a typical pattern observed on the majority of all Net-Maps: the sector's business runs entirely through and is powered by the dealer-transporter-wholesaler networks.

**Figure 8 The central role of dealers in the charcoal sector (as perceived by wholesalers/dealers)<sup>27</sup>**

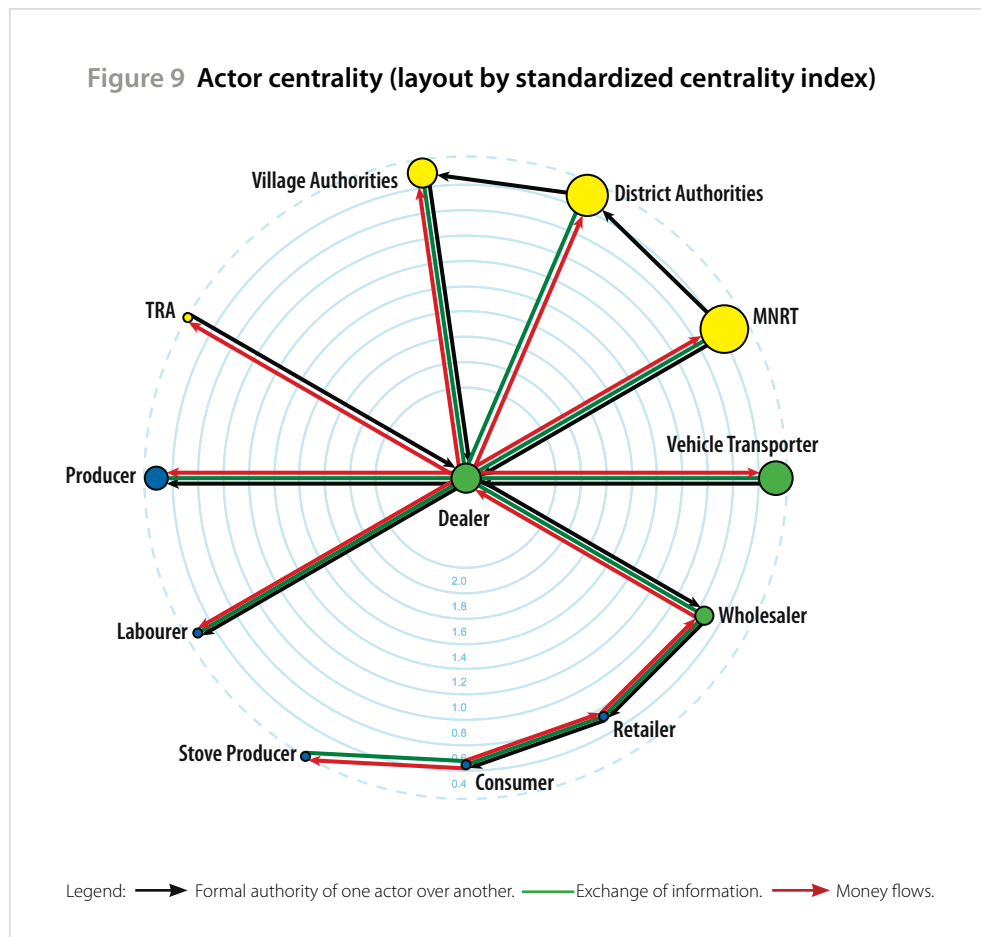


Charcoal dealers are not only perceived to have information about the interests and actions of all government actors (contrary to the government stakeholders who felt they did not have any information about the processes in the sector, as shown in Figure 14 and Figure 15 in Annex 2), they are also the cash source of the entire sector and connect the non-governmental actors with the central, district and village level authorities.

The central role played by dealers can be further specified: One can calculate the level of centrality of an actor in a

social network by counting the links that are going in and out of an actor's node, relative to the total number of in- and out-links in the network. For the Net-Map shown in Figure 8, a standardized centrality index was constructed with this method. Figure 9 depicts the result of this calculation, with the actors placed on a circular grid according to their centrality level. It clearly shows that dealers are by far the best connected actors and that most other actors are in a highly peripheral position.

<sup>27</sup> The size of the actor node again reflects the relative influence ascribed to this actor in the sector by this particular Net-Map discussion group.

**Figure 9 Actor centrality (layout by standardized centrality index)**

### INTERESTS AND INCENTIVES OF CHARCOAL DEALERS, TRANSPORTERS AND WHOLESALERS

As profit-maximizing individuals or groups, charcoal dealers (together with transporters and wholesalers) have a strong interest in maintaining the status quo, i.e. a largely informal system where the continuously high demand for charcoal by urban consumers guarantees the *de facto* functioning of the sector:

- Charcoal is produced and traded under an arrangement where official fee and tax payments can be kept at a minimum (it is estimated at 10 to 20 percent).
- Instead, well-known avoidance strategies are used to bypass formal sector regulations and to integrate government officials or institutions in an informal benefit sharing mechanism, i.e. charcoal

production and trade at night or over remote routes, in combination with side-payments to officials of all tiers in the government hierarchy.

With regard to the charcoal sector reform agenda as outlined in section 3 (page 12), this creates the following incentives for dealer-transporter-wholesaler networks:

- They would be strongly opposed to reform elements that aim at increasing the share of official payments to be made (currently estimated at 10 to 20 percent) while decreasing the discretion with which the dealers currently navigate all transactions along the charcoal value chain (which would be the case if vertical lines of accountability in MNRT, MEM, and other central government agencies would be strengthened).
- As these stakeholders depend on charcoal trade and transport for their livelihoods, they would also oppose



reform measures that could reduce the demand for charcoal in the medium term, i.e. any components of the reform program aiming at more efficient charcoal use (through improved cook stoves) or promotion of alternative energy sources such as LPG or biomass briquettes.

- However, the dealers' dependence on charcoal trade and transport also implies that they may find those components of the reform program favorable that intend to make charcoal production more sustainable because this would ensure continued business opportunities in the future.
- Hence, the support or opposition of this stakeholder group to a sustainability-oriented reform agenda depends on whether policy makers can successfully convince this stakeholder group that its benefits would outweigh the risks. If sector reforms are simply seen as a way to introduce new control and sanctions mechanisms, it is likely to meet strong resistance from dealer-transporter-wholesaler networks. If it is also viewed as a business opportunity, their political support (or at least acquiescence) may not be completely unthinkable.

A number of recommendations emerge if government is to regain control of the charcoal sector and wants to shape how the sector functions in practice.

## RECOMMENDATIONS FOR ACTION

### SETTING REALISTIC GOALS AND EXPECTATIONS

- As a first step, an open dialogue is needed within the Tanzanian government to decide in which direction the charcoal sector should be moving. A fundamental strategic decision is to be taken that can shape the future of the sector in either one of the following ways:
- Charcoal cannot be easily substituted with comparably affordable and readily available energy

sources in the short to medium term. On the basis of this premise, a (sustainability-oriented) reform agenda is needed that emphasizes the legitimacy of charcoal as an energy source while trying to make its production, trade and utilization more sustainable. This in turn requires an adequate policy framework that can generate the revenue needed to be reinvested at the district and village level into sustainable production practices, and that can be used at the national level to support initiatives that promote more efficient use of charcoal and use of alternative energy sources.<sup>28</sup>

- This open dialogue within government would include the need to openly discuss the interests of government officials at stake. As many central, district and village government officials are reported to be involved in the business side of the charcoal sector, a sensible way forward to deal with these interests during reform design and implementation needs to be identified. A 'charcoal sector roundtable', as suggested above, could be helpful in this regard.

### STRENGTHENING VERTICAL ACCOUNTABILITY AND EXCHANGE OF INFORMATION

- Strengthen vertical accountabilities and reporting mechanisms in MNRT, PMO-RALG and MEM to ensure compliance with centrally formulated policies and directives at the sub-national level, and to gather real-time information about the *de facto* functioning of the charcoal sector in practice.
- The establishment of fixed trading sites around and in urban centers can simplify the collection and verification of charcoal-related fees and taxes while reducing the opportunities for informal business practices of government officials and charcoal sector stakeholders.

<sup>28</sup> The alternative would be a sanctions-oriented reform agenda that is based on the premise that charcoal is an undesirable and environmentally damaging energy source that is to be substituted as quickly as possible with alternative energy sources. This would call for measures that discourage the production, trade and use of charcoal by implementing an effective rule and sanctions regime. However, it is not clear whether this is realistic, given that over the past 7 years the number of households using charcoal has significantly increased.

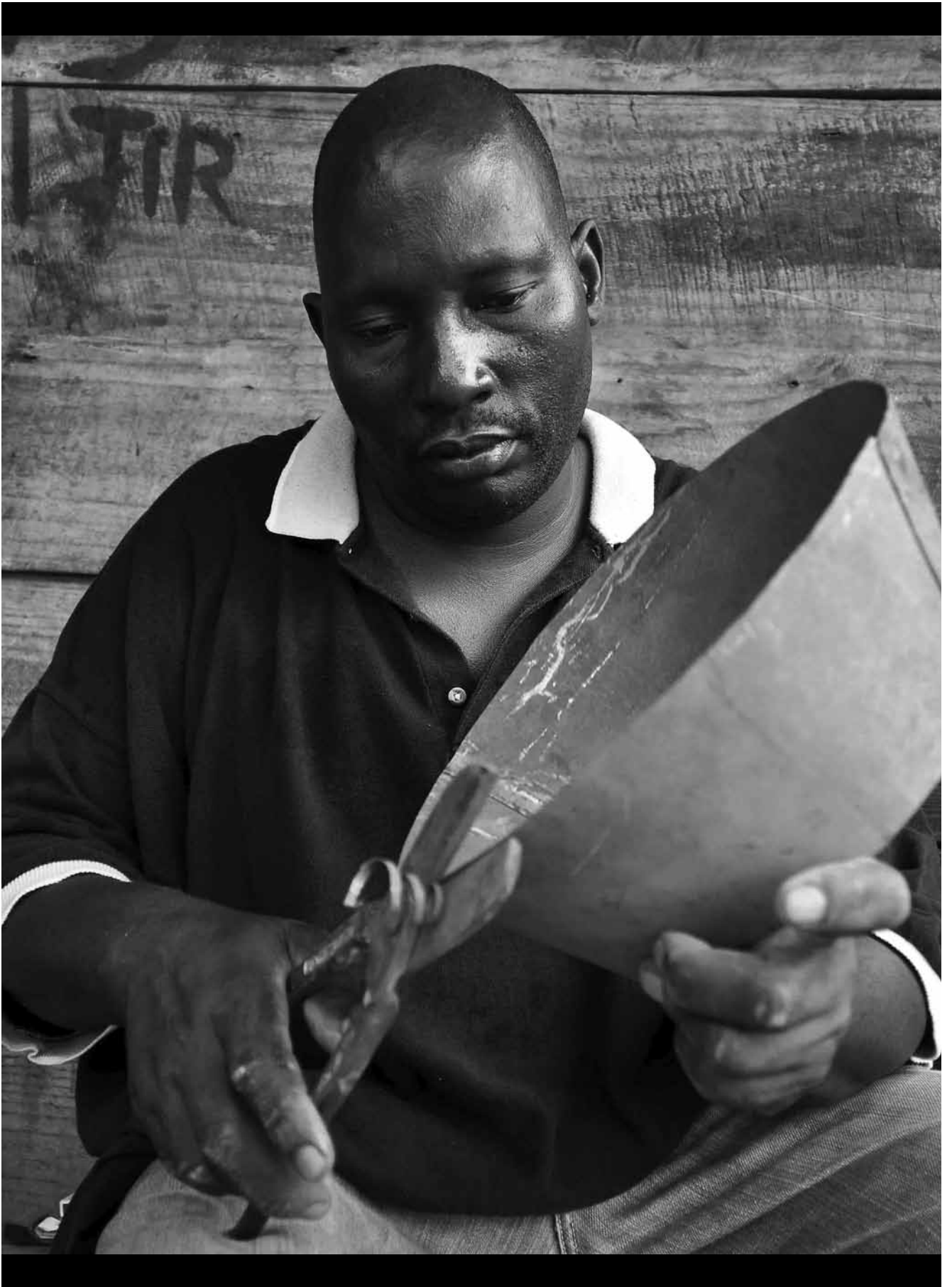
## ENGAGING WITH CHARCOAL DEALER-TRANSPORTER-WHOLESALE NETWORKS

- MNRT, MEM and other key central government agencies engage in a dialogue with the dealer-transporter-wholesaler networks who exercise substantial *de facto* control over the charcoal sector.
- Convert the currently irregular and informal interactions with this stakeholder group (mainly through village and district level authorities) into a more formal relationship with regular meetings, also including central government agencies, to get a better understanding of how the sector functions in practice and to include this critical stakeholder group in the design of charcoal sector policy reforms from the outset.

The government, until now, seems to be missing an entry point of how to engage with the dealer-transporter-wholesaler networks. However, the missing entry point seems to be neither of geographic nor of individual nature. Dealers, transporters and wholesalers can be found at wholesale sites and near charcoal trucks. Even though the individual in charge may not be known, he can be found –

or at least contacted – through his agents. This means that what has been missing so far is an explicit commitment by central government actors to wholeheartedly engage in a comprehensive sector reform. Once this decision has been made, the connections of government officials both centrally and on the district level can be used to identify and engage with the individuals who make the decisions on the business side of the charcoal sector. Then an effective reform proposal acceptable to both sides can be brokered.

The previous discussion has shown that an open dialogue both within the government system and between government and dealers-transporters-wholesalers as the key actors in the charcoal sector is necessary to render the design and implementation of viable policy reforms politically feasible. The remaining question is how a sustainability-oriented reform agenda as outlined in section 3 would affect the other stakeholders in the sector, what would be the overall poverty and social impacts, and how this would affect support or opposition to the reform agenda. This question will be explored in the following section.



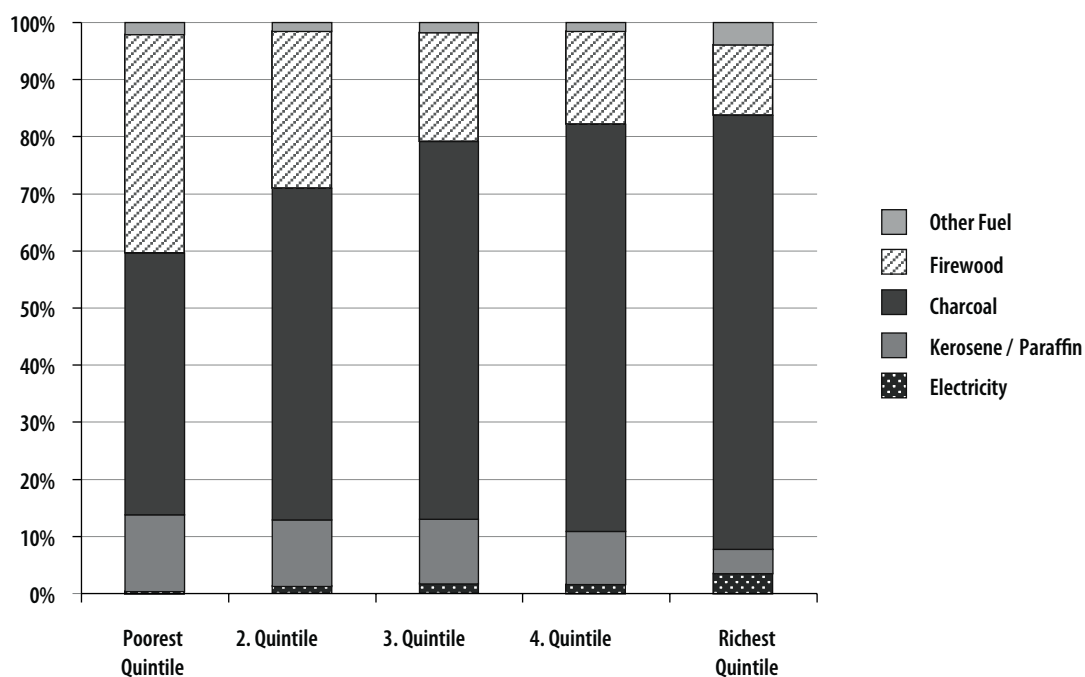
# 5 POTENTIAL POVERTY AND SOCIAL IMPACTS OF CHARCOAL SECTOR REFORMS

Since the two week-long ban on charcoal in 2006, the price developments in the charcoal sector have been astounding. All stakeholders used the period of the ban as an opportunity to mark up prices considerably and essentially held prices up even after the ban was lifted. Figure 1 (page 2) illustrates the remarkable increase in charcoal prices at all levels since the time of the ban. The price charged by producers has gone up by 50 percent; wholesalers charge 83 percent more than immediately after the ban, and retailers have marked up their margin by 108 percent. Given the ever increasing amounts of charcoal being transported into urban areas, the price elasticity of demand seems to be minimal. How do these price changes affect charcoal consumers? Do charcoal users, especially the poor, still have room for further price increases? Who are the stakeholders profiting most from the current setup of the sector, and how would their profits change under reform implementation? Taking into account the expected effects of consumers and charcoal producers, dealers-transporters-wholesalers, and retailers, what are the implications for reform design?

## 5.1 CHARCOAL USE AND EXPENDITURE ON CHARCOAL

### THE CENTRAL ROLE OF CHARCOAL

Figure 10 demonstrates the pivotal role of wood-based fuels among the energy sources used for cooking by urban consumers, shown by income quintile. In all income groups, charcoal is by far the most important energy source for cooking. It ranges from 46 percent of the households in the poorest quintile up to 76 percent of the households in the richest quintile who mainly cook with charcoal. The figure also indicates that in all income groups, firewood is still used for cooking by a significant number of households due to its affordability. In the two poorest quintiles, firewood is still used by 38 percent and 27 percent of households, respectively. Charcoal is mainly used for cooking by urban consumers, as Figure 3 shows. Therefore the following analysis focuses on households in Dar es Salaam and other urban areas.

**Figure 10 Source of energy used for cooking by urban consumers, by income quintile**

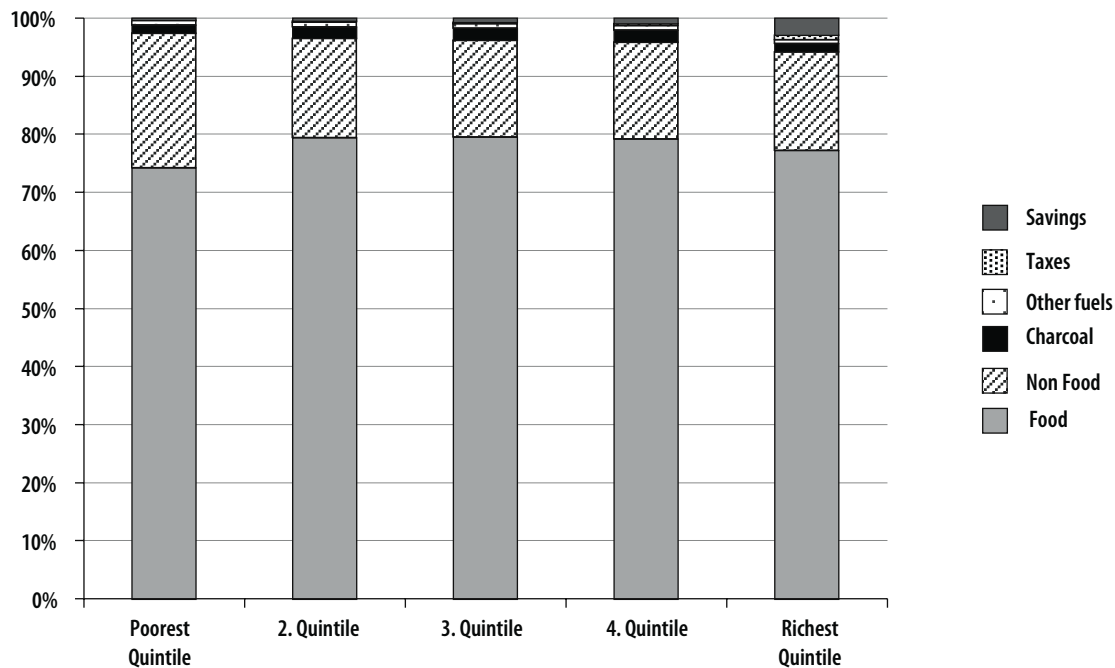
### HOUSEHOLD EXPENDITURE AND ROOM FOR FURTHER PRICE INCREASES

Looking at the expenditures of urban households in Tanzania (Figure 11), one can see that the overwhelming majority of households across all income groups spend well over 95 percent of their income on food and essential non-food items (see Annex 2, Table 3 and Table 4) for detailed expenditure shares for households in Dar es Salaam and other urban areas). Charcoal expenses take up a major share of the otherwise minimal remaining household resources. Therefore, the room for increases in the price of charcoal is marginal. Even for the wealthiest 20 percent, a rise in charcoal prices would quickly force them to consume less charcoal (which is a strong incentive for using improved cook stoves) or to substitute charcoal through cheaper fuel sources (i.e. firewood) or forego other – most likely non-food – expenditures.

The cut-back in non-food expenditures could appear in essential expense categories such as education (children's

school fees) or health care, which can have a substantial negative impact on families' well-being and income, particularly for children and women. If expenditure on food items is reduced (through buying lower quality foods or less food altogether), this could result in a lower calorie intake, negatively affecting especially children (whose body and brain development critically depends on sufficient nutrient supplies) and women. Some form of substitution behavior or more efficient charcoal consumption must have happened already, given that the statistics presented here are based on the Household Budget Survey of 2006/07, which was conducted around the time of the charcoal ban. Since then the retail price of charcoal has increased by 108 percent. As no newer household expenditure survey data exists, one cannot say with certainty through which compensation or substitution strategy households have coped with the higher energy costs.



**Figure 11 Expenditures of urban households by income group**

Data source: HBS 2007.

## 5.2 PRICE EFFECTS OF CHARCOAL SECTOR REFORMS

As there seems to be no room for charcoal price increases, reform-induced or otherwise, one needs to look at how the price of charcoal might actually develop if sustainability reforms were implemented. Given the limited availability of reliable price data in the charcoal sector, such projections have to be treated with great care. All prices contain an unknown percentage of unofficial side-payments made on route from the production site to the final marketing place. It is estimated that only 20 percent of all taxes and levies are actually paid to the authorities.<sup>29</sup> However, some general trends can be identified in Figure 12. Due to a lack of disaggregated data for each actor, only the aggregate 'costs and profits' are shown in this

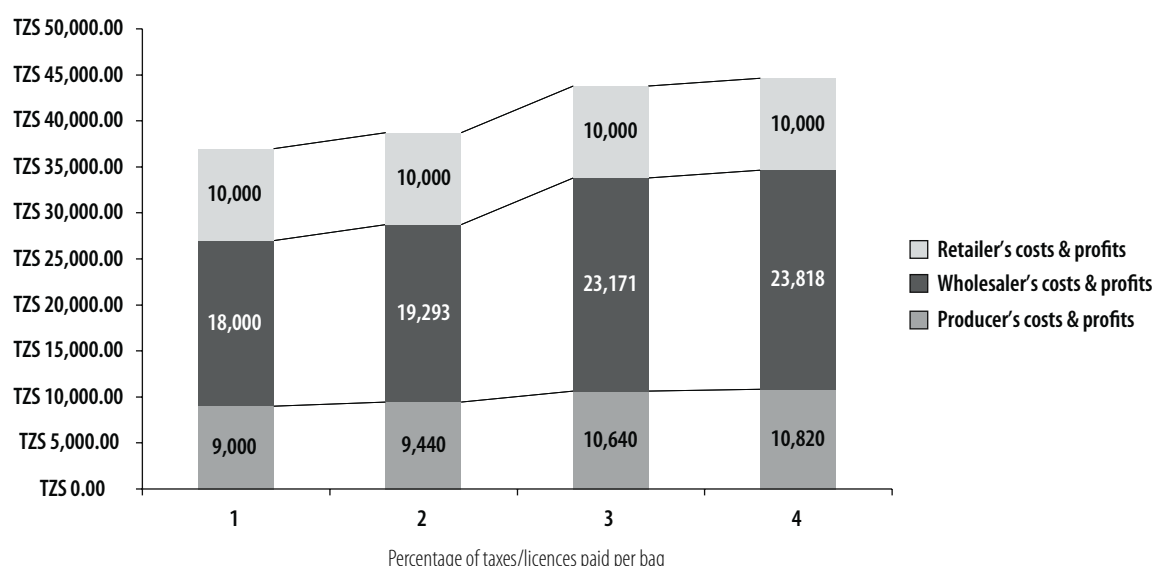
graph. Wholesalers are taken as a proxy for the dealer-transporter-wholesaler networks; wholesale sites are the most reliable price points that are easiest to track, and – as explained earlier on – it would be difficult to determine who pays the taxes and fees of these three actors because this frequently changes. Retailers are small-scale vendors who typically do not pay any charcoal-related taxes and fees; hence their cost-profit share remains constant.

Figure 12 yields the following key observations regarding potential price effects of sustainability-oriented charcoal sector reforms:

- The first bar shows the situation in the status quo with only about 20 percent of all charcoal-related taxes and fees being paid.<sup>30</sup> This results in a current

<sup>29</sup> Malimbwi et al. 2007; World Bank 2009.

<sup>30</sup> van Beukering et al. 2007; spot survey 2010.

**Figure 12 Charcoal price projections, per 80-100kg bag**

Sources: van Beukering 2007, CHAPOSA 2001, spot survey 2010.

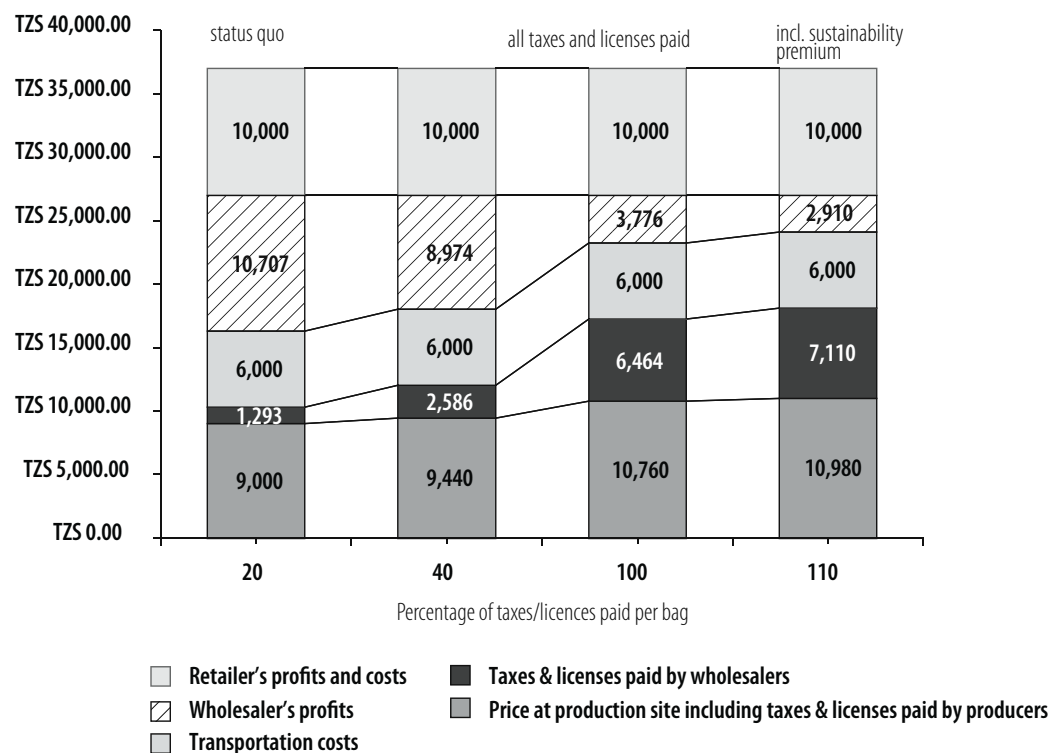
consumer price of TZS 37,000 per bag of charcoal (US\$ 25.50). If charcoal sector reforms were effectively implemented, more revenue would be collected for central, district and local level authorities, to be partly reinvested in more sustainable charcoal production and consumption.

- Bringing tax and fee collection up from 20 percent to a hypothetical 40 percent enforcement rate and assuming that all additional costs would be passed on to the consumer, urban charcoal consumers would have to absorb a 4.7 percent increase in the retail price of charcoal.
- Increasing tax and fee collection up to 100 percent, a state where all necessary dues were paid to the authorities, and still assuming that all additional costs would be passed on to the consumer, urban charcoal consumers would have to absorb an 18 percent increase in the retail price of charcoal.
- Imposing a 10 percent sustainability premium on

the sector, in addition to 100 percent tax and fee collection, would result in a total increase in the current retail price of charcoal of 20 percent. The premium would be charged on charcoal coming from unsustainably managed forests, unsustainably produced charcoal or illegal forest products in general. This would put an incentive on sustainable charcoal production generating financial resources that can be used to further promote sustainable production and efficient consumption.<sup>31</sup>

While it may not be realistic to assume that revenue collection would triple or even quintuple in the short term, the projection shows that it would impose a substantial additional cost (if passed on to consumers) which the bottom four income groups could hardly absorb. On the other hand, urban households seem to have coped well with the 108 percent increase in the price of charcoal since 2006; or – more likely – they simply have no alternative.

<sup>31</sup> For details on the sustainability premium model, see World Bank 2009, page 37.

**Figure 13 Projected costs and profits of charcoal wholesalers, per 80-100kg bag**

Sources: Spot survey 2010; van Beukering et al. 2007; CHAPOS 2002.

A realistic short to medium term goal might be to increase the share of taxes and fees paid from 20 percent to 40 percent and to impose a sustainability premium of 10 percent, resulting in a 7 percent increase in the retail price of charcoal. However, given consumer's extremely limited ability to pay, one can look at a different scenario where the additional costs are absorbed by the actor with the seemingly greatest cost-profit share – the wholesaler.

Looking at the wholesalers' cost-profit situation, Figure 13 unbundles the wholesaler proxy as far as possible. Holding the final consumer price constant, Figure 13 shows how the wholesaler's profits change given the percentage of taxes and fees he has to pay and given that he has to pay a lump-sum amount of vehicle transport costs per

bag (which is typically the case when transportation is hired by dealers or wholesalers). With 100 percent of taxes and fees paid, or with all taxes and fees paid and an additional sustainability premium of 10 percent, the wholesaler's profits would shrink by 65 percent or 73 percent, respectively. In case the share of taxes and fees paid was doubled from the status quo to 40 percent, the wholesaler's profit would be marked down by only 16 percent. With an additional sustainability premium of 10 percent, the wholesaler would already make a quarter less profit (24 percent). This suggests that a doubling current revenue collection may still be feasible, while any measures going beyond this might be met with strong resistance.

## THE SITUATION OF CHARCOAL PRODUCERS AND THE INCENTIVES THEY FACE

The situation of charcoal producers seems to be somewhat paradox: the entire sector depends on them for a continuous supply of charcoal, and yet they are the most disempowered stakeholder in the sector:

- Producers have little knowledge about their rights and obligations regarding the forest resources they rely on.
- They are largely unaware of improved production technologies and lack the means to use them.
- Charcoal producers lack bargaining power vis-à-vis the dealer-transporter-wholesaler networks and they report to be subject to arbitrary rule enforcement acts by district level officials.<sup>32</sup>
- The lack of bargaining power partly stems from the producers' inability to form associations or organized interest groups. Living scattered across rural areas, they lack the means of communication and transportation, they are discouraged by the cumbersome processes of district bureaucracy, and they do not necessarily see the value added of putting effort into a concerted process whose payoff they cannot immediately see.
- As producers generally do not pay any harvesting royalties, fees or taxes at present (this is usually done by the charcoal dealer or transporter, if only sporadically), they have little incentive to support a sustainability-oriented reform agenda that would put a cost the forest resources that are used for charcoal production.

Nevertheless, the Net-Map discussion meetings showed that charcoal producers are largely in favor of sector reforms as they expect more clarity and certainty over the regulations that apply to them, and they hope to be empowered regarding the ownership rights over forest assets, which would give them an incentive to manage forest areas more sustainably (e.g. through CBFM or PFM

mechanisms). They are also uneasy about the prospect of having to pay for the forest resources which they are currently using at no cost. However, a communication strategy for the proposed policy reform agenda could clearly explain that the benefits for charcoal producers would outweigh their additional costs substantially: without switching to sustainable production practices there will soon be no forest areas from which to produce charcoal. In addition to paying for the production of charcoal from natural forests, two further options exist: First, charcoal producers may establish their own small woodlots from which they produce charcoal or they pay those households that own trees for the wood to produce their charcoal. It remains a point for discussion in future charcoal sector reforms whether wood produced on a smallholder basis should to be charged or exempt from a harvesting tax charged by the forest service.

## OTHER CHARCOAL SECTOR STAKEHOLDERS, THEIR INTERESTS AND ANTICIPATED IMPACTS

The consumer's ability to pay for charcoal seems already stretched to the maximum. Therefore, reforms would need to be designed so that the burden of additional costs would be put on those who can more easily cope with them (i.e. the dealer-transporter-wholesaler networks). It is also a legitimate question to ask whether the retailer should not take over a share of the charcoal-related fees and taxes. This seems to be an attractive proposal from a burden-sharing point of view, but it may be difficult to implement given that retailers are small street vendors who rarely run registered businesses. Who will bear the burden of higher charcoal-related costs is also a matter of who can decide what to charge and what to pay. Hence, it becomes a question of bargaining power and empowerment.

The pricing power in the sector is currently concentrated largely in the hands of the dealer-transporter-wholesaler networks. To prevent them from pushing all additional costs fully on to other stakeholders in the sector, certain key actors would need to be empowered to have a greater say vis-à-vis the wholesalers.

<sup>32</sup> Arbitrary in the sense that district level authorities are seen as having an interest in the business side of the charcoal sector and do not coherently enforce or monitor charcoal-related policies because they benefit from the informal nature of the status quo themselves. Therefore, raids or confiscations of 'illegal' forest products are seen as arbitrary and weakly justified.

- **Consumers** need to be better informed about the energy choices they have, and about the simple ways through which the amounts of charcoal needed for cooking can be reduced (e.g. through improved stoves, dowsing remaining charcoal to be used for cooking the next meal, etc). But consumers can also be empowered vis-à-vis the government, to make their voices heard more clearly. If there was more public demand for the government to promote sustainable charcoal production and use as well as alternative energy sources, such activities might achieve higher priority on the government's policy agenda. One important part of enhancing the information on energy choices should focus on those fuels that can be used with the same charcoal stoves. These are mainly "charcoal" briquettes made from agricultural waste, which are currently sold below the price of traditional charcoal.
- **Women** are the main users of charcoal in household settings. They suffer most from indoor air pollution and its consequences – a burden that can be eased with simple but effective measures such as improved stoves with a chimney, placement of the stove, better ventilation, or through changed user behavior. Information about such measures needs to be disseminated widely and easily accessible so that all women in urban areas are educated about the measures that can make their daily life easier. Women in rural communities are usually responsible for selling the charcoal at the road side, but in times of economic hardship they are often required to work in charcoal production as well – a physically extremely challenging task. Women would need access to education and finance to be less dependent on charcoal as a source of household income, to diversify their livelihoods, and they would need to be educated about the relatively easy ways by which to alleviate indoor air pollution.

Women are also generally responsible in the households for selecting and purchasing stoves. Therefore, women need to be the target group for any marketing and sensitization campaign that have the objective of enhancing the dissemination of improved stoves – especially third generation cook stoves. Similarly, women need to be in the focus of

any campaign that promotes alternative fuels, such as biomass briquettes produced from agricultural waste in lieu of traditional charcoal, because they generally make the choice as regards which fuel source used and, therefore, constitute an important part of influencing the charcoal value chain.

- **Alternative stove producers and energy providers** (e.g. biomass briquettes) face a marketing gap which they find themselves unable to bridge. Their products can make charcoal consumption more efficient, or even substitute it with comparably affordable energy sources of similar calorific value. However, relatively few consumers are aware of cheap alternative energy sources, or they do not find them as easily accessible as charcoal. Improved stoves are already widely available but not every household can afford to buy one as prices are generally 35 percent higher than for conventional stoves. Advertising or some financial support from government or development partners could help this sustainable business segment to get a larger market share in the charcoal sector. For third and fourth generation cook stoves, carbon finance options could be explored to provide financial incentives to consumers by lowering prices on these cook stoves.
- **Bicycle transporters** are in a marginalized position, making minimal profits when transporting charcoal from production sites to road sites or trading centers, and they feel disempowered because they lack access to capital to invest in better transport equipment and they face similar constraints as charcoal producers in their efforts to form associations to have a greater say in the struggle for establishing their own marketing sites or in disputes with village or district governments. Hence, they would need support in gaining access to micro credits or other investment capital, and they need to be empowered vis-à-vis the government bureaucracy to strengthen their formal role in the charcoal sector.
- **Retailers** are also relatively non-vocal in the charcoal sector, but the above analysis of costs and profits shows that their profits seem to be substantial and leave room to absorb producer price increases or more coherent fee and tax collection.



## RECOMMENDATIONS FOR ACTION

### SHARING THE BURDEN OF INCREASING CHARCOAL PRICES

- Looking at the income-expenditure situation of charcoal users, the consumer's ability to pay for charcoal seems already stretched, while wholesalers and retailers seem to score substantial margins that leave room for tax maneuvering. Therefore, sustainability-oriented reforms that could result in rising charcoal prices would need to be designed so that the burden of additional costs would be put on those who can more easily cope with them, i.e. the dealer-transporter-wholesaler networks or the retailers.
- A realistic short to medium term goal might be to increase the share of taxes and fees paid from 20 percent to 40 percent and to impose a sustainability premium of 10 percent, resulting in a 7 percent increase in the retail price of charcoal.
- This price increase, mainly due to the higher costs of sustainable production and sanctioning of unsustainably produced charcoal, could be absorbed by wholesalers (resulting in a 24 percent profit cut), or shared between wholesalers and retailers (whose profits are difficult to estimate due to limited data availability) through targeted tax measures or price controls (which are difficult to implement and have a rather mixed success record in Tanzania).

### EMPOWERING KEY STAKEHOLDERS

- Educate producers about their rights and responsibilities regarding ownership and use of forest resources, including ownership of trees grown in small-scale plantations, woodlots, and along fields and in agroforestry systems.
- Effectively disseminate knowledge about and promote sustainable, simple charcoal production technologies, such as improved kilns.
- Promote Community Based Forest Management (CBFM) and Participatory Forest Management (PFM) to empower rural communities and producers to make charcoal production more sustainable and give them a more reliable source of income.
- Raise awareness among consumers, especially women, about more efficient ways of using charcoal (e.g. through improved cook stoves) and promote the use of improved stoves and alternative energy sources (such as LPG or biomass briquettes), for example by increasing their availability or subsidizing their use through a targeted scheme.



# 6 CONCLUSION

Based on the findings of the Policy Note on the charcoal sector in Tanzania published in August 2009, it is evident that charcoal will continue to be a major source of energy in Tanzania and other Sub-Saharan African countries for the next 30 to 40 years. With the majority of the population now living in urban areas, the poorer part of the urban population will continue to rely on charcoal and other biomass to satisfy energy needs, especially for cooking. Given the relative price increase of alternative fossil fuels and fossil fuel derivatives such as LPG, the number of households using traditional biomass has increased dramatically over the past few years.

Against this background, the analysis presented in this report has attempted to identify the key political economy factors that facilitate or inhibit a comprehensive political approach to reforming the charcoal sector in Tanzania to make it environmentally and socio-economically more sustainable. The paper also tried to anticipate the poverty and social impacts of a sustainability-oriented policy reform agenda. Given the enormous uncertainty about rules and regulations in the charcoal sector, and the extremely limited availability of reliable data – particularly at disaggregate levels – the findings presented in this report have to be treated with some care.

A number of key conclusions emerge:

- The fiscal disempowerment of village and district governments, combined with the uncertainty about forest asset ownership and user rights, as well as the limited policy implementation and monitoring capacity of government agencies at all organizational levels, create substantial disincentives for sustainable management of the charcoal sector by government institutions and sustainable production, trade, and use by non-governmental stakeholders.
- An open conversation within and among key government agencies and a subsequent strategic decision is needed to clearly state where the charcoal sector should be moving, i.e. in the direction of sustainability-oriented reforms, or towards a stricter sanctions regime.
- New policies (or changes in existing policies) need to be based on realistic goals and expectations as to what can be achieved and require a coherent communication strategy that effectively translates the legal provisions of the policy into actionable instructions to district or village governments, even in remote areas of the country.
- Matching institutional responsibilities of village and district governments to implement and enforce charcoal sector policies with the right to retain a percentage of charcoal revenues seems imperative to create an incentive for better policy implementation and monitoring at the sub-national level.
- In this respect, vertical accountabilities and reporting mechanisms within existing systems and structures in MNRT, PMO-RALG and MEM should be strengthened to ensure compliance with centrally formulated policies and directives at the sub-national level, and to gather real-time information about the de facto functioning of the charcoal sector in practice.
- MNRT, MEM and other key central government agencies need to scope out a mode of engagement with the dealer-transporter-wholesaler networks who exercise substantial de facto control over the charcoal sector. Converting the currently irregular and informal interactions with this stakeholder group (mainly through village and district level authorities) into a more formal relationship with regular meetings, also including central government agencies, might contribute to gain a better understanding of how the sector functions in practice and to include this critical stakeholder group in the design of charcoal sector policy reforms.
- A realistic short to medium term goal might be to



increase the share of payable taxes and fees collected from 20 percent to 40 percent and to impose a sustainability premium of 10 percent, encouraging sustainable forest management and charcoal production while discouraging the production, trade and use of unsustainably produced charcoal. This scenario could result in a 7 percent increase in the retail price of charcoal, which charcoal consumers might still be able to absorb. However, looking at the sizable margins of wholesalers and retailers, one should engage in a deliberative process of developing policy measures that promote sustainable charcoal

production while including wholesalers and retailers in sharing the higher costs of a more sustainably operating sector.

- Other non-governmental stakeholders need to be empowered through information campaigns, promotion of more efficient technology, and more sustainable management practices. This applies first and foremost to producers, but also to charcoal consumers, women, as well as bicycle transporters, improved stove producers and alternative energy providers.

# Annex 1

## DETAILS ON THE METHODOLOGICAL APPROACH

### CONTEXT MATTERS: A MULTI-DISCIPLINARY AND PARTICIPATORY APPROACH

The analysis presented in this paper is grounded in the commonsensical understanding that (a) context matters, i.e. policies are neither designed nor implemented in a socio-economic or political vacuum, but are subject to stakeholder interests and influence, negotiated in political processes and mediated through institutions whose setup and configuration can substantially affect policy outcomes during implementation. Therefore it is important to acknowledge that (b) multi-disciplinary approaches, combining quantitative and qualitative research methods as well as economic and political, institutional and stakeholder analysis are key to answering the complex questions that are the subject of enquiry in this paper.

Therefore, the analysis is based on three building blocks:

**(1) A multi-disciplinary team:** the analysis has been conducted and the paper been produced by an integrated team of political scientists, economists, and natural resource management specialists both from Tanzania and internationally. This effectively combines contextual, country- and sector-specific knowledge and analytical rigor with an (as far as possible) unprejudiced mode of curious inquiry from an outsider's perspective.

**(2) Qualitative research methods:** For both the political economy (PE) analysis and the poverty and social impact analysis (PSIA) the team engaged in a participatory and consultative process to integrate the knowledge of those likely to influence the policy design and those likely to be affected by the policy. At the heart of this approach lie

the focus group discussions and key informant interviews conducted with some 200 stakeholders from all relevant groups in Tanzania's charcoal sector, carried out between December 2009 and March 2010.

**(3) Quantitative research methods:** The availability of quantitative data on charcoal production, trade and consumption is extremely limited due to the sector's high degree of informality and limited government capacity to collect and process such data. It was beyond the financial means of this research project to fund a comprehensive and nationally representative survey on charcoal-related issues. However, the team collected some current charcoal price data in Dar es Salaam and the surrounding districts, and could draw on the Household Budget Surveys (HBS) of 1992, 2001 and 2007. This data was particularly useful for the PSIA to conduct some basic household income and expenditure analysis and to estimate consumers' ability to pay.

### DAR ES SALAAM AS CASE STUDY

The research team adopted a case study approach with Dar es Salaam serving as the main case study site. Charcoal consumption in Dar es Salaam accounts for about 50 percent of Tanzania's annual charcoal consumption, and the proportion of households using charcoal in Dar es Salaam lies at 71 percent as of 2007. Thus, choosing the country's largest city and its surrounding districts for case study is sensible, considering that the most important charcoal business takes place here.

The team met with 200 stakeholders in key informant interviews and focus group discussions, conducted in Dar es Salaam and the surrounding districts (Kibaha, Kisarawe),

from where the majority of the capital's charcoal supplies come. Meeting participants were assured confidentiality so that they felt comfortable to speak freely about politically and socially sensitive issues. From the government's side, the team met representatives from the Ministry of Natural Resources and Tourism (MNRT), Forestry and Beekeeping Division (FBD), the Ministry of Energy and Minerals (MEM), the Ministry of Health and Social Welfare (MOHW), and representatives from district and local government entities (district commissioners, forest extension officers, foresters, village leaders). Regarding non-governmental stakeholders, focus group discussions were conducted with charcoal producers, bicycle and vehicle transporters, wholesalers, retailers, household and commercial consumers (restaurant owners and small street vendors), as well as women's groups and various development partner agencies.

## **POLITICAL ECONOMY ANALYSIS: THE NET-MAP PROCESS<sup>33</sup>**

The Net-Map process can be undertaken with one key informant or a group of stakeholders. It can help the analyst and the stakeholders themselves develop an understanding of which actors are involved in a given network, how they are linked, how influential they are, and what their interests and goals are. For this analysis the team conducted Net-Map discussion meetings with different stakeholder groups of 5 to 15 people.

### **1. Preparation**

The Net-Map process starts with defining the key questions to be answered. For this analysis the questions are "who will be affected by charcoal sector reforms, and who can influence the success of the reform process?" As a next step, the possible links between actors are defined (here: formal authority; exchanging information; giving money) and colors are assigned to these links. The last preparatory step is to define the goals that actors can have (oppose the proposed reform agenda; support the reform agenda mainly for economic/business reason; or support the reform agenda for mainly environmental reasons). The goals need to be predefined so that the results of the meetings with different stakeholder

groups are comparable. However, the goals are defined broadly enough with respect to the key questions so that stakeholders can identify with one of the three goals (or be qualified as indifferent).

### **2. Actor selection**

As a next step, the discussion group is asked to identify the actors involved in the process (of charcoal sector reforms). The actors mentioned are written down on post-it cards and distributed on a large, empty sheet of paper, the Net-Map sheet. Working with color-coded actor cards, links and goals ensures that even illiterate stakeholders can meaningfully participate in the Net-Map discussion.

### **3. Drawing links**

Once the relevant actors have been identified, the meeting participants are asked to point out "who is linked to whom," using the predefined links as described above. The links are drawn onto the Net-Map sheet in the different colors assigned to the different links (i.e. who has authority over whom; who exchanges information with whom; who gives money to whom).

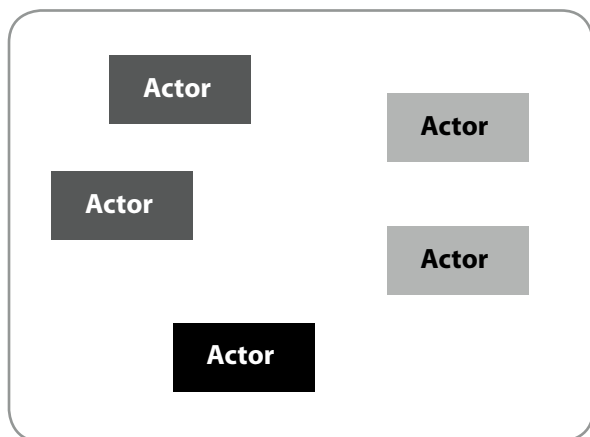
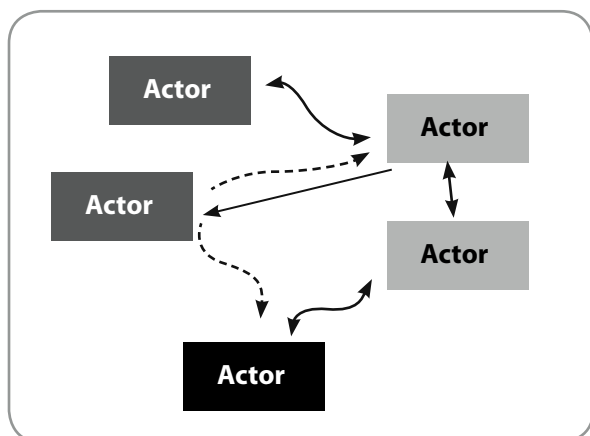
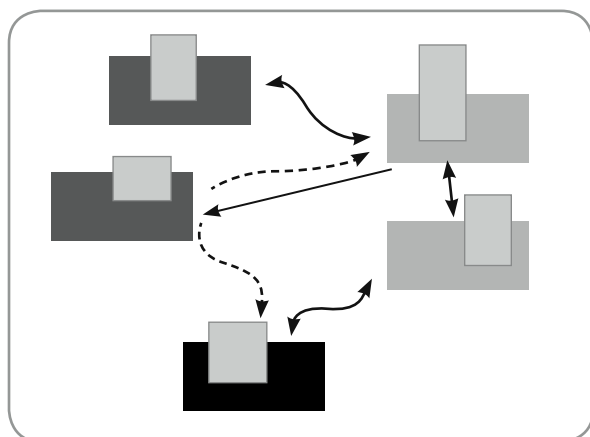
### **4. Assigning influence towers**

At this stage the discussion group is presented with the question of "how strongly can actors influence processes and outcomes in the sector?" The objective is not to rank actors by the magnitude of the formal powers vested in them by law, but to gain a realistic assessment of which actors can de facto make things happen or stall, or how much influence they have over the behavior of other actors. The meeting participants are then asked to put 'influence towers' on the actor cards; an influence tower is made up of one to eight flat stackable objects, such as poker chips. The height of the influence tower represents the actor's relative influence in the sector.

### **5. Identifying goals**

According to the predefined goals, the meetings participants are asked to assess – actor by actor – who opposes and who supports a given reform agenda, and why. The goals are noted next to the actor cards in an abbreviated form.

<sup>33</sup> Adapted from Schiffer and Waale 2008; IFPRI Discussion Paper 00772.

**Step 1 Which actors are involved?****Step 1 How are the actors linked?****Step 1 How influential are they?****6. Discussing implications**

Steps 1 through 5 result in the creation of a 'Net-Map landscape' that lays out the relevant actors in the sector, their links, their relative importance and their goals in a visually accessible way. The stakeholders develop an enhanced understanding of their own position in the sector and how their own situation is influenced by the actors and processes that prevail in the sector. Based on this 'Net-Map landscape' the researchers can discuss with the groups that have in-depth knowledge of the sector how the actors, links, influence and goals mapped out on the Net-Map sheet can affect a specific reform agenda or process, and with whom and how one needs to engage in the sector to support the design and implementation of viable policy reforms.

**POVERTY AND SOCIAL IMPACT ANALYSIS:  
BASIC ECONOMIC MODELING WITH LIMITED  
DATA AVAILABILITY**

Given the data constraints in the charcoal sector in Tanzania, with current price and revenue data not available, the options to conduct an in-depth analysis of the poverty and social impacts of the proposed policy reforms were limited. For general data on household income and expenditure, the team drew on the Household Budget Surveys (HBS) of 1992, 2001 and 2007. For charcoal-related data such as prices, fees, taxes, or transport costs, the analysis used data collected in earlier research projects,<sup>34</sup> complemented with current information gained in spot surveys carried out in Dar es Salaam and the surrounding districts in March 2010.

The analysis is complicated by the fact that all charcoal-related prices (usually calculated by bag of charcoal) can only be approximated as they are not systematically recorded and depend on varying factors. Therefore, the results of the quantitative analysis have to be treated with some caution.

- **Producer costs and prices** vary by dry and wet season (as production is more difficult during wet season, and many producers engage in other income generating

<sup>34</sup> van Beukering et al. 2007; World Bank 2009.





activities such as farming, which further decreases the supply of charcoal), by region (as taxes and levies vary by region), and by the extent to which the producer pays the necessary licenses and harvesting royalties.

- **Transport costs** depend on the means of transport (different truck sizes, bicycle), the distance between the production site and the wholesaler or retailer, and the season (as transport is more difficult during wet season when unpaved roads are difficult to navigate).
- **Wholesale prices** vary by region (different levies and taxes), the means of transport (different levies and taxes), whether license and taxes to the different authorities are paid, and the margin added by the wholesaler.

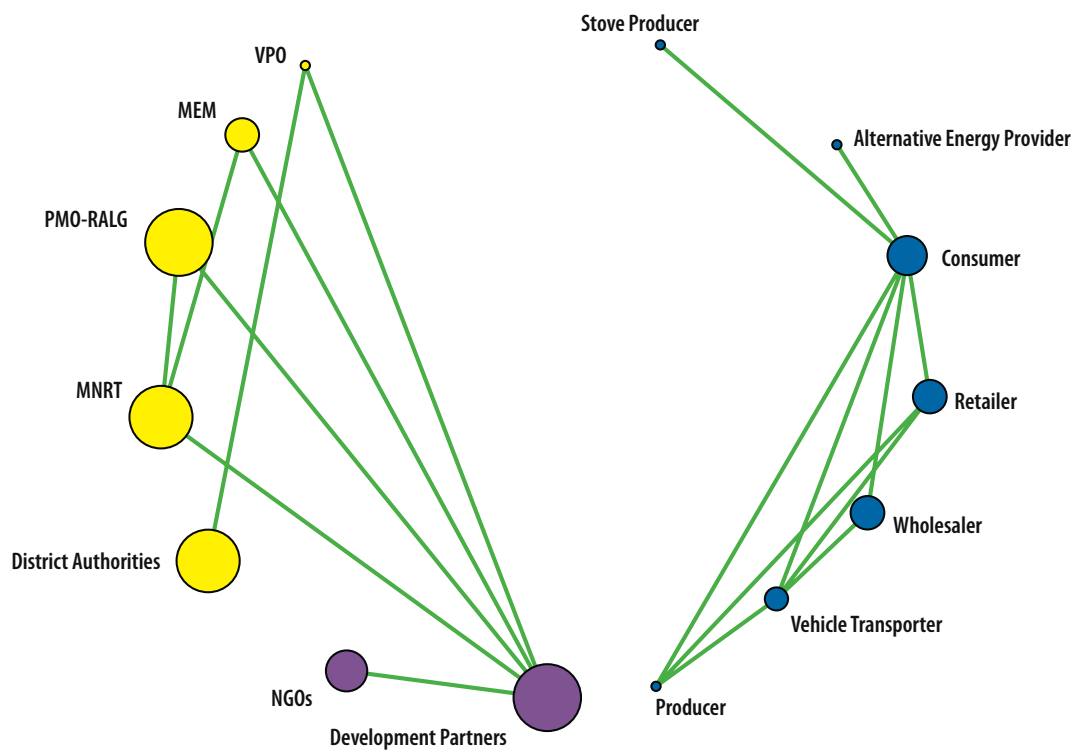
- **Retail prices** depend on the region, the charcoal bag size (at least seven different sizes on the market), and the margin added by the retailer.

Based on the data sources mentioned above, and with the caveat of limited data availability and reliability in mind, the team created some simple projections of how prices, costs, and profits would change if the proposed reform agenda were to be implemented. Comparing these calculations with household income and expenditure, one can estimate the impact of the policy reforms on charcoal consumers' incomes and ability to pay for their energy needs.

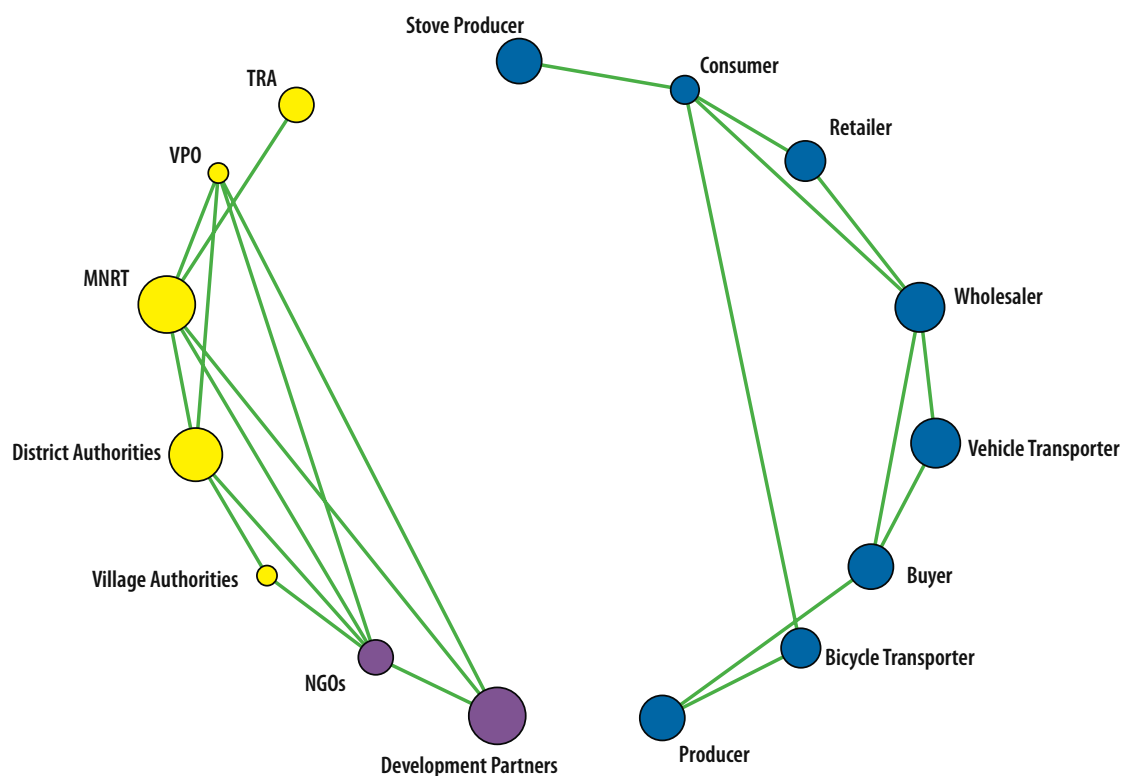


# Annex 2 SELECTED TABLES

**Figure 14** Exchange of information between actors (as perceived by central government stakeholders)



**Figure 15** Exchange of information between actors (as perceived by local government stakeholders)



**Table 3** Exchange of information between actors (as perceived by local government stakeholders)

Household Expenditures	Poorest Quintile	2. Quintile	3. Quintile	4. Quintile	Richest Quintile
<b>in Dar es Salaam</b>					
Food	66.9%	76.3%	77.7%	77.3%	76.1%
Non Food	30.6%	20.5%	18.8%	19.0%	19.5%
Charcoal	1.9%	2.4%	2.5%	2.5%	1.9%
Other Fuels	0.5%	0.7%	0.6%	0.7%	0.6%
Taxes	0.0%	0.1%	0.2%	0.2%	0.5%
Savings	0.0%	0.0%	0.2%	0.2%	1.4%
<b>in other urban areas</b>					
Food	82.4%	82.4%	81.5%	81.5%	78.8%
Non Food	14.6%	13.8%	14.3%	13.5%	13.5%
Charcoal	1.3%	1.8%	1.7%	1.7%	1.1%
Other Fuels	0.9%	0.9%	1.0%	0.9%	0.7%
Taxes	0.1%	0.2%	0.3%	0.4%	1.0%
Savings	0.6%	0.9%	1.3%	2.0%	4.9%

Data source: HBS 2007.

**Table 4 Household expenditures by income group (in Tanzanian Shillings)**

Household Expenditures	Poorest Quintile	2. Quintile	3. Quintile	4. Quintile	Richest Quintile
<b>in Dar es Salaam</b>					
Food	TZS 55,559	TZS 117,765	TZS 180,698	TZS 275,028	TZS 717,010
Non Food	TZS 20,298	TZS 31,516	TZS 43,706	TZS 68,041	TZS 178,045
Charcoal	TZS 1,593	TZS 3,729	TZS 5,917	TZS 8,699	TZS 13,680
Other Fuels	TZS 468	TZS 1,050	TZS 1,486	TZS 2,599	TZS 5,650
Taxes	TZS 19	TZS 135	TZS 407	TZS 715	TZS 5,693
Savings	TZS 148	TZS 661	TZS 3,273	TZS 7,433	TZS 593,174
<b>in other urban areas</b>					
Food	TZS 65,508	TZS 125,116	TZS 188,208	TZS 287,592	TZS 753,888
Non Food	TZS 11,022	TZS 20,902	TZS 33,052	TZS 47,741	TZS 119,253
Charcoal	TZS 1,171	TZS 2,754	TZS 3,890	TZS 6,114	TZS 8,493
Other Fuels	TZS 733	TZS 1,292	TZS 2,212	TZS 3,057	TZS 5,622
Taxes	TZS 87	TZS 368	TZS 722	TZS 1,389	TZS 15,004
Savings	TZS 506	TZS 1,413	TZS 2,898	TZS 6,985	TZS 70,234

Data source: HBS 2007.

## REFERENCES

- Allen, J. A. 1985. *Wood energy and preservation of woodlands in semi-arid developing countries: The case of Dodoma region, Tanzania*. Journal of Development Economics, Volume 19, Issues 1-2, pp. 59-84.
- Beukering van, P., G. Kahyarara, E. Massey, S. di Prima, S. Hess, V. Makundi and K. van der Leeuw. 2007. *Optimization of the Charcoal Chain in Tanzania – A Gap Analysis*. Poverty Reduction and Environmental Management (PREM), Institute for Environmental Studies. Vrije Universiteit, Amsterdam, The Netherlands.
- Blomley, T. 2006. *Mainstreaming Participatory Forestry within the Local Government Reform Process in Tanzania*. Gatekeeper Series No. 128, International Institute for Environment and Development, London, United Kingdom.
- CHAPOSA (Charcoal Potential in Southern Africa). 2001. *Dar es Salaam Charcoal Consumer's Study*. Project Report, Stockholm Environment Institute, Stockholm, Sweden.
- CHAPOSA. 2002. *Charcoal Potential in Southern Africa – Final Report*. Stockholm, Sweden: Stockholm Environment Institute. [www.sei.se/chaposa/chaposaindex.html](http://www.sei.se/chaposa/chaposaindex.html).
- Energy for Sustainable Development (ESD). 2007. *Situation Analysis of Charcoal Dynamics, Energy Policies and Possibilities of Switching to Alternatives*. Consultant Report, WWF-Tanzania Program Office.
- Evans, K. 2004. *Towards sustainable production and use of charcoal in Kenya: exploring the potential in life cycle management approach*. Journal of Cleaner Production, Volume 12, Issues 8-10, Applications of Industrial Ecology, pp. 1047-1057.
- FAO. 2006. *Responsible management of planted forests: voluntary guidelines*. Planted Forests and Trees Working Paper 37, Rome, Italy.
- Heltberg, R. 2004. *Fuel switching: evidence from eight developing countries*. Energy Economics, Elsevier, vol. 26(5), pp. 869-887.
- Hofstad, O. 1997. *Woodland Deforestation by Charcoal Supply to Dar es Salaam*. Journal of Environmental Economics and Management, Volume 33, Issue 1, pp. 17-32.
- Hoiser, R.H. and W. Kipondya. 1993. *Urban Household Energy Use in Tanzania: Prices, Substitutes and Poverty*. Energy Policy, Vol. 21, Issue 5, pp. 454-73.
- Howells, M., D.G. Victor, T. Gaunt, R.J. Elias and T. Alfstad. 2006. *Beyond free electricity: The costs of electric cooking in poor households and a market-friendly alternative*. Energy Policy, Elsevier, vol. 34(17), pp. 3351-3358.
- Karekezi, S. 2002. *Renewables in Africa--meeting the energy needs of the poor*. Energy Policy, Elsevier, vol. 30(11-12), pp. 1059-1069.
- Kilahama, F. 2008. *Impact of increased charcoal consumption to forests and woodlands in Tanzania*. Tanzania Association of Foresters (TAF).

- Luoga, E.J., E.T. Witkowski and K. Balkwill. 2000. *Economics of charcoal production in miombo woodlands of eastern Tanzania: some hidden costs associated with commercialization of the resources*. Ecological Economics, Volume 35, Issue 2, pp. 243-257.
- Malimbwi, R.E., E. Zahabu and B. Mchome. 2007. *Situation Analysis of Dar es Salaam Charcoal Sector*; WWF Tanzania Program Office, Dar es Salaam, Tanzania.
- Malimbwi, R.E. and E.M. Zahabu. 2008. *Woodlands and the charcoal trade: the case of Dar es Salaam City*. Working Papers of the Finnish Forest Research Institute 98, pp. 93-114.
- Milledge, S.A.H., I. K. Gelvas and A. Ahrends. 2007. *Forestry, Governance and National Development: Lessons Learned from a Logging Boom in Southern Tanzania*. TRAFFIC East/Southern Africa/Tanzania Development Partners Group/MNRT, Dar es Salaam, Tanzania, pp. 252.
- Mugasha, A.G. and S.A.O. Chamshama. 2008. *Indicators and Tools for Restoration and Sustainable Management of Forests in East Africa*. I-TOO working paper No. 9.
- Mwampamba, T.H. 2007. *Has the Woodfuel Crisis Returned? Urban Charcoal Consumption in Tanzania and its Implications to Present and Future Forest Availability*. Energy Policy. Vol. 35, Issue 8, pp. 4221-4234.
- Palmula, S, and M. Beaudin. 2007. *Greening the Charcoal Chain - Substituting for Charcoal as a Household Cooking Fuel in Dar es Salaam*. Poverty Reduction and Environmental Management (PREM), Institute for Environmental Studies. Vrije Universiteit, Amsterdam, The Netherlands.
- Pender, J., F. Place, and S. Ehui, eds. 2006. *Strategies for sustainable land management in the East African highlands*. International Food Policy Research Institute. Washington, D.C.
- PREM (Poverty Reduction and Environmental Management) 2007. *Chained to Charcoal: The Market for Forest Fuels in Tanzania*. PREM Policy Brief No. 16, Institute for Environmental Studies, Vrije Universiteit, Amsterdam, The Netherlands.
- Sanga, G., and G. Jannuzzi. 2005. *Impacts of Efficient Stoves and Cooking Fuel Substitutions in Family Expenditures of Urban Households in Dar es Salaam*, Energy Discussion Paper No.2.59.1/05, International Energy Initiative Tanzania.
- Sawe, E.N. 2005. *Rural Energy and Stoves Development in Tanzania: Experiences, Barriers and Strategies*. Traditional Energy Development and Environment Organization (TaTEDO), Dar es Salaam. Tanzania.
- Schiffer, E. and D. Waale. 2008. *Tracing power and influence in networks: Net-Map as a tool for research and strategic network planning*. IFPRI discussion papers 772, International Food Policy Research Institute (IFPRI).
- Schlag, N., and F. Zuzarte. 2008. *Market Barriers to Clean Cooking Fuels in Sub-Saharan Africa: A Review of Literature*. Working Paper, Stockholm Environment Institute, Stockholm, Sweden.

- Sepp, S. 2008a. *Promotion of Sustainable Charcoal Production through Community Level Approaches – Experiences and Lessons Learned from Selected Sub-Saharan African Countries*. Discussion paper, ECO-Consult, Oberaula, Germany.
- Sepp, S. 2008b. *The Way Ahead—Creating a Formal and Sustainable Charcoal Sector*. Discussion paper. ECOConsult, Oberaula, Germany.
- The United Republic of Tanzania. 2007. *Administrative and Financial Manual for Participatory Forest Management and Sustainable Wetlands Management*. Dodoma: Prime Minister's Office—Regional Administration and Local Government.
- The United Republic of Tanzania. 2007a. *Community-based Forest Management Guidelines*. Ministry of Natural Resources and Tourism, Tanzania.
- The United Republic of Tanzania. 2007b. *Guidelines for Sustainable Harvesting and Trade in Forest Produce*. Ministry of Natural Resources and Tourism, Tanzania.
- The United Republic of Tanzania. 2007c. *Royalty Rates for Forest Products*. Ministry of Natural Resources and Tourism, Tanzania.
- The United Republic of Tanzania. 2008. *Participatory Forest Management: Facts and Figures*. Dar es Salaam: Ministry of Natural Resources and Tourism, Tanzania.
- The United Republic of Tanzania. 2008. *Household Budget Survey 2006/2007*. Dar es Salaam National Bureau of Statistics, Tanzania.
- United Nations Environment Programme. 2007. *Forests and woodlands in Africa*. In: *Encyclopedia of Earth*. Eds. Cutler J. Cleveland (Washington, D.C.: Environmental Information Coalition, National Council for Science and the Environment).
- World Bank. 2006. *Tanzania Energy Sector Brief 2006*. World Bank, Washington, DC.
- World Bank. 2007. *Participation in Sustainable Forest Management: Linking Forests and People in Kenya*. Forest Policy Note, Sustainable Development Department, Africa Region, World Bank, Washington, DC.
- World Bank. 2009. *Environmental crisis or sustainable development opportunity? Transforming the charcoal sector in Tanzania*. A policy note, World Bank, Washington, DC.
- WWF. 2008. *The Dar es Salaam Charcoal Project. A project proposal to begin resolving the environmental crisis caused by charcoal*. WWF Tanzania Program Office, Dar es Salaam, Tanzania.
- Zein-Elabdin, E.O. 1997. *Improved stoves in Sub-Saharan Africa: the case of the Sudan*. Energy Economics, Elsevier, vol. 19(4), pp. 465-475.







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