The human and livelihoods cost of fuel-switching in Addis Ababa

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Background

Household energy crises and fuel switching strategies in Addis Ababa

After the two oil price shocks of the 1970s, there was growing concern within international development circles, as well as the Ethiopian government, about the link between energy and environment and how informed policy decisions could be made. Several studies carried out in the sector in the 1980s concluded that with heavy reliance on biomass fuels, rapidly dwindling forest resources and rising household energy expenditure, Ethiopia was experiencing a serious household energy crisis. In response, a number of policies were implemented to encourage households to switch from using wood fuel to using kerosene and electricity. This article focuses on the implications of these policies on traditional fuel suppliers and their livelihoods.

The traditional fuels sector

The supply of traditional fuels in Addis Ababa provides livelihoods for many thousands of poor urban and rural men and women. Informal sector fuel suppliers include:

- fuel collectors who gather wood either on a small-scale from common land, or a large-scale from plantations (Figure 1);
- transporters who take the wood to Addis Ababa and distribute it; and

Figure 1 Woman collecting fuel, earning around $1US per day (*photo: ESD Ltd.*)

- vendors who sell wood from kiosks in markets, or wholesale from warehouses.

The average income of workers in this sector is about one US$1 a day. The sector is highly informal and decentralized, and relies on what has proven to be an unsustainable resource base. The majority of traditional fuel suppliers obtain fuelwood from state-owned plantations but access is not guaranteed – often bribes are required.

In summary, suppliers have no secure access to fuel, are marginalized, powerless, vulnerable and are victims of harassment by authorities.

Fuel switching policies

The shift away from wood use

In response to the household energy crisis, various strategies have been adopted since the mid-1980s including:

- promoting and subsidising electricity, kerosene and stoves;
- controlling and restricting the flow of fuelwood into Addis Ababa; and
- improving the fuel efficiency of wood stoves for those still using wood.

These measures resulted in wood accounting for just 13% of the total energy used in Addis Ababa in 2000, compared with 70% in 1980.

Electricity and electric injera mitads

A revised electricity tariff was adopted to encourage households to switch from biomass to electricity. The national electricity utility also embarked upon large-scale production and marketing of electric *mitad* stoves at subsidized prices. The stoves are used for making the local staple 'pancake' called *injera.* The utility provided financing that made the *mitad*s affordable to even the poorest consumers. Ownership of electric *injera mitad*s increased from 13% in 1984 to over 70% in 1997. The deliberate policy decision made by the government to keep both electricity and electric *mitad*s affordable for the majority of the households accelerated the switching from biomass to electricity in Addis Ababa from the mid-1980s.

Kerosene and kerosene stoves

Switching from wood to kerosene as a household cooking fuel was almost unknown in Ethiopia in 1980, until it was proposed as a quick fix for the energy crisis. Since 1983, the government has relaxed import restrictions and embarked upon mass importation of kerosene stoves.

Consumption of kerosene grew from about 3000 cubic metres in 1983 to over

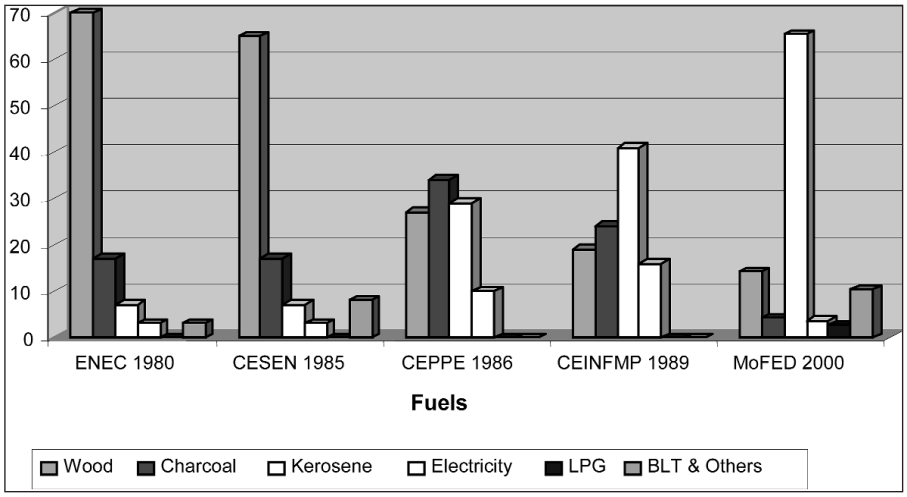

Figure 2 Interfuel switching trends in Addis Ababa 1980–2000

220,000 cubic metres in 2001. Ever since, consumption of kerosene has grown at a rate of about 15% annually. At least half the kerosene is consumed in Addis Ababa, where 90% of households currently own kerosene stoves.

The most notable trends in the Addis Ababa household fuel use include:

- a remarkable decline of wood as a cooking fuel;
- the overwhelming transition to kerosene for domestic cooking; and
- significant penetration of electricity for *injera* baking (Figure 2).

Figures from the national electricity utility indicate a decline in electricity consumption around the year 2000. This is believed to be a short-term response resulting from a reduction in electricity subsidy in 1997. The constant decline in consumption of wood can be seen against steadily increasing consumption of kerosene throughout the period.

Fuel switching: benefits and costs

Environmental benefits

The quantities of modern fuels consumed annually indicate that remarkable environmental gains have been achieved due to fuel switching over the last 20 years. It is estimated that the equivalent of over 400 000 tonnes wood were displaced by modern fuels in the year 2001 alone. Environmentally, the benefit is equivalent to preserving around 50 000 hectares of reasonably stocked forest land.

Social and health benefits

In the mid-eighties, scarcity of traditional fuels increased prices such that poorer households were forced to scavenge for any combustible biomass from nearby waste disposal sites in the city. There are obvious hazards associated with collecting such waste, and the fumes produced from burning them. The perceived benefits of fuel switching for household consumers included reduced energy expenditure, improved health due to the cleaner cooking environment and ease of availability and convenience of modern fuels.

Overlooked costs: impacts on traditional fuel suppliers' livelihoods

National energy and forestry policies promoting fuel switching have increased the vulnerability of traditional fuel suppliers whose numbers have declined as a consequence. In 1984, in a single market day, around 42 000 suppliers were counted transporting traditional fuels into the city. By 1988 there were less than 10 000 falling to 3500 in 2001. This decline exactly coincided with the adoption of fuel switching strategies.

An indicator of the loss of suppliers' livelihoods is the quantity of traditional fuels displaced by modern fuels. Surveys indicated that one supplier supplies approximately 3.4 tonnes, and one retailer sells about 4.5 tonnes of wood equivalent annually. In wood equivalent terms, an average of 205 000 tonnes of traditional fuels have been displaced each year by modern fuels in Addis Ababa since 1983 (Figure 3). This is likely to have resulted in enormous losses of livelihoods.

Ethiopia is committed to achieving the Millennium Development Goals (MDGs), which aim to halve poverty by 2015. This means that new jobs have to be created, but fuel switching has had the opposite effect. Some new jobs have been created by the modern fuels sector, but these are unlikely to replace all of those lost by traditional fuel suppliers. For example, kerosene retailing is usually undertaken through existing petrol stations, so has generated few jobs compared to the number it is likely to have displaced. Other opportunities in the modern fuel sector are not appropriate or accessible to displaced traditional fuel suppliers, as they require formal education and skills, which few

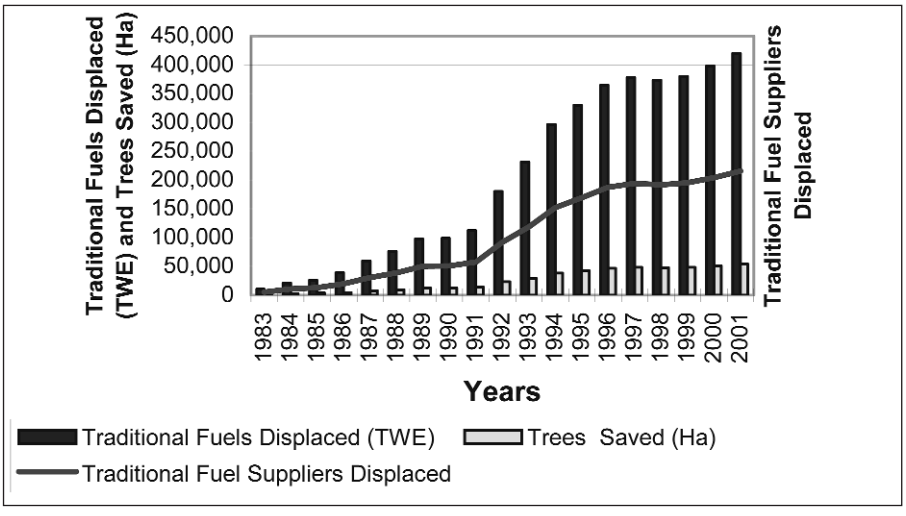

Figure 3 Estimates of traditional fuels displaced, trees saved and suppliers displaced annually in Addis Ababa (1983–2001)

of them have. Around 2000 jobs have been created by small businesses manufacturing electric, kerosene and improved-biomass stoves.

Addressing livelihood losses

Policy makers are either unaware of adverse socio-economic impacts of fuel switching interventions, or they are reluctant to recognise and address the problem. Attributing more value to forest resources, which puts trees before human beings, is still a prevalent attitude among some policy makers.

There have been some sporadic efforts to minimize the hardships encountered by traditional fuel suppliers. These groups included the "Former Women Fuelwood Carriers Association", (FWFCA) and the Finfinne Forestry Development and Marketing Enterprise" (FFDME). Their stories are described in Box 1.

Conclusions and recommendations

Fuel switching interventions adopted in the past have been remarkably successful and have produced considerable environmental and social benefits. Very little was known about the livelihood impacts of fuel switching before this research, which indicates that interventions have had adverse impacts on the livelihoods of many traditional fuel suppliers. These impacts include loss of jobs, declining incomes, increasing vulnerability and insecure access to natural resources. There are insufficient employment opportunities in the distribution and sale of modern fuels to compensate for the high livelihood losses experienced by traditional fuels suppliers (Figure 4).

Figure 4 Selling fuel provides employment for thousands of suppliers (*photo ESD Ltd.*)

Despite its role as a major source of household energy and provider of livelihoods, the official attitude towards traditional fuels is generally unfavourable. There are no policies to inform and guide interventions to address the livelihood-related outcomes. Policy makers are either reluctant or unaware of the unintended consequences of fuel switching.

In the absence of formal mitigation measures, traditional fuel suppliers have borne the brunt of livelihood losses and harassment. Organizing traditional fuel suppliers into groups and providing them with technical and financial support has proved successful in securing some sustainable livelihoods. There is a need to include and consult suppliers in the energy policy formulation process, and to protect both natural resources and the poor, for as long as their livelihoods depend on them.

Box 1 Addressing livelihood losses

Former Women Fuelwood Carriers Association

This ILO-supported project organized women fuel wood carriers into an association that provided alternative employment opportunities. The project brought together over 100 women offering them training and technical support in alternative income generating schemes, and set up an association in the mid 1990s. In spite of serious resource constraints that hampered scaling up of its activities, currently the association's membership has grown to about 200. The association, in collaboration with some partners, has prepared a project concept that would enable its members to participate in, and benefit from, sustainable management of existing fuel wood plantations around Addis Ababa.

Finfinne Forestry Development and Marketing Enterprise

The FFDME owns 27 000 hectares of plantations on which the livelihoods of about 25 000 traditional fuel suppliers depend. The FFDME understands that complete denial of access to the plantation will have far-reaching social, economic and even political ramifications. Therefore, in addition to allowing some access to forest resources, the FFDME is also initiating alternative employment opportunities as forest guards and wage labourers, providing seedlings to communities to develop their own forest resources, and improving access to education and water supply to communities whose livelihoods depend on these state-run plantations.

References

Shanko, M. 2000, *Poverty Alleviation Aspects of Successful Improved Stoves Programmes:* Ethiopia, Country Report, DFID KaR, MGP Ltd: Addis Ababa.

Shanko, M. and Abebe, T. 2002, *Poverty/ Sustainable Livelihood Impacts of Fuel*

Bess, M. and Shanko, M., 1993. *Electric Mitads Producers Survey Results*.

Bess, M. and Shanko, M. 1993. *Implications on Ethiopia's Power and Biomass Consumption*, Ethiopian Energy Authority: Addis Ababa

Rouse, J.R. 2004. Absorbing informal sector operators into improved urban services. *Small Enterprise Development*, Vol 15, No 2 June 2004.

Shanko, M. 2004. Impact of fuel switching policy on traditional fuel suppliers in Addis Ababa. *Field report by Megan Power Ltd.*

Woody Biomass Inventory and Strategic Planning Project (WBISPP). 2003.

The Fuelwood Situation in Ethiopia, WBISPP. Addis Ababa. 2003.

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