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# AFRICAN FORESTRY AND WILDLIFE COMMISSION

## TWENTIETH SESSION

**Nairobi, Kenya, 1 - 5 February 2016**

### **ENHANCING SUSTAINABILITY AND EFFICIENCY OF WOODFUEL PRODUCTION AND CONSUMPTION**

#### **I. Background**

1. Over half of global wood production is used for energy. One-third of households worldwide and two-thirds of those in Africa use wood as their main fuel for cooking, heating and water-boiling. Woodfuel provides more than half of the energy supply in 29 countries, of which 22 are in sub-Saharan Africa<sup>1</sup>. The demand for woodfuels – particularly charcoal – is not likely to decline in the foreseeable future and may even increase due to population growth and urbanization.
2. Despite its socio-economic significance, the traditional practices of woodfuel production and consumption in many developing countries have led to a negative perception that woodfuel is an inferior source of energy, which fits only for poor. The major problems associated with the traditional woodfuel sector include, among others, unsustainable and often illegal production that leads to deforestation, forest degradation and, in some areas, to woodfuel scarcity; indoor air pollution due to inefficient use of woodfuel that results in health problems; and the disproportionate burden fuelwood collection imposes on women and children. This is of particular concern in Africa, where a large part of the population relies on woodfuel for basic energy services.
3. The challenges related to traditional woodfuel production and use, however, are not inherent to the fuel type and can be addressed with appropriate regulatory interventions, adapted forest management practices, and technology advancement. In Africa, simply shifting the primary cooking fuel from wood to modern fossil fuels may not be realistic in short or medium term, nor would it be an optimum solution for sustainable development in this region, if considering resource availability, accessibility, and affordability of woodfuels and fossil fuels. Furthermore, shifting from the locally

<sup>1</sup> FAO (2014), State of the World's Forest (SOFO-2014)

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available renewable energy sources to commercial fossil fuels imported from other countries would have a very significant economic and environmental impact and may affect the security of energy supplies at local, national and regional levels.

## **II. Revaluing the contribution of woodfuel sector**

4. Woodfuel in Africa is produced mainly by the informal sector and therefore in many countries official statistical data is lacking. However, its economic value should not be underestimated. FAO has estimated that 195 million people in Africa are employed through the woodfuel sector on a full-time or part-time basis, an equivalent of 45 million full-time employment or roughly 4.6 percent of the total full-time employment in the region<sup>2</sup>. The annual contributions of the charcoal sector alone to employment, rural livelihoods, and the wider economy, for example, were estimated at about USD 650 million and USD 450 million in Tanzania and Kenya, respectively, according to a report of the World Bank<sup>3</sup>. These figures roughly correspond to 2.2 percent and 1.2 percent of national GDP in these two countries in 2009<sup>4</sup>.

5. Woodfuel is a renewable and climate friendly form of energy, when produced sustainably and used efficiently. Improvement in woodfuel production and use can be a factor and/or driver of socioeconomic development in terms of livelihoods and rural development, food security and health, energy access and climate change, biodiversity and ecosystem conservation, sustainable forest management, as well as employment creation and gender equity. Moreover, there is a large potential for modern, industrial uses of woodfuel as demonstrated in both industrialized and developing countries.

6. Woodfuel has an important role to play in the Sustainable Development Agenda 2030 as it contributes to most of the Sustainable Development Goals. The significance of woodfuel needs to be mainstreamed into development strategies at international and national levels, and efforts need to be undertaken to create an enabling environment for the robust and sustainable development of the woodfuel sector.

## **III. Value chain approach to improve performance of the woodfuel sector**

7. The woodfuel value chain starts with the growing trees, followed by a process of cutting, drying and possible carbonization, then bundling or packaging and transport to local and regional markets, where it is consumed by households and businesses. Market channels for urban supply vary from direct sales by producers to consumers, to indirect chains that involve intermediaries and/or wholesalers and retailers who organize the sales to consumers. Woodfuel value chains in Africa are mostly restricted to domestic levels following demand patterns of nearby urban centers. The major groups of actors involved in the woodfuel value chain are producers, transporters, traders (wholesalers and retailers), consumers and (traditional and official) authorities.

## **IV. Enhancing the sustainability of woodfuel production**

8. The extraction of wood for fuel has been identified as one of the principal drivers of forest degradation, particularly in sub-Saharan Africa. Woodfuel can be extracted by cutting trees from natural forests, trees on farms or plantations, or by using silvicultural thinnings or residues from forest harvesting and timber processing. In many African countries, government authorities control

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<sup>2</sup> FAO (2014), State of the World's Forest (SOFO-2014)

<sup>3</sup> World Bank (2010), Enabling Reforms: A stakeholder-Based Analysis of the Political Economy of Tanzania's Charcoal Sector and the Poverty and Social Impacts of Proposed Reforms

<sup>4</sup> World Bank databank indicates that the GDP of Tanzania and Kenya in 2009 were USD 28.57 billion and USD 37.02 billion, respectively.

production through producer and/or trader taxes, licenses, permits, fees, and by imposing minimum harvestable tree diameters or restrictions on certain tree species.

9. The woodfuel sector is generally characterized by the presence of many actors, informal practices, and often unequal distribution of benefits, which lead to a situation where there is little incentive to extract or produce woodfuel sustainably. The main issues related to sustainable woodfuel production include a resource deficit due to extraction that exceeds natural growth; lack of woodfuel plantations; insecure tenure and access rights; unequal distribution of benefits to producers; competitive use of trees and land for fuel and for other purposes; lack of awareness and knowledge of sustainable management practices; low efficiency of charcoal production; and weak resource governance.

10. Potential interventions to enhance sustainability of woodfuel production include improving forest management, plantation of fuelwood forests or woodlots for energy use, or efficient use of wood wastes from processing industries. Wood production may be increased by providing incentives for improved management of degraded forests, agroforestry, plantations and reforestation of fallow land, as well as improvement of tree harvesting techniques and wood extraction regulations in both managed and unmanaged areas. Another important means to increase woodfuel resources is to make good use of the wastes from wood processing industries (sawdust, wood chips, barks, etc). If processed into pellets, wood or charcoal briquettes, these wood wastes may partially substitute fuelwood for household cooking and heating or productive activities and at the same time eliminate the adverse environmental impacts of such woody biomass waste.

## **V. Improving efficiency of woodfuel conversion and consumption**

11. Woodfuel conversion and utilization efficiency has been far below the technical potential in many developing countries, particularly for the wood-to-charcoal conversion. For example, the currently prevailing wood-to-charcoal conversion efficiency is about 15 percent in many African countries. Upgrading the conversion efficiency to 25 percent could save 40 percent of wood for the same amount of charcoal produced, and this upgrading may not require very large upfront investment in addition to improvement of technical skills. Given the large and increasing demand for charcoal, efficiency improvement in charcoal production has significant potential to reduce the demand for wood to be extracted from forests and trees outside forests.

12. Inefficient combustion of woodfuel with traditional stoves in households results in indoor air pollution and low efficiency for thermal applications (cooking, water boiling, and room heating). While advanced wood-burning stoves have reached the thermal efficiency of over 70 percent, three-stone fires with a thermal efficiency of less than 20 percent are still widely used. Learning from lessons of previous programs, future programs that introduce and disseminate improved cookstoves need to take account of cooking practices and specific economic, social and cultural circumstances of the targeted areas.

13. Technological progress in modern industrial use of woodfuels in developed countries may inspire innovations for more efficient conversion and productive uses of woodfuel, but the investment scale of some technologies and/or the cost of the products may be prohibitively high to be replicated in the contexts of many less developed countries. Appropriate technologies that have proven to work well in countries with similar socio-economic conditions may be introduced as less costly solutions.

## **VI. Improving governance in the woodfuel sector**

14. Woodfuel is part of the forestry and energy sector, but in many cases both sectors have only marginal interest in this subject, partially due to the complexity of dealing with an informal sector. Woodfuel issues are also relevant to several other sectors, such as environmental protection and health, agriculture and rural development, gender development, and land traffic control (in case of trade of woodfuels), which makes the coordination processes more complex, sometimes leading to

considerable loss of efficiency. There is often poor coordination between institutions with an interest in the sector, and the benefit of investing limited funding and human resources in woodfuel may not be sufficient to stimulate any of the agencies to invest time and efforts in this subject.

15. In many countries, policies governing woodfuel production, trade, and consumption do not exist. Even if such policies are in place, they can be vague, inconsistent or contradictory, or conflicting to each other. The institutional capacity for the enforcement of existing woodfuel policies and regulations is weak as well in many countries. As a consequence, illegal logging and trade are widespread. Such institutional weaknesses, coupled with unclear policy and legal frameworks, may invite corruption - a major cause of unregulated or illegal woodfuel business, particularly in the case of charcoal production and trade.

16. To effectively address the problems with traditional practices of woodfuel production and consumption and to improve governance of the sector requires political will by governments and effective cross-sector coordination, which involves interactions among different sectors to balance the needs of stakeholders and to create synergies for a harmonized regulatory environment. An important step to build up political will is recognition of the economic value and the importance of sustainable woodfuel in national energy and food security, ecosystem conservation, rural livelihoods, environment and health, as well as gender development and job creation.

17. Adequate data and information on the whole woodfuel value chain is very important in formulating sound policies and regulations of the woodfuel sector. To improve woodfuel data availability and reliability, regular surveys would be required for woodfuel production and supply, trade and transport, end-user consumption and market demand, as well as the changes over time.

## **VII. Points for consideration**

18. The Committee may wish to invite countries to:

- recognize the value and importance of the woodfuel sector in provision of basic energy services and assess the current status and future trends in woodfuel production and consumption and take these into account in forest-related policies and measures;
- strengthen their efforts to enhance sustainability of woodfuel production and to improve the efficiency of woodfuel conversion and consumption;
- strengthen the institutional framework and cross-sector coordination so as to create enabling environments for investment and innovation in the woodfuel sector;
- bring the issue of woodfuel in Africa to the attention of the Regional Conference.
- The Committee may wish to invite relevant regional and international organizations and fora to foster dialogue and provide venues for information and experience exchange on good practices in resource governance for a sustainable woodfuel sector.

19. The Committee may wish to recommend that FAO supports countries in:

- reviewing national and regional programs, policies, and regulations related to wood energy and integrating them into developmental policies at national level;
- developing tools in support of policy formulation and decision making process, particularly in resource assessment and supply-demand analysis and planning;
- addressing sustainability of woodfuel production, effective use of wood wastes, efficiency of charcoal making, cleaner use of woodfuel in household sector, and productive use of woodfuel in industrial sectors;
- enhancing and aligning capacities of related public administrations to more effectively govern sustainable woodfuel management and use, and to adapt more swiftly to emerging challenges.
- The Committee may wish to request FAO to make sustainable wood energy one of its priorities in Africa.