



Fuelwood revisited: What has changed in the last decade?

Key points

- The available evidence does not substantiate earlier concerns that woodfuel demand has been outpacing sustainable supply on a scale that makes it a major cause of deforestation.
- The balance between demand and supply is seldom an issue requiring forestry intervention on a national scale. However, the rapid rise in charcoal production and its concentration, to supply large urban markets, certainly warrants further investigation.
- Annual global consumption of fuelwood appears to have peaked in the mid-1990s, at about 1600 million m³ and is now believed to be slowly declining. However, global charcoal consumption is growing rapidly (and at the turn of the century, was estimated to be using roughly 270 million m³ of wood pa). The combined aggregate is still rising but at a declining rate and substantially less rapidly than the equivalent growth in population. Overall, the total quantities of woodfuels being used are still huge, with an estimated 2.4 billion people currently utilising wood and other forms of biomass.
- In poor households almost everywhere, woodfuels are among the main forest related inputs. But this is not reflected in the current level of policy attention they receive, despite the growing focus on giving forestry a stronger livelihood orientation.
- Forestry initiatives need to be compatible with the energy sector's objective of helping poor users move up the energy ladder to greater fuel efficiency and alternative fuels. The main task though, is likely to be facilitating access to supplies for those who continue to depend on biomass fuels, for their own use or as an important source of income.
- Forestry measures will need to integrate meeting woodfuel demand into wider forestry objectives rather than, as in the past, developing responses focusing on the fuelwood issue alone.

In industrialised countries, woodfuels¹ have been largely replaced by more efficient and convenient sources of energy. However, in developing regions, less able to afford and access alternative fuels, wood remains a dominant form of energy. Huge numbers of subsistence users depend upon it for their domestic energy needs and millions of poor people also rely on woodfuel trading as a source of income. The resulting impact on forests and the role of woodfuels in rural livelihoods have been the subject of considerable debate.

Historical background

The initial explosion of interest in woodfuels in the mid-1970s, centred on the perceived, potentially devastating effects of escalating fuelwood demand on forest resources. Serious, negative socioeconomic consequences were also predicted for the rural poor, from expected future shortages. A series of early estimates forecast alarming discrepancies between woodfuel demand and sustainable supply (a fuelwood 'gap') and assumed the shortfall would be met by over cutting of the forest resource. Woodfuels became a significant development and environmental issue and went on to attract strong funding flows. One of the main interventions was to create additional woodfuel resources, through plantations and farm forestry.

In the late 1980s however, revised assessments of the situation and of the effectiveness of forestry interventions led to a marked downgrading in both research and forestry applications. But has the pendulum swung too far back the other way—resulting in an important livelihood and environmental issue being neglected?

Patterns and trends at the national and global level

Improved, more realistic consumption models (including new variables in addition to population growth, such as income, urbanisation and the price of fuels) have resulted in more accurate revised projections of woodfuel demand. Although there are great variations

¹'Woodfuels' - this term covers both fuelwood (or firewood) and charcoal. 'Forests' and 'forestry' broadly relate to trees and woody resources, where appropriate, both within and outside forests.



*For millions of poor people, woodfuel trading is a major source of regular or supplementary income.
(Photo by Christian Cossalter)*

between countries, a general result shows that consumption of both fuelwood and charcoal decrease with a corresponding rise in income and with increasing urbanisation, as users switch to more efficient energy sources.

Though it was largely overlooked in the early estimates of supply, trees outside forests actually provide a large share of overall woodfuel output, highlighting the importance of non-forest resources. This reinforces the view that demand is unlikely to deplete forest cover on a large scale and emerging studies on the causes of deforestation tend to support this. For example, finding that where deforestation is occurring, this is generally due more to land clearing for agriculture (with fuelwood as a by-product) than to woodfuel collection per se. However, where charcoal production is concentrated, as in parts of Africa, wood extraction for charcoal can represent the main source of tree loss and its harvest can materially alter the structure and productivity of the woodstocks being drawn upon.

Urban patterns of woodfuel use and supply

Recent data show forest depletion is initially heavy near urban areas but this slows down as cities get larger and wealthier. This pattern is consistent with the urban energy transition process of fuel substitution (from

intensive use of fuelwood, to alternative fuels like charcoal and finally, to LPG and electricity). Accordingly, woodfuel consumption in much of urban Asia is growing only slowly, if at all and in some places, the shift away from woodfuels has been quite marked. However, the rapid population growth in places like urban Africa, often accompanied with persistently low incomes, means strong growth in woodfuel use will probably continue to occur into the foreseeable future. Attempts are currently underway to try and put supplies to African cities on a more sustainable footing but have experienced only limited success so far.

Rural patterns of woodfuel use and supply

In rural areas, biomass fuels dominate household energy use, with a high dependence on collected fuelwood. The loss of access to Common Pool Resources (CPRs) due to privatisation or state control can therefore pose a significant problem. Also, initiatives to improve access through local management have had a flawed record. It is the poorest who tend to be the most adversely affected when shifts to bring CPRs under sustainable management restrict fuelwood harvesting in the process (also, the household needs of women can be overridden by the needs of men gathering fuelwood for sale).

Where there are fuelwood shortages, purchased supplies generally increase or more time is spent on fuelwood collection. Some households also move down to straw and dung, while other, wealthier households shift to alternative fuels. Measures to economise woodfuel use are also adopted, for example, using foods that take less time or fuel to cook. Interventions to encourage the adoption of more fuel efficient stoves have had some impact in urban areas, however success has been limited in rural areas, partly due to unfamiliarity with the new technology and cost constraints.

Programmes to support farm fuelwood lots have also experienced little success, as planted and managed tree stocks have created wood outputs with too high an alternative value and at too high a cost for growers to burn the wood themselves. Although, there is growing evidence that tree management by farmers is on the rise and some of the resulting outputs are going towards increasing household fuelwood supplies.



In most rural areas, gathered supplies of fuelwood constitute the main source of domestic energy and hence these users are vulnerable to changes that affect their ability to access fuelwood. (Photo by Edmond Dounias)

Forestry-related issues

In relation to woodfuel users and suppliers, three main categories of 'problem areas' of relevance to forestry emerge:

- Reductions in access to woodfuels can negatively affect poor subsistence users
- Certain situations can adversely affect those generating income from woodfuels
- Woodfuel harvesting and use can have negative conservation consequences

Locally managed woody resources

The issues that arise are similar to those relating to the devolution of control and management of forests as a whole. For example, the effective transfer and enforcement of local rights to a resource are required. Issues that often remain to be resolved include the continuing role of forest departments, the accountability of local institutions to their members and potential differences regarding how the resource should be used, both within the user community and between the community and outsiders.

While the poorest people are usually the most dependent on woodfuels, they are often the least likely to have equitable access to locally managed resources. External forest sector support may assist by developing management practices that better reflect the balance of needs within the user group, minimise the disruption to fuelwood use or help those who are dependent on fuelwood trading (where access is restricted in order to put the resource on a more sustainable footing). For example, poor people could be assisted to diversify into other income generating activities, while those needing to shift to other energy sources could be provided with credit or subsidised introductory rates.

Management of on-farm woodfuel resources

The shift to individual land tenure should create a more secure basis for tree management by farmers. However, households can only assess the relevance of woody plants in terms of the species and knowledge available to them. There appears to be considerable scope for intervention to enhance the spectrum of low cost, multi-purpose woody species and husbandry options available

to farmers. This could serve to increase their fuelwood supplies as a co- or bi-product of broader on-farm tree management strategies.

Generating income from woodfuel trade and markets

Urban demand for woodfuels is the area most likely to impact upon forest resources and is potentially the most amenable to forestry intervention. The potential and constraints of woodfuel selling as a source of income for the poor appear to be insufficiently recognised in poverty reduction initiatives (which are often oriented mainly towards timber or non-wood products). Yet, huge numbers of the poor derive income from woodfuel trading, particularly given the ease of access to the resource and entry into the trade. However, these same

characteristics can impede progress out of poverty, keeping prices and incomes low and discouraging investment in more efficient production, sustainable management and resource renewal. Hence, there is a need to better understand the conditions in which expanding urban demand for woodfuels can provide useful income and how it is best to support those engaged in this activity.

Competition from subsidised woodfuel supplies from government forests, taxes and other charges to generate revenue, restrictions imposed in the name of conservation, and other regulations governing the sale and trading of woodfuels, can create trade and market distortions and impose significant constraints on who can participate. Such interventions are often unnecessary, counter productive or poorly implemented and need to be critically examined and where necessary, removed or revised.

Conclusions

This review supports the conclusions of the late 1980s that there is not a 'fuelwood crisis' of such magnitude and with such potentially dire consequences, as to require major interventions devoted just to this issue. Better data and analytical models show that demand for fuelwood is not growing at the rates earlier estimated. In practice, fuelwood supplies are being drawn from a much wider base than just forests and users have access to a range of responses that enable them to adjust to changes in the availability of fuelwood without necessarily needing investment in additional wood resources.

Issues of resource depletion associated with woodfuel supplies to some urban markets indicate an inherent conflict between pursuit of the livelihood benefits for the poor and the sustainable use of the forest resource. In such situations, further studies into the nature and causes of the problem and appropriate interventions are required. As part of this process, additional information is needed about how woodfuel use, energy policies and forestry and livelihood interventions can best relate to each other.

Woodfuels remain one of the larger outputs of the forest resource and provide inputs into the livelihoods of larger numbers of people, most of them poor, than possibly any other forest product. However, the attention this receives in forest management and in participatory forestry and forest product programmes and research, is not commensurate with this level of usage. Woodfuels are less of a concern to the security of the forest estate than previously feared. However, they are a larger component of the contribution that forestry can make to poverty alleviation than is currently reflected in most forest policies and programmes.



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