

## Impacts of Charcoal and Fuel Wood Use in the Goma Region, North Kivu

Wood is a primary necessity for all Congolese people, especially those living in a rural environment. The people from the Goma region are significantly exploiting forests resources, namely because:

- Wood for fuel is usually freely available to those in rural areas willing to gather it;
- The very low initial capital investment needed to use energy wood;
- The very low level of electrification (barely 10% of homes) and the lack of alternative energy sources;
- Goma's proximity to the Nyiragongo volcano provides a strong demand for construction timber<sup>1</sup>;
- A high flux of people caused by various rebellions<sup>2</sup>;
- A preference for foods cooked over wood fires.

### 1. The Energy Dependence of Goma Inhabitants

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Goma town depends largely on wood to meet its energy demands. It has a low degree of electrification, and power cuts are frequent, apparently because power is diverted to new factories in the North. The *Division Provinciale de la Direction du Plan* (or Provincial Division of the Ministry of Planning) noted in 2006 that “the almost total absence of electricity in the North Kivu Province resulted in massive deforestation and tree clearance in the [Virunga] National Park, with all the associated ecological and tourism-related consequences one would expect”. It is hoped that the 40 hydroelectric plants planned for construction in the Beni, Lubero, Masisi, Rutshuru and Walikale territories, together with the current project in the Sake territory in the Masisi Province, will reduce Goma's use of fuel wood. These two fuel sources are however not readily interchangeable.

The wealthiest households use charcoal (Makala) while the poorest households and roadside caterers (chiguague, meaning peanut) use bundles of sticks as firewood on cookers consisting simply of three stones.



Every day, many small traders bring bundles of firewood and bags of charcoal into town, either on their backs (30 to 35 kg bags), on their bicycles (up to 5 bundles of sticks or three bags of charcoal<sup>1</sup>), in vans (60 bags of charcoal) or in 8 -10 tonne trucks (200 - 250 bags of charcoal).

<sup>1</sup> In 2001, the volcano's eruption caused the destruction of a large part of Goma town (520,000 inhabitants).

<sup>2</sup> As at May 2006, the number of displaced persons in Goma town was still 22,716 individuals (or 23% of the total population).

## 2. Evaluating Consumption

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The exploitation of wood for energy (for cooking and heating), like that of other resources gathered by rural peoples, develops mainly through informal networks. It is therefore very difficult to quantify consumption levels. The administrative services responsible for trade and forest law enforcement report that the sector is uncontrollable, and brings virtually nothing in revenue terms.

The communities of Goma could request concessions for the use of forest resources free of charge. This permit gives any individual in the community the right to sell their wood products anywhere in the DRC without having to pay government taxes, although the Provincial and Territorial DAE and the chieftainships do have a right to levy their own taxes (Edict of 079-244 dated 16 October 1979). Otherwise, the export of energy wood to Uganda attracts a tax of 200 shillings (0.12 USD) per bag.

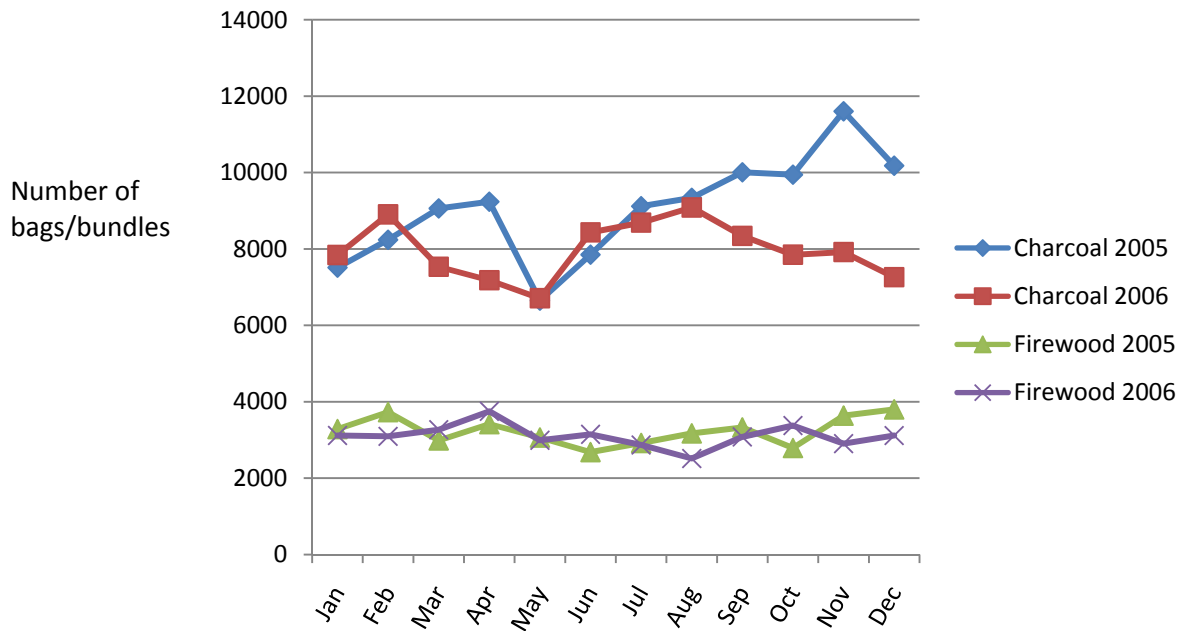
Fuel wood consumption varies between 1 and 1.6 m<sup>3</sup> of fuel wood per person per annum, and from 85 to 90 kg of charcoal per person per annum<sup>3</sup>, based on FAO 2005 figures, themselves extrapolated from the demographic data available. In contrast, Delvingt (1994)<sup>4</sup>, found that the annual per capita consumption of fuel wood was 0.74 m<sup>3</sup> in Southern Kivu.

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<sup>3</sup> The FAO nationwide estimate of about 72 million m<sup>3</sup>; this means that the overwhelming majority of all the wood harvested in Congo is used locally for heating and cooking.

<sup>4</sup> Cited in Ministère de Plan, Division Provinciale du Plan Nord-Kivu, Profil socio-économique de la Province Nord-Kivu, 2<sup>nd</sup> Edition, Goma, July 2000, 198 p.

**Figure 1** Monthly records for firewood and charcoal bundles entering Goma, North Kivu, DRC, during 2005 and 2006.



Source: AFED<sup>5</sup>

Very little variations are seen in the number of bundles entering Goma (at sampled points<sup>6</sup>), although there was a slight drop in the number of bags of charcoal recorded between 2005 and 2006 (from 9061 bags to 7890 bags per month, Fig. 6). Annual consumption is therefore estimated at 214 tonnes of firewood and 420.61 tonnes of charcoal.

ECNEF<sup>7</sup> Goma's sales figures for 2004 are 2,947 tonnes of charcoal and 3,926 m<sup>3</sup> of fuel wood. In Kasindi<sup>8</sup>, only 150 bags of charcoal were recorded per month, giving an annual total of 54-63 tonnes (FOPRADI, 2007), with small quantities also exported to Rwanda.

### 3. Place of Production

Whether it is for commercial gains or for family use, the wood is collected mainly by women and young girls; men attend to the production of charcoal. Large-scale production of charcoal is carried out in the Rwenzori, Mutuenga and Bulungo communities. The charcoal preferred by local people is produced from *Nyarwire*, which is taken exclusively from Virunga National Park. Charcoal could also be produced from exotic (planted) species such as eucalyptus. However, according to the Ministry of Planning (Ministère de Plan, 2006), the majority of energy wood comes from natural forests.

<sup>5</sup> AFED: Amis de la Forêt et de l'Environnement pour le Développement (NGO).

<sup>6</sup> Since 2001, AFED has recorded all charcoal and fuel wood bundle movements from a point of entry to the west of Goma. In Autumn 2004, the NGO WWF-PEVi also recorded these movements along 6 different axes into Goma. The counts were carried out covertly between 0600 and 1800 hours; the peak times were between 6 and 10 a.m. and 4 and 8 p.m.

<sup>7</sup> ENCF : Conservation of Nature, Water, Forests and the Environment (DRC).

<sup>8</sup> The cost to load a *bombeur* is CFAF 100 to the edge of the forest, the cost of unloading at Kasindi is 400 shillings.

The main market for charcoal is located at Kiroliwr (west of Virunga National Park) and was created by General Nkunda (deposed by the Congolese Army) during the 2004 rebellion. General Nkunda – together with his brothers – authorised the local people to gather the wood from the National Park. A secondary market was also created at Kingi, again west of the National Park, where the wives of military personnel sell wood. There are two or three charcoal manufacturing ovens (using mainly town trees) in Goma, and about 300 more within a 10 km radius (AFED, 2006).

Tree trunks are needed to manufacture charcoal (e.g. 0.0436 ha of forest is needed to manufacture 472 bags of charcoal); firewood bundles are made up mainly of twigs (around 0.6 ha yields 1300 bundles) (WWF-PEVi, 2004). It is estimated that between 3 and 4 hectares of Virunga National Park forest is harvested every month by local people.

#### **4. Thoughts on Solutions to reduce the Pressure on Natural Resources**

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- Increase the area of plantation forests;
- Use better designed hearths to reduce charcoal consumption by 50 - 60% (AFED, 2006);
- Raise awareness on hearth efficiency. Once a month, AFED broadcasts information on better hearths on Ushirika Community Radio (Rutshuru);
- Change the behaviour of builders. For example, temporary accommodation for construction workers is made exclusively out of timber.



#### **5. Avenues for Additional Research**

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- Estimate the charcoal and firewood volumes consumed locally *versus* the volumes exported. There are four charcoal markets in Goma<sup>9</sup>. Two organisations that Forests Monitor met in Goma have already carried out such counts at these markets, but are reticent about the idea of doing counts directly on the border without an official framework for such operations;
- Estimate charcoal consumption and export volumes in Kindu (Maniema Province), where the charcoal is transported to Goma by plane or to Rwanda by road.

#### **References**

**FOPRADI and CREF Network**, Etat des lieux de l'exploitation forestière dans le corridor de l'Ituri, territoires Beni-Irumu-Mambasa, Défis et perspectives, Enquêtes effectuées par Ing. Kasereka Mundele, Dec. 2005, 29 pp.

**Ministère de Plan**, Division Provinciale du Plan Nord-Kivu, Bulletin trimestriel des indicateurs sociaux, Deuxième Trimestre 2006, Service Planification sociale et communication, Goma, July 06, N° 06/02/06, 30pp.

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<sup>9</sup> Up until 2003, AFED had observers in all four markets. Unfortunately there are no records of these data.

*Note:*

This document is part of a larger study undertaken by Forests Monitor and partners, within the context of the UK Department for International Development's (DFID) programme on the trade in natural resources from the DRC. This study uses a multidisciplinary approach - comprising socio-economics and politics - to analyse the timber trade in the Upper Great Lakes Region in central Africa, and recommends a set of integrated policies to increase the contribution of the timber trade to regional sustainable development. For the full report see 'The Timber Trade and Poverty Alleviation in the Upper Great Lakes Region', [www.forestsmonitor.org](http://www.forestsmonitor.org)