

Case Study 1. Firewood and Charcoal Production in Paraguay - by Miguel Lovera, Espacio Orgánico, Paraguay

Background

Paraguay is a country originally rich in forests. Of its 40,600,000 ha territory, some 25,000,000 ha were covered by forests, approximately 8,000,000 ha of which were subtropical moist forests and 16,000,000 ha dry subtropical and tropical formations in the Chaco Region. However, only some scattered patches of the subtropical moist forests remain (about 1,000,000 ha in total); and there are only about 14,000,000 ha of the dry forests formation in the Chaco remaining.¹

Deforestation is still rampant throughout the country.² The main drivers are the expansion of the agricultural frontier, mainly to plant soybeans in the Eastern Region and to enlarge the pastures for cattle ranching in the Chaco. But the production of charcoal and the harvesting of firewood are key drivers of degradation and devastation of forests as well.

Paraguay is a great producer of hydroelectric power, generating an average of 9,000 kWh per inhabitant.³ However, much of this is exported and the most common source of energy for domestic consumption is biomass. Firewood and charcoal provide for most household and industrial uses and this consumption contributes heavily to the deforestation and degradation of forests in the country. Additionally, domestic wood combustion—in stoves without chimneys laid on the floors of the huts of poor people—poses significant health problems for women who are exposed to smoke on a daily basis while cooking.

In recent years, charcoal also became an important export product, with quantities traded reaching and even surpassing domestic consumption levels.

Both the consumption and production of firewood and charcoal need to be addressed. Alternative energy sources such as solar and, in some cases, wind, should be accessed. A rationalisation of the distribution of and democratic access to hydropower should also be established without more ado, thus distributing the power generated by the installed hydropower plants democratically and fairly amongst the population, so they depend less on wood.

Firewood

Firewood is the most used source of energy, mainly for cooking. More than half (52%) of domestic energy consumption is based on biomass; 70% of this biomass is charcoal (8%) or firewood (70%).⁴ This situation makes Paraguay the largest per capita consumer/producer of firewood in the Mercosur region (which comprises Argentina, Brazil,

¹ These data are derived from analysis of the latest deforestation maps by INFONA (Instituto Forestal Nacional www.infona.gov.py)

² See for example www.lanacion.com.py/articulo/153813--chaco-paraguayo-presenta-la-mayor-deforestacion-del-mundo-en-23-anos.html

³ http://www.ssme.gov.py/VMME/sector%20energetico/sec_energetico.htm

⁴ Secretaria del Ambiente, 2013. Hoja de Ruta para la Estrategia Nacional para un Desarrollo Bajo en Carbono. SEAM. Asunción, 2012. www.seam.gov.py

Paraguay and Uruguay).⁵ Up to 50,000 ha of wood is harvested annually for energy purposes, most of it from native forests. In the case of the Eastern Region of Paraguay, where the subtropical moist forest is situated, the remaining stands are mainly secondary. This means that the firewood harvest in this region takes a particularly heavy toll on forest recovery and resilience.

Nowadays, the main industrial demand for firewood is grain drying. Paraguay is the fourth largest exporter of soybeans and produces some 9,000,000 tons/year. This requires more than 500,000 tons/year of wood. A similar quantity of wheat, maize and other grains demand a comparable amount of wood every year, most of which is sourced from natural stands.⁶

Charcoal Production

Charcoal production in Paraguay has a dismal tradition. More is exported than retained for domestic use even though the local population, mainly households and small industries, depends on it, including for cooking.

During the 70's and in recent years, most of the exported charcoal has gone to Brazil. The majority of that was illegally exported, providing no benefit to the peasants who produced it beyond the meagre wages paid on a piecework basis. It is difficult to quantify the volume of charcoal sold in this way. However, on one spot check a visiting investigative committee found 17 truckloads of illegal charcoal waiting at the Paraguay-Brazil border, in broad daylight, for their Brazilian counterparts to arrive and collect the charcoal.⁷ Assuming each truckload of charcoal weighs approximately 20 tons, 100 tons of timber would be required to make the charcoal carried by each lorry, which would in turn have required the harvesting of roughly one ha of Paraguay's subtropical forests per truck. This adds up to 17 ha of deforestation being generated by just this one event. The quantity actually crossing the border will be some five times this every day, so we can estimate that more than 20,000 ha of forest are being lost every year to produce illegal charcoal to export to Brazil.

Paraguay also exports high-quality barbecue charcoal. Last year exporters earned some US\$ 35,000,000 in exports to countries including Spain, Germany, Belgium, Brazil, Israel and Chile.⁸ This represents the destruction of roughly 12,000 ha more forest.

Another great charcoal consumer in Paraguay is the steel industry. At the moment, only one steel mill exists in the country, ACEPAR. According to the Workers Cooperative of ACEPAR,⁹ in the period between 2000 and 2008 the mill produced 815,174 tons of pig iron. The mill consumes 1.25 tons of charcoal per ton of pig iron, which meant consuming 1,018,968 tons of charcoal during this period, with equates to an average annual consumption of 127,371 tons of charcoal. This represents some 636,855 tons of wood or 6,369 ha of forest.

⁵ Viceministerio de Minas y Energia, Balance Energetico Nacional 2011, in, Ministerio de Obras Publicas y Comunicaciones, Asuncion, 2012. www.ssme.gov.py

⁶ Calculated on basis of conventional firewood use in drying grain for storage in silos.

⁷ <http://www.abc.com.py/edicion-impresia/interior/el-contrabando-del-carbon-al-brasil-florece-en-la-zona-de-caniindeyu-906897.html>

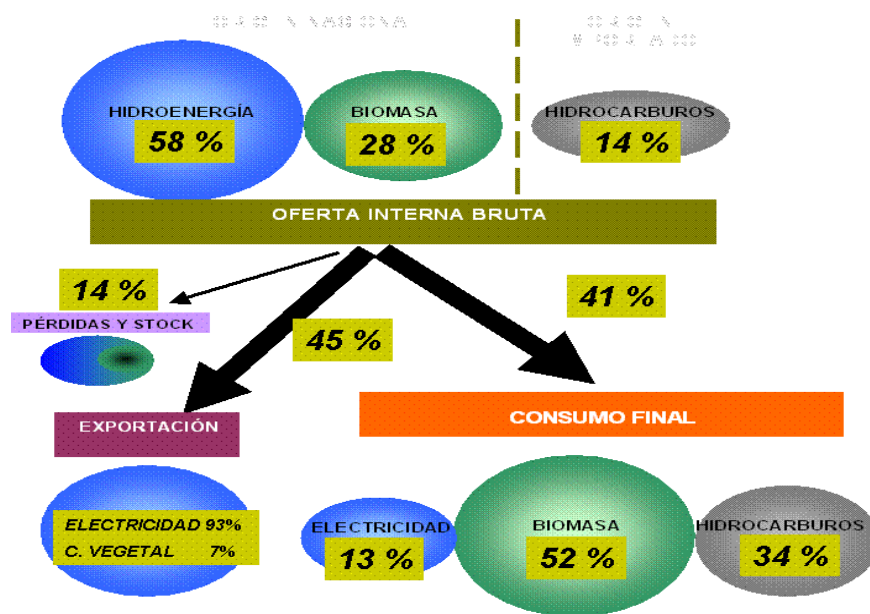
⁸ REDIEX, 2010. Perfiles de Productos para la Exportación No. 9. Carbón vegetal Red de Inversiones y Exportaciones <http://www.rediex.gov.py/userfiles/file/9%20-%20PPE%20Carbon%20vegetal.pdf>

⁹ <http://www.diarioprimeraplana.com/v1/index.php/locales/itemlist/date/2014/2/19?start=10>

Conclusion

With abundant resources for hydroelectric production and some 250 sunny days per year, Paraguay should not rely so heavily on wood as a source of energy. Paraguay's energy transmission infrastructure needs to be improved, and democratically controlled and accessible hydroelectricity transmission facilities should be built. Shifting to these sustainable renewable sources of energy would clearly make a very significant difference to Paraguay's rates of deforestation and forest degradation, potentially reducing deforestation by something in the order of 50,000 ha/year.

Structure of the Energy Matrix of Paraguay



Source: Vice-Ministry of Mines and Energy of Paraguay, 2007. From top left to right: Hydroenergy 58%; Biomass 28%; Hydrocarbon 14%; Internal Gross Offer (from left to right): Losses and stock 14%; Export 45%; Final consumption 41%; Row below left to right: Electricity 93%; Charcoal 7%; Electricity 13%; Biomass 52%; Hydrocarbon 34%