Consultation Service

for

Determining the Biomass Resource Stock in Tbilisi and Its Surrounding Areas

Final Report

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Introduction

Biomass energy represents the significant additional source of energy not only for Georgia, but it is recognized worldwide. In order to ensure the utilization of biomass potential in Georgia as an additional source of energy, we should know the exact amount of available biomass supply if the country considers policy elaboration and support for the sector development to be a priority.

There are two types of forest biomass: a) the one derived from timber production and log transportation. This type of biomass has no economic effect so far. b) Residues/biomass produced during the processing of timber performed by timber processing plants. This differentiation is provided in the table below[1]:

Table 1

Source	Type of Biomass/Residues
Timber production activities	Branches, needles, leaves, chumps, roots, low quality decaying wood, woodchips, sawdust

[1] http://fao.org/docrap/T0269E/t0269e08.htm#6.2.4.%20alternative%20uses%20of%20residues

Sawmill	Bark, sawdust, shreds, wood shavings and woodchips, wood dust
Veneer production	Bark, wood, woodchips on veneer and dust
WPB production	Bark, narrow woodchips, sawdust

Distribution of biomass derived from cutting down one tree[2]:

Table 2

Part of Tree or Product	Share %
Left in forest:	
Crown, branches and leaves	23
Stump (without root)	10
Sawdust	5
In the sawmill:	
Wood slabs, edges and slices	17
Sawdust and dust	7,5
Miscellaneous wood residues	4
Bark	5,5
Sawed wood	28
Total	100

In Georgia the forecasted parameter for wood production is 1,360,900 m^3 that will be implemented in the next 2-3 years. Due to a number of subjective and objective circumstances, the timber production facilities cannot use the total volume of produced timber, i.e. to transport it out of forest and process or sell it. The expected volume of such wood is not less than 20% of the total volume that amounts to approximately 240,000 m^3 annually. Moreover, there is some potential to use timber residues (sawdust and slices) by small and primitive sawmills. There used to be many sawmills in Georgia, majority of which is not functioning any more. However, a lot of wood residues have been

[2] http://fao.org/docrap/T0269E/t0269e08.htm#6.2.4.%20alternative%20uses%20of%20residues

[3] Forecast parameter of the National Forestry Agency

accumulated for years in the territories where the sawmills were located. Removing residues from such territories has economic and ecological significance due to the fact that many sawmills were often located on riverbanks.

There is a potential to use the biomass accumulated in agriculture, which is represented by the wood resources in old fruit gardens, biomass produced from hazelnut processing (that has a significant share in export), such as nutshell, residues of corn, soy, other crops.

It is noteworthy that the following activities must be implemented in order to ensure complete utilization of the potential forest biomass:

- Legislative innovations
- Incentive economic levers
- Implementation of targeted social programs

Today the forestry legislation undergoes dynamic changes. The current Forest Code will be replaced with a new one. Conditions for the complete utilization of wood biomass should be envisaged by the new law.

Determining the Biomass Supply in Tbilisi and Its Surrounding Areas

The aim of the Consultation Service was to determine the biomass supply in Tbilisi and its surrounding areas (15-20 km). The study was supposed to cover the exact location, volume, owner, type of biomass, etc.

At the first stage of the study the data[4] were collected from the enterprises located in Tbilisi and some biomass has been accumulated in their yards.

At the final stage of the project data on State Forests Fund and the volume of timber cut down in Tbilisi National Park were collected from the surrounding areas, within 15-20 km radius from Tbilisi.[5]

The conducted study and analysis suggest that the biomass amounts to 12,641 m^3 in Tbilisi. Every year in the surrounding areas – in the territory of the State Forests Fund and Tbilisi National Park, there is 9,067 m^3 timber is given for non-commercial purpose and 2,708 m^3 biomass supplies are left in the forest as a result of extraction of timber. Interviews with forest guards showed that due to social and economic problems the local

[4] Due to the fact that none of the enterprises keeps record of biomass, approximate numbers are presented in the document.

[5] Due to the fact that the biomass existing in areas surrounding Tbilisi is not located on a specific place, the information cannot be presented according to the project ToR.

population takes branches and brushwood left after the timber extraction out of the forest. People do it on a regular basis that decreases the amount of biomass supply in the forest.

Findings of the study suggest that the amount of biomass supply in Tbilisi and its surrounding areas can be considered insufficient for reaching the main goal of the project.

Biomass Supply in Tbilisi

Tbilisi City Hall

In 2013, the enterprise under the City Hall produced 2,800 m^3 timber for household use (firewood) and 621 m^3 - for industrial use. The population takes tree branches with the thickness of more than 0.8mm (left after wood production) to warm their houses. This year the total volume of biomass left in forests after timber extraction is approximately 1,022 m^3.

There is no special territory to localize timber waste (branches, needles, leaves, chumps, roots, low quality decaying wood, woodchips and sawdust). As the Municipal Environment Service of Tbilisi City Hall mentioned, a special area will be designated (presumably at the Gldani landfill) where wood residues from timber harvesting will be transported.

The Municipal Environment Service of Tbilisi City Hall informed that the supply of wood to be extracted in 2014 will be determined after consultations with the German expert forester hired by them.

Embawood Ltd.

One of the biggest furniture manufacturers in Georgia uses production residues (mainly sawdust, woodchips) to warm its own buildings in winter (they do not produce briquettes and pallets).

They collect wood waste in 200 m^3 reservoir that becomes full in one month according to their information. They sell the available supply only during the period from April to October.

Jadvari Ltd.

The company exports fir tree seeds to Europe in cooperation with European partners. Fir tree cones are collected in Racha Region (the village of Tlughi, Ambrolauri District) and processed in the enterprise located in Tbilisi.

The production process includes separation of seed from cones. The cones without seeds may be used as an alternative fuel.

In specific seasons (autumn, winter) the company collects 90-100 tons of cones as manufacturing waste.

In addition other manufacturers of conifer seeds may collect 5-10 tons of cones.

Wood Service Ltd.

The manufacturer of wooden doors and windows, wood flooring and parquet flooring. 470 m^3 sawdust and woodchips are accumulated every month. The residues are used by the company to warm its buildings in winter (they produce briquettes).

Gora Ltd.

The manufacturer of carpentry products annually collects 10-15 m^3 sawdust in seasons (summer-autumn) and uses it to warm its buildings in winter (they do not produce briquettes and pallets).

Tsunda Ltd.

The manufacturer of carpentry products produces wooden furniture. Director of the organization mentioned that 200 sacks (approximately 25-30 kg per sack) of sawdust and woodchips are collected per month. The residues are used by the company to warm its buildings in winter (they produce briquettes).

Forest Ltd

The manufacturer of wood doors and windows and other types of carpentry products. They mentioned that in case of full load 21-25 m^3 sawdust and 12-14 m^3 woodchips are accumulated per month.

Individual Entrepreneur Jumber Gabadze

The manufacturer of wooden products collects 20-25 m^3 sawdust and woodchips per month.

JSC Orbeli 91

The manufacturer of wooden products collects approximately 18-20 m^3 sawdust and woodchips per month.

Individual Entrepreneurs - David Pitskhelauri and George Chkhaidze, manufacturers of carpentry products collect approximately 5-10 m^3 sawdust and woodchips per month.

Eliava Market and Mukhiani Market

Different types of wood products are produced in the markets: furniture, doors and windows, balustrade, etc. Averagely 5-10 sacks (approximately 25-30 kg per sack) of woodchips are collected per day.

The enterprises, which discontinued production due to the lack of orders, were also interviewed. They mentioned that even when they work the volume of biomass is very little (approximately 1-3 m^3 per month) in the work area.

Totally 27 manufacturers of different types of wooden products were interviewed in Tbilisi.

Biomass Supply in Surrounding Areas of Tbilisi (15-20 km)

The biomass in surrounding areas of Tbilisi is mainly derived from residues left in cutting areas[6]: branches, needles, leaves, chumps, roots, low quality decaying wood, brushwood, woodchips and sawdust, fallen dry trees and branches, dug out, broken and wind-fallen wood.

Every year the controlling body of the respective territory determines the cutting area for the local population, with the purpose of personal consumption, for ensuring household use and to meet their social needs.[7] In the study area a timber production license has not been issued for commercial wood production. The timber marked in the cutting area is taken out of the forest by the local population for wood production (social cutting and thinning are marked, the cut timber is treated on the site, and the measures are determined by the population individually). The timber residues are left in the forest that actually should be transported and stored by the agency in charge of managing a particular area (National Forest Agency in the area of the State Forest Fund and Agency of Protected Areas – in Tbilisi National Park).

[6] A particular area of the Georgian Forest Fund with the quantity of trees allocated for felling defined and trees designated for felling marked (Forest Code of Georgia)

[7] Mainly leafy wood is used for household and social purposes

Despite the regulations envisaged by the relevant law pursuant to which the management bodies shall be responsible for cleaning the cutting areas, collection and storage of residues left after cutting trees, such activities are not implemented. Accordingly, the biomass is not localized at one place and it is scattered all over the forest.

As mentioned above, forest management agencies designate cutting area every year and then visually examine/examine it. Forest guards of the forest district also inspect other areas under their control. Heads of forest districts and relevant decision-makers[8] of the central administration mentioned that it is not difficult to determine the quality of residues.

According to the obtained information, some biomass supply (dug out, broken and wind-fallen wood) is located in such places (outside cutting areas) that are inaccessible due to complicated terrain and bad roads and it is difficult to take the biomass out of the area. Accordingly, there is no information about such areas.

It is noteworthy that the cutting area is allocated every year in the surroundings of Tbilisi near the territories accessed by roads, in order to easily transport the timber. Table 1 shows the volume of cut wood produced in 2013 to ensure household use and to meet social needs of villages around the study area. In adjacent regions the volume of cut wood was the same in previous years (the last 3 years) as in 2013. Before any alternative fuel is provided to the population (natural gas supply, biofuel, etc.) the volume of wood to be cut annually will be the same.

Volume of Timber Produced in Tbilisi National Park and Areas of the State Forests Fund within 15-40 km Radius from Tbilisi

Table 3

Forest District	Forest District	Distance from Tbilisi (km)	Volume of Cut Wood	Biomass M3
Mtskheta-Didgori	Bevreti	24	925	276
Mtskheta-Didgori	Dighomi	16	1,124	336
Mtskheta-Didgori	Dzegvi	26	1,125	337
Mtskheta-Didgori	Didgori	17	982	293

[8] Contact person: Vladimir Vashakidze –Head of Forest Accounting Department, National Forestry Agency

	Lisi			
Tsalka-Tetritskaro	Orbeti	27	507	151
Gardabani-Marneuli	Satskhenisi	37	420	125
Tbilisi National Park	Martkopi, Ghulelebi (Ghulelebi), Ghulelebi (Bochorma), Gldani, (Tskhvarichamia), Gldani (Gldani), Saguramo (Saguramo), Saguramo (Galavani)			
Total:			**9,067**	**2,708**

It should be mentioned that the volume of stump (without root) is not included in the total amount of biomass existing in surrounding areas of Tbilisi that amounts to 10% of the total volume. The wood to be cut in the cutting area is marked on the stump (to ensure accurate cutting and identification) and it is not common practice to take it out of forests (except the cases when licensees implement forest management activities in the area given away under the license e.g. to produce butt stock of a gun, decorative products and other industrial timber). Moreover, their transportation out of forest is not regulated by laws. There exists the potential for the use of biomass accumulated in agriculture. The study was conducted on arable lands in surrounding areas of Tbilisi. The study suggests that farmers use residues of corn, soy and other agricultural cultures to feed domestic animals in winter.

Biomass Resource Supply in Tbilisi and in Its Surrounding Areas (15-20 km)

(One year supply)

Table 4

Location	Biomass m^3
Tbilisi	
Tbilisi City Hall	1,022
Embawood	2,400
Jadvari	1,555

Gora	90
Wood Service	5,640
Tsunda	204
Forest	348
Individual Entrepreneur Jumber Gabadze	288
Orbeli 91	240
Individual Entrepreneur David Pitskhelauri	120
Individual Entrepreneur George Chkhaidze	120
Eliava and Mukhiani Markets	60
Other	276
Total	12,363
Surrounding area of Tbilisi	2,708
Total: 15,071	