



EUROPEAN NEIGHBORHOOD AND PARTNERSHIP INSTRUMENT (ENPI) EAST COUNTRIES FOREST LAW ENFORCEMENT AND GOVERNANCE (FLEG) II PROGRAM COMPLEMENTARY MEASURES FOR ARMENIA & GEORGIA

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Executive Summary

Assessment of Firewood Consumption and Firewood Production Potential in Georgia

CENN – Caucasus Environmental NGO Network
March 2016





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Introduction

Massive use of Georgian forests for social purposes over the last 25 years is putting the country at risk of an environmental disaster as well as socio-economic and energy shocks.

In Georgia, firewood is the main source of heating. Its share as a fuel source ranges from 75-96% by region¹. The amount of firewood legally provided to the population of Georgia—which is for the most part supplied by means of small-scale logging by private individuals in areas allocated by the National Forestry Agency (following the NFA)—has decreased to a critical point. According to Georgian legislation, the Government of Georgia is obliged to provide firewood resources for its population. Georgian Forest Code² gives the definition of Social Cutting – in the cases envisaged by the law of Georgia, implementing the relevant activities to provide timber to local population, authorities depended on state budget, Legal Entities of Public Law as well as other authorities determined by the Georgian Government with timber.

Surveys conducted in the forestry and energy sectors have shown a firewood deficit, with a dramatic difference between annual firewood consumption and the amount of firewood officially allocated by the government. Due to the urgency of the problem, in 2014 an obligation to develop a state programme on the provision of the population with fuel resources became part of the environmental component of the implementation of the EU Association Agreement road map.

In order to address the above mentioned problem in the forest sector, IUCN ENPI FLEG program started working on supporting the development of the state program on providing rural population with firewood. At the very initial stage of designing the work, agreement was reached with the NFA and the Ministry of Environment and Natural Resources Protection of Georgia (following the Ministry) to address and cover the following key issues:

- Conduct assessment of the usage of energy sources by local population, with special focus on usage of firewood and its share in total energy consumption;
- Based on the results prepare an analytical report on the usage and supply of fuelwood in rural communities, which would help in the development of state strategy to provide rural households with timber resources, including firewood.
- Carry out an awareness raising campaign among local population on usage of different sources of energy

¹ Current Status of Forest Management and its Impact on the Population CENN 2014

² Article 5. Definition of Terms Used in This Code – Sub Article “CH” (“B”)



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The work is being carried out by Caucasus Environmental NGO Network (CENN) in close cooperation with the NFA, the Ministry and the key stakeholders.

The work is supported by the European Neighbourhood and Partnership Instrument (ENPI) East Countries' *Forest Law Enforcement and Governance II* (FLEG II) and *FLEG II: Complementary Measures for Georgia and Armenia* programmes. These Programmes aim to improve forest governance by effectively implementing the main priorities set out in the St. Petersburg Ministerial Declaration and Indicative Plan of Actions for the Europe and North Asia Forest Law Enforcement and Governance (ENA-FLEG) process.

Methodology

In order to agree on a methodology that would provide valuable and precise data for the state program on providing rural population with fuel resources, the Ministry within National Forest Program (following the NFP) process established a special working group. The group includes representatives from the Ministry, NFoA, CENN, IUCN and forestry experts and is authorized to evaluate the situation and help in obtaining and verifying the data.

Before developing the detailed study methodology on calculating the optimum annual available resources for firewood and actual firewood use the group decided to identify key problems and facts which hinder the development of the state forest sector. As a result, the list of “key facts” has been agreed by all parties and declared by the NFA and the Ministry:

Table 1. Key facts

N	Facts
1	Firewood is the main heating resource
2	Firewood, as a energy resource, is not considered in the state energy policy
3	Firewood production is the main function of Georgian forests
4	Firewood provision is the main direction of forest management
5	Firewood is free of charge and does not contribute to the state income
6	The firewood market is totally illegal in Georgia
7	Forestry sector does not participate in the state economy
8	Firewood consumption depends on social demand and is not based on forest growth



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9	Unsustainable forestry management is connected to the state security
10	The disasters caused by forests and river basin degradation annually cause hundreds of millions economical damage
11	Population constantly shows dissatisfaction for the limited firewood recourses or unavailability
12	There are frequent violations when population cuts unmarked trees
13	Forest degradation level is proportional to existence of forest roads
14	Firewood is actively used by private sector and organizations depended on a state budget
15	Rational exploitation of the forestry material does not exceed 30 %
16	Firewood is a traditional attribute of population lifestyle
17	Firewood production is carried out by unqualified people lacking appropriate technical equipment and safety measures, which not rarely causes fatal accidents

As the next step, the Working Group developed and agreed on a common methodology for calculating optimum available firewood resources and actual firewood usage.

Based on the methodology, the following measures had to be undertaken:

- I. To determine the annual amount of sustainable firewood consumption (within the agricultural units) from the state forest fund territories;
- II. To determine the number of households consuming the fuel resources during the winter period (at municipal and national levels);
- III. To determine the number of households consuming the firewood as a heating source during the winter period (at municipal and national levels);
- IV. To identify the deficit of the firewood (at country, regional and municipal levels);
- V. To carry out cost-benefit analysis for firewood and other alternatives;
- VI. To identify the alternative fuel sources for the households which experience deficit of the firewood and come up with a supply plan for them;



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- VII. Elaborate alternative actions aiming to decrease firewood consumption (Energy efficiency, rational extraction and consumption of the firewood)
- VIII. Elaborate the state program on providing rural population with the fuel resources;
- IX. Initiate legislative amendments.

Assessment of annual firewood consumption and firewood production potential compared to forest growth was specified as one of the main objectives of the survey. Besides, identification of local and general deficits, a cost-benefit analysis is a necessary condition for development of an effective programme for providing the population with firewood, the calculation of which needs to be tailored to local needs/capabilities and to be implemented by the Government of Georgia.

The current study only covers the following issues: (1) assessment of the optimum annual volume of firewood obtainable under a continuous consumption approach and (2) the identification of the real demand for firewood by local households.

Assessment of optimum annual firewood production

One of the key objectives to be defined by the survey was the assessment of the optimum annual firewood obtainable under a continuous consumption approach. Presently, the NFA allocates approximately 600,000 m³ of firewood annually. As an accurate inventory of forests exists only for a small area, the NFA uses old data, and logging areas for social purposes are allocated according to old maps. While working on identification of the key facts (see table 1) the NFA publicly admitted that firewood extraction takes place according to social demand and not according to principles of sustainable forestry. However, the jointly developed new methodology concluded that the optimum amount of annually available firewood should not exceed 200,000 m³.

For defining the optimum amount for annual available firewood the experts used the recalculation materials from the forest taxation indicators provided by the NFA. The taxation was made before 2001 for all forest area, and since 2001 only for the some regions (Borjomi, Kharagauli and forests unused concessions). For the purposes of the study only information about the general forest use has been taken into account. . The result of the calculation is given in table 2:

Table 2. **Summary Table of optimal amount (annual allowable cutting) of main cutting per region**



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Title (region)	Total		
	Area (in ha)	Liquid (thousand m ³)	Firewood (thousand m ³)
Sum Guria	216	6.04	3.2
Sum Imereti	3524	52.83	18.64
Sum Kakheti	746	20.26	11.24
Sum Mtskheta-Mtianeti	678	19.45	10.795
Sum Racha-Lechkhumi, Kvemo Svaneti	1733	60	28.04
Sum Samegrelo-Zemo Svaneti	1058	54.08	22.743
Sum Samtskhe-Javakheti	1368.8	58.0	24.4
Sum Shida Kartli	160	3.67	1.914
Sum Kvemo Kartli	437	13.59	7.5
Total	9920.80	287.90	128.49

The table does not include the information about sanitary cutting (information is not provided). In order to calculate the annual amount of firewood from sanitary cutting, a forestry expert of the project team in cooperation with the NFA made a general estimation of the total amount for annual sanitary cutting. The number has been added to the main calculation given in the table 2. As a result the final number has been increased up to 200,000 m³



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Firewood consumption by local households

According to data from the national census conducted in 2015, the population of Georgia is 3,729,500, approximately 1,000,000 households. Based on the above mentioned agreed methodology, the next objective of the survey was to determine the number of households consuming firewood.

Taking into consideration internal migration patterns, especially from rural to urban areas during the winter period, it was necessary to come up with a methodology which would account for wintering households. In order to define the real number of consumers, it was decided to use the data on electricity consumption from the energy-companies. The methodology identified the following criteria and thresholds:

- Household consuming over 3 GEL per month of electricity during the winter are assumed to have remained in their homes for the winter³;

Based on information from energy distribution companies, a total of 832,052 households are registered as energy consumers. However, the number of households consuming over 3 GEL per month of electricity was only 577,695 as given in the table below:

Table 2: Number of winter households per region

Region	Active*	Registered**
Guria	32,366	48,275
Imereti	120,645	183,768
Mtskheta-Mtianeti	35,297	54,990

³ Electricity, as a source of heating was considered only in particular cases (Mestia, Rustavi, etc.), according to existing data and regional specifics.

Samegrelo-Zemo svaneti	98,297	129,588
Kvemo Kartli	63,502	89,321
Samtkhe-Javakheti	43,565	60,910
Kakheti	91,919	128,317
Shida Kartli	78,295	108,531
Racha Lechkhumi – Kvemo Svaneti	12,996	27,418
Total Sum	577,695	832,052

Active* - Number of the households using electricity more than 3 GEL in a month

Registered** - Number of registered households

In order to derive the number of households consuming firewood as a source for heating from the total number of wintering households, statistical data on gas and nutshell consumption was used. For calculating the data on gas consumption, the following criteria and thresholds have been agreed:

- Household consuming up to 30 GEL per month of gas during the winter were considered not to be using gas for heating;
- Household consuming from 30 to 50 GEL per month on gas during the winter were considered to be partially using gas for heating;
- Household consuming more than 50 GEL per month on gas during the winter were considered to be using only gas for heating.



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Accordingly, the real number of winter households was estimated to be 254,357 less, and it became 577,695 instead of the total number of registered households using electricity (832,052).

The specifically developed methodology revealed 91,918 households consuming only natural gas and 5,679 households consuming nutshells for heating. These, along with stumps and firewood cut outside of forest fund territories, which based on sociological research conducted by CENN accounts for 10 %⁴ of firewood consumed, were deducted from the overall number of wintering households.

As a result, the actual number of firewood consumers was calculated as 419,328 households, along with 29,944 using firewood with natural gas.

In addition to this, CENN used an opinion poll, "Assessment of the existing demand on firewood energy in Dedoplistskaro and Akhmeta municipalities", conducted by CENN in November 2015 within the GIZ programme *Sustainable Biodiversity Management in South Caucasus*, to determine the annual rate of firewood consumption per household in the winter season. A forestry expert examined the existing situation and has prepared an average calculation of annual consumption taking into consideration the climate conditions in the mountains and plains and came to the following conclusion - for households consuming both firewood and gas for heating, annual firewood consumption was identified as 3 m³, and for households consuming firewood only, 6 m³.

Based on calculations using this information, the overall annual consumption of firewood amounts to **2,426,138 m³** which critically exceeds both the optimum rate according to the survey (128,490 m³) and the amount of firewood annually allocated by the National Forestry Agency (600,000 m³).

⁴ Based on the result of the socio-research conducted in around 2,000 villages by CENN in 2014, the average consumption of stumps is 10 % in comparison with the total amount of firewood consumption.

Table 3. Summary of firewood consumption in Georgia

Region	Municipality	N of consumer households of electricity		Gasified N of customers	N of consumer households of Natural Gas			household s consuming nutshells	N of consumer households of firewood	required amount of firewood resources (cube meter)
		Active	Registered		< 30	30 - 50	> 50			
1	2	3	4	5	6	7	8	9	10	11
Guria	Chokhatauri	5,808	9,341	1,661	1,013	70	171		5,056	30,127
Guria	Lanchkhuti	9,186	13,118	2,610	1,358	176	388		7,879	46,748
Guria	Ozurgeti	17,372	25,817	8,528	3,890	664	1,716		13,919	81,521
Total Guria		32,366	48,275	12,799	6,261	910	2,275		26,854	158,396
Imereti	Kutaisi	50,840	65,502	59,291	22,927	10,212	16,942		28,814	142,248
Imereti	Bagdati	7,248	10,906	4,424	2,731	353	721		5,802	33,754
Imereti	Chiatura	13,429	24,069	6,092	2,252	1,009	1,531		10,555	60,304
Imereti	Kharagauli	6,596	11,418	679	151	35	116		5,820	34,817
Imereti	Samtredia	14,547	21,495	15,328	7,147	1,313	2,782		10,310	57,923
Imereti	Terjola	10,652	15,369	6,466	2,507	296	446		9,141	53,957
Imereti	Tskaltubo	14,676	20,104	7,092	2,907	806	1,147		12,061	69,950
Imereti	Zestaponi	17,719	26,376	11,835	5,232	1,644	3,226		12,721	71,395
Imereti	Vani	7,814	11,508	6,979	5,103	393	548		6,485	37,729
Imereti	Khoni	7,615	10,843	7,266	3,458	722	1,298		5,556	31,171
Imereti	Tkibuli	9,455	14,674	904	430	90	161		8,348	49,819
Imereti	Sachkhere	10,894	17,007	17,451	8,305	1,733	3,116		6,688	34,931
Total Imereti		120,645	183,768	84,516	40,224	8,393	15,092		93,488	535,749
Mtskheta - Mtianeti	Dusheti	9,271	15,751	5,289	1,524	219	1,262		7,082	41,834
Mtskheta - Mtianeti	Mtsketa	22,625	33,101	13,666	5,365	933	4,756		15,607	90,840
Mtskheta - Mtianeti	Tianeti	3,401	6,138	1,887	566	75	377		2,684	15,875
Total Mtskheta - Mtianeti		35,297	54,990	20,842	7,455	1,227	6,395		25,372	148,549
Racha - Lechkhumi, Kvemo	Ambrolauri	4,952	11,234	742	427	42	73		4,384	26,177
Racha - Lechkhumi, Kvemo	Oni	2,479	6,782	-	-	-	-		2,231	13,387
Racha - Lechkhumi, Kvemo	Tsageri - Lentekhi	5,565	9,402	-	-	-	-		5,009	30,051
Total Racha - Lechkhumi, Kvemo		12,996	27,418	742	427	42	73		11,623	69,614
Samegrelo - Zemo Svaneti	Abasha	6,700	9,721	1,750	1,171	119	199		5,831	34,629
Samegrelo - Zemo Svaneti	Chkhorocku	6,743	8,504	-	-	-	-		6,069	36,412
Samegrelo - Zemo Svaneti	Khobi	8,336	10,661	1,089	639	65	202		7,300	43,607
Samegrelo - Zemo Svaneti	Martvili	9,873	13,981	748	486	45	150		8,736	52,282
Samegrelo - Zemo Svaneti	Mestia	682	860	-	-	-	-		614	3,683
Samegrelo - Zemo Svaneti	Poti	13,536	18,297	7,895	2,432	592	1,645		10,537	61,448
Samegrelo - Zemo Svaneti	Senaki	12,416	16,770	9,240	3,419	832	2,772		8,402	47,920
Samegrelo - Zemo Svaneti	Tsalenjikha	7,946	11,303	-	-	-	-		7,151	42,908
Samegrelo - Zemo Svaneti	Zugdidi	32,065	39,491	13,090	4,755	1,151	4,021		24,838	111,498
Total Samegrelo - Zemo Svaneti		98,297	129,588	33,812	12,902	2,803	8,989	5,679	73,800	434,388
Samtskhe Javakheti	Akhalkalaki	11,450	15,072	10,640	1,277	1,915	5,320		4,985	24,164
Samtskhe Javakheti	Akhalcikhe - Adigeni	15,662	20,963	18,414	2,243	3,289	9,547		4,549	17,426
Samtskhe Javakheti	Aspindza	2,672	3,531	1,629	594	92	269		2,136	12,539
Samtskhe Javakheti	Borjomi	8,199	13,687	9,781	3,848	672	2,542		4,837	27,007
Samtskhe Javakheti	Ninotsminda	5,582	7,657	5,395	1,942	324	863		4,161	23,993
Total Samtskhe Javakheti		43,565	60,910	45,859	9,904	6,292	18,541		20,667	105,128
Kvemo Kartli	Bolnisi	13,772	18,452	8,541	3,297	695	2,855		9,540	55,154
Kvemo Kartli	Dmanisi	5,144	7,859	2,986	1,853	136	207		4,423	26,128
Kvemo Kartli	Gardabani	7,805	10,092	12,643	3,954	830	3,095		3,930	21,087
Kvemo Kartli	Marnueili	26,519	35,005	17,190	6,124	1,111	5,280		18,587	108,190
Kvemo Kartli	Tetritskaro	5,117	10,621	4,804	2,385	378	851		3,754	21,392
Kvemo Kartli	Tsalka	5,145	7,292	882	335	60	238		4,392	26,174
Total Kvemo Kartli		63,502	89,321	47,046	17,948	3,210	12,526		44,626	258,124
Shida Kartli	Gori	37,754	48,675	28,125	6,902	2,336	11,415		22,564	128,374
Shida Kartli	Kaspi	13,518	21,520	9,591	3,301	667	3,757		8,409	48,454
Shida Kartli	Khashuri	27,023	38,336	12,782	5,534	952	3,653		20,668	121,150
Total Shida Kartli		78,295	108,531	50,498	15,737	3,955	18,825		51,641	297,978
Kakheti	Sagarejo	12,371	16,563	11,338	4,696	535	1,876		9,258	53,942
Kakheti	Dedoplistskaro	6,777	9,904	5,558	-	-	-		6,099	36,596
Kakheti	Sighnaghi	9,802	14,142	8,332	4,060	425	1,894		6,928	40,292
Kakheti	Laqodekhi	12,079	16,461	6,029	3,051	346	1,405		9,466	55,759
Kakheti	Gurjaani	16,280	22,970	14,595	7,078	771	3,813		10,839	62,721
Kakheti	Kvareli	8,798	11,750	8,067	5,625	385	1,070		6,848	39,934
Kakheti	Akhmeta	9,170	12,647	7,532	4,225	219	447		7,806	46,179
Kakheti	Telavi	17,455	24,815	9,982	4,662	429	1,697		14,013	82,788
Total Kakheti		92,732	129,252	71,433	33,397	3,110	12,202		71,257	418,210
		577,695	832,052	367,547	144,255	29,944	94,918	5,679	419,328	2,426,138



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Summary of findings

Based on the results of the study, annual firewood consumption is currently twelve times more than the optimum annual available amount under continuous consumption principles.

In particular:

According to forest inventory materials and taxation indicators of state-owned forests, the optimum annual available firewood resources is less than 200,000 m³, while the actual annual rate of firewood exploitation exceeds 2,400,000 m³.

To satisfy the demand on heating sources, the National Forest Agency allocates 600,000 m³ of firewood annually. Despite this amounting three times more than the optimum annual available amount in case of sustainable forest use, this volume of firewood still only satisfies 25% of the overall demand. The remaining 300,000 households must resort to illegally obtaining the extra 1,800,000 m³ of the firewood for their existence.

This is demonstrated in the results of the recently conducted forest inventory in Borjomi-Bakuriani and Kharagauli forests, which shows a drastic results of forest decline, a rapid decrease in wood supplies and highlights the extreme difficulty in marking final areas of forests. This brings into question the possibility of sustainable provision of firewood covering even 25% of existing demand.

Georgia faces a real risk of a part of the population finding themselves without any firewood and lacking the ability of obtain it even by illegal means.

Based on the above, it is recommended that the Ministry of Environment and Natural Resources Protection of Georgia present to the Government of Georgia, and publicly announce in the nearest future, the volume of firewood available for legal allocation for the 2016-2017 winter season, and that the Government of Georgia should develop short-term, mid-term and long-term plans for a resolution to the energy shortage which will reliably provide the population of Georgia with vital essentials and protect forests from inevitable degradation.