BIOMASS ENERGY IN GEORGIA







WHAT IS BIOMASS?

BIOMASS is any organic, decomposable matter derived from plants or animals available on a renewable basis. Biomass includes wood and agricultural crops, municipal organic wastes as well as manure.

BIOMASS can be transformed in ENERGY, used directly as fuel, or processed into liquids and gases.

BIOMASS ENERGY SITUATION

In 2014, renewable energy accounted for **27% of the total** energy supply of Georgia, of which **11%** was biofuels and waste.

Despite the availability of significant – and largely untapped domestic energy resources, Georgia is still highly dependent on imports for its energy supply: **imported natural gas and oil currently** account for more than **73% of total primary energy supply.**

70% of the Georgian rural households use firewood as the main source of heating, where only 25% is provided by the government of Georgia (through the social wood program). The rest is obtained mostly illegally. This wastes a significant amount of energy while putting additional pressures on the national forest resources, which exacerbates deforestation and land degradation processes and contributes to Greenhouse Gas (GHG) emissions.



Total Primary Energy Supply (2014) - EU contries and Georgia



DID YOU KNOW?

- In the middle of 2016, the Association Agreement (AA) between the European Union and Georgia fully entered into force, and Georgia has made commitments in reforming its energy and environment sectors.
- Renewable heating and cooling continued to be the dominant renewable energy market sector in Europe, representing over half of all gross final consumption of renewables in 18 Member States. Biomass-based technologies are still predominant in this sector.

HOW IS THE PRODUCTION CHAIN?



WHAT ARE THE BENEFITS OF USING BIOMASS?

ENVIRONMENTAL BENEFITS



Increase of biodiversity conservation

- It is estimated that **2.7-3.0 million cubic meters** of round wood were removed from Georgia's forests in 2014; this is around five times more than the sustainable volume.
- Unsustainable annual consumption of 2.4 million cubic meters of timber resources by domestic households in Georgia costs the state **GEL 446** million annually, and over a 10-year period would amount to GEL 3.65 billion.

Help to reduce greenhouse gas emissions

- Georgia plans to unconditionally reduce its GHG emissions by 15% below the Business as Usual scenario (BAU) for the year 2030, and conditionally reduction its emissions by up 25% in addition.
- Biomass is considered carbon neutral, as plants lock up CO2 during their growth, which helps to mitigate GHG emissions.



DID YOU KNOW?

11 municipalities in Georgia have signed the Covenant of Mayors for Climate & Energy, sharing a common vision for 2050:

- MITIGATION: accelerating the decarbonisation of our territories (40% lower CO2 emissions by 2030);
- ADAPTATION: Strengthening our capacity to adapt to unavoidable climate change impacts;
- SECURE, SUSTAINABLE AND AFFORDABLE ENERGY: increasing energy efficiency and the use of renewable energy sources on our territory.

Therefore, BIOMASS can help to achieve these commitments.

ECONOMIC AND SOCIAL BENEFITS



Create more jobs and improve the local economy

- The largest growth in clean energy jobs in the European Union is solid biomass, which supported **273,000 direct and indirect jobs in 2010**.
- The long-term economic and carbon benefits are especially strong with biomass heat (it creates many more jobs than other forms of renewable investment and saves more carbon).
- Making use of our biomass energy resources can reduce energy costs, and the money spent on this energy stays within the local economy.

Help to prevent climate change disasters

- Some of the most significant natural hazards in Georgia are floods, mudflows, and landslides. The pressure on the national forest resources can result in the loss of tree cover and land degradation, increasing the risk and impact of natural disasters.
- The use of sustainable biomass reduces the amount of land degradation, and can actively encourage more planting, and can, therefore, mitigate natural disasters resulting from climate change.

BIOMASS POTENTIAL IN GEORGIA

 Biomass has a great potential in Georgia: It's estimated that more than one million and a half tons of agricultural residues and more than one million m³ of forest residues are produced every year in Georgia, which have the potential to generate 36.5 Picojoules (PJ), or 70% of the Georgia's residential energy consumption.



- Barley Abkhazia HazeInut Vine pruning Fruit orchard resid Mtskheta 1 Corn straw Sunflower Shida Kartli (.... Sawmill Guri Wheat Adjara Samtskhe Javakheti Tbilis
 - Corn straw is the biggest potential source of agriculture residues, with an estimated production of around a million tons per year, and a potential to generate 18.3 Picojoules of sustainable energy (of which 29% and 26% are located in Imereti and Samegrelo-Zemo Svaneti regions respectively).
 - Vine pruning also has a great potential, with an estimated generation of **108,900 tonnes per year**, which could easily generate **2 Picojoules of sustainable energy** (of which 61% is located in Kakheti region).

BIOMASS MARKET IN GEORGIA

Currently, there are some barriers that hinder the development of a local biomass energy market in Georgia. These can generally be categorized as supply-side and demand-side barriers. On the supply side, the key barriers are scarcity and unreliability of the biomass feedstock data, as well as the high spatial dispersion of relative small size biomass stocks. On the demand side, the key barriers are the competition with other sources of energy (like firewood or natural gas), as well as relatively high upfront costs of advanced biomass heating systems.

THE MAIN BARRIERS OF THE BIOMASS MARKET IN GEORGIA AND HOW TO OVERCOME THEM:

Economic barriers:	How to overcome:
Affordable financing, essential to both sides of the bioenergy market (producers/suppliers and end users)	Loan guarantee; Low Interest Loans; Feed in Tariff legislation; Grants and Tax Rebates.
High competition with other energy sources (mainly firewood and natural gas)	Bioenergy promotion schemes should be implemented, essentially through three different mechanisms: - Decreasing bioenergy technology costs to lower installment costs; - Decreasing financing costs of bioenergy power plants; and - Increasing the reward for bioenergy generation to compensate for higher costs
Lack of local and international capital	 Financial sector policy reforms for example favorable to long-term infrastructure, including project finance. Investment grants lower the cost of equity, increases the probability to obtain debt financing under cheaper conditions and hence decreases financing costs.
Policy barriers:	How to overcome:
	 Implementation of renewable energy targets;
Uncertainties in the energy market regarding government commitments to reliably pursue a bioenergy deployment strategy	 Targeted funding by the state. This will increase the probability of funding, which will give motivation to interested entrepreneurs. Decreasing the risk of disruption in supply of raw materials and unstable prices, entrepreneurs have more chances to obtain favorable terms for funding
Uncertainties in the energy market regarding government commitments to reliably pursue a bioenergy deployment strategy Lack of conception, strategy, policies and coordination for and of the complete forest sector	 Targeted funding by the state. This will increase the probability of funding, which will give motivation to interested entrepreneurs. Decreasing the risk of disruption in supply of raw materials and unstable prices, entrepreneurs have more chances to obtain favorable terms for funding Develop a functioning holistic forest sector (forest industry, markets, and business) Implement phase out of the social wood programme favorable terms for funding
Uncertainties in the energy market regarding government commitments to reliably pursue a bioenergy deployment strategy Lack of conception, strategy, policies and coordination for and of the complete forest sector Technical barriers:	 Targeted funding by the state. This will increase the probability of funding, which will give motivation to interested entrepreneurs. Decreasing the risk of disruption in supply of raw materials and unstable prices, entrepreneurs have more chances to obtain favorable terms for funding Develop a functioning holistic forest sector (forest industry, markets, and business) Implement phase out of the social wood programme favorable terms for funding
Uncertainties in the energy market regarding government commitments to reliably pursue a bioenergy deployment strategy Lack of conception, strategy, policies and coordination for and of the complete forest sector Technical barriers: Lack of information and limited experience with renewable energy	 Targeted funding by the state. This will increase the probability of funding, which will give motivation to interested entrepreneurs. Decreasing the risk of disruption in supply of raw materials and unstable prices, entrepreneurs have more chances to obtain favorable terms for funding Develop a functioning holistic forest sector (forest industry, markets, and business) Implement phase out of the social wood programme favorable terms for funding How to overcome: Governments can offer specific investment suites with pre-feasibility studies to lower information costs and signal credible bioenergy deployment potentially lowering financing costs Provide help for foreign and local investors through investment guidelines, dialogues, conferences, workshops, and training.

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Since 2013, UNDP Georgia has been supporting the production of biomass in Georgia with the financial support of the Global Environment Facility, through the project Promotion of Biomass Production and Utilisation in Georgia, and has been working in close cooperation with the Ministry of Environment and Natural Resources Protection of Georgia.





For more information: www.ge.undp.org www.biomass.ge