Sustainable Bioenergy for Georgia: A Roadmap

Learn how to transform the use of biomass in Georgia to create a sustainable bioenergy industry for the future.

Experience the full roadmap at iea.org/programmes/eu4energy
Georgia Bioenergy Context

Biomass use in Georgia has implications not only for the energy sector, but far beyond.

A co-ordinated approach to policymaking, governance and market development is required.

What does domestic energy consumption in Georgia look like?

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NOTES: Mtoe = million tonnes of oil equivalent (1 Mtoe = 41.9 PJ); *Includes coal, solar, thermal, geothermal and district heat; not visible at this scale. Sources: IEA (2020), World Energy Balances 2020 (database), eia.org/statistics; Geostat (2017), Energy Consumption in Households

Rural Areas:

+ ~80% of biomass consumption occurs in rural areas
+ Low energy efficiency firewood stoves are the main form of heating in rural areas
Forest resources in Georgia are overexploited:

- Forests cover 40% (3 million hectares) of Georgia’s landmass
- Firewood consumption far exceeds the sustainable level of supply, degrading forest resources

Negative environmental & social impacts include:

- Forest degradation results in loss of biodiversity
- Reliance on firewood raises the risk of fuel poverty in rural areas
- Increased soil erosion leads to landslides and flash floods
- 3,000+ settlements in danger of environmental disasters in Georgia
- Indoor air pollution leads to 2.5 million premature deaths worldwide every year

What could sustainable bioenergy in Georgia look like?

- 3.7 Million inhabitants
- 500,000 households
- Approximately 1/2 of households use biomass fuel for heat

- Mitigation of environmental problems: floods, landslides, and forest degradation
- Modernised waste management
- Use of agricultural best practices
- Meeting climate, renewable energy, and energy efficiency commitments
- Increased health and safety in the forest
- Reduced energy poverty and increased thermal comfort in the home
- Improved air quality and public health
Ensuring sustainable forestry management

How?

- Implement Georgia’s Updated Forest Code: best-practice sustainable forestry management principles
- Ending social cutting: promote transition away from fuelwood
- New methods: harness the potential of sustainable forestry residues

Utilising waste and residues

**Transforming agricultural residues into fuels**
+ 35% of territory in Georgia is agricultural land
+ Vineyards, orchards and crops produce biomass residues that can serve as feedstock to produce fuels
+ A regulatory framework to guide the collection and use of agricultural residues can ensure they are valorised

**Energy from municipal waste**
+ Further fuel diversification will come from modernising waste management and developing Energy-from-Waste (EfW) projects
+ Policies that increase the cost of, or prohibit, landfill waste disposal encourage EfW

Why?

Georgia needs the ability to **produce its own biomass fuels** while avoiding deforestation & associated environmental impacts of firewood supply

By **diversifying the types of biomass** used as heating fuels, Georgia can:
+ Reduce pressure on forestry resources
+ Provide increased rural job opportunities
+ Provide an avenue for managing municipal, agricultural and forestry wastes and residues.
Encourage the adoption of more efficient biomass stoves and boilers

How?

- Implementing support measures that encourage more purchases of efficient stoves
- Enhance public awareness of the health and financial benefits
- Launch focused initiatives to establish upgraded-fuel production businesses
- Using upgraded biomass fuels such as wood chips, pellets and briquettes

More efficient stoves, significantly lower heating costs

<table>
<thead>
<tr>
<th>Fuel</th>
<th>Fuel cost range (GEL/GJ)</th>
<th>Stove type and combustion efficiency</th>
<th>Delivered heat cost range (GEL/kWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firewood</td>
<td>13-18</td>
<td>Basic, 25%v</td>
<td>0.18-0.26</td>
</tr>
<tr>
<td>Briquettes</td>
<td>23-32</td>
<td>Improved, 45%</td>
<td>0.19-0.26</td>
</tr>
<tr>
<td>Briquettes</td>
<td>32-40</td>
<td>Efficient, 75%</td>
<td>0.11-0.16</td>
</tr>
</tbody>
</table>

The cost of heat from briquettes in an efficient stove is less than firewood in a basic stove

Why?

The single most effective method to improve the sustainability of biomass use in Georgia is to transition to more efficient heating appliances.

+ Lowers fuel demand
+ Reduces pressure on forestry resources
+ Reduces indoor air pollution
+ Creates skilled jobs
The Vision for 2030

- A modern bioenergy industry
- Diversified, sustainable production of biomass fuels
- Skilled jobs in fuel manufacturing, installation, maintenance, logistics created
- Decreased use of firewood heating stoves
- Low indoor pollution
- Low illegal forest activity
- Decreased deforestation

An extended set of policy recommendations is included in the full roadmap