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# Covenant of Mayors for Climate & Energy – Eastern Partnership

## Local Biomass for Sustainable Development in Telavi

*10th anniversary of the Covenant of Mayors in the Eastern Partnership Region*

*Tbilisi, Georgia*

*30 November 2022*





# Local Biomass for Sustainable Development in Telavi Municipality



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## Project Title:

*“Biomass Energy & Energy Efficient Technologies as a Sustainable Energy Solutions for Georgian CoM Signatories”*

Donor:

EU Commission

Main Applicant:

Energy Efficiency Center Georgia

Co-Applicant:

Telavi Municipality City Hall

Implementation Period:

2018 - 2022 წ.წ

Total Budget:

748,641.60 €

Grant:

598,913.28 €

Co-financing:

149,728.32€



## Project Purpose:

*To enhance Georgian CoM signatory municipalities capacities in climate change mitigation and fulfillment of sustainable local energy policy through implementation of investment projects in line with their Sustainable Energy & Climate Action Plans (SECAPs).*







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# Project's Core Activities - Implemented Measures

Full thermo-modernization of 2 municipal buildings  
(TELAVI #1 & IKALTO Kindergartens) by applying sustainable  
EE technologies through using of locally available RE resource



## Implemented Renewable Energy & Energy Efficient Measures TELAVI #1 & IKALTO Kindergartens (KGs)

1. Roofs' renovation & thermal insulation of attic floors with 20cm thick mineral wool and waterproofing membrane covering in the KGs;
2. Exterior walls thermal insulation, including foundation walls (socle), with 10 cm rockwools and 8 cm XPS panels in the KGs;
3. Installation of low emission double glazed PVS windows & doors in target KGs;
4. Installation of decentralized & central ventilation systems (air flow-exhaust wall recuperators) in target KGs;



*IKALTO Kindergarten located in Ikalto Village*



*TELAVI #1 Kindergarten located in Telavi Town*







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# Project's Core Activities – Implemented Measures

Full thermo-modernization of 2 municipal buildings:  
**TELAVI #1 & IKALTO Kindergartens** by applying sustainable EE technologies through using of locally available RE resource



## Implemented Renewable Energy & Energy Efficient Measures TELAVI #1 & IKALTO Kindergartens

5. Full replacement of electrical wirings and installation of EE lighting systems (LED Lamps) in the target KGs;
6. Installation of autonomous heating systems working on locally available biomass - vineyards pruning residues;
7. Installation of solar water heater systems (SWH)s connected to autonomous heating systems (AHS) in target KGs;
8. Installation of 5.45 kW (IKALTO) & 6,82 kW (TELAVI #1) grid-connected PV systems in target KGs;



- Total cost of IKALTO KG complete thermo-modernization:  
537,745.05 GEL
- Total cost of TELAVI #1 KG complete thermo-modernization:  
825,247.91 GEL



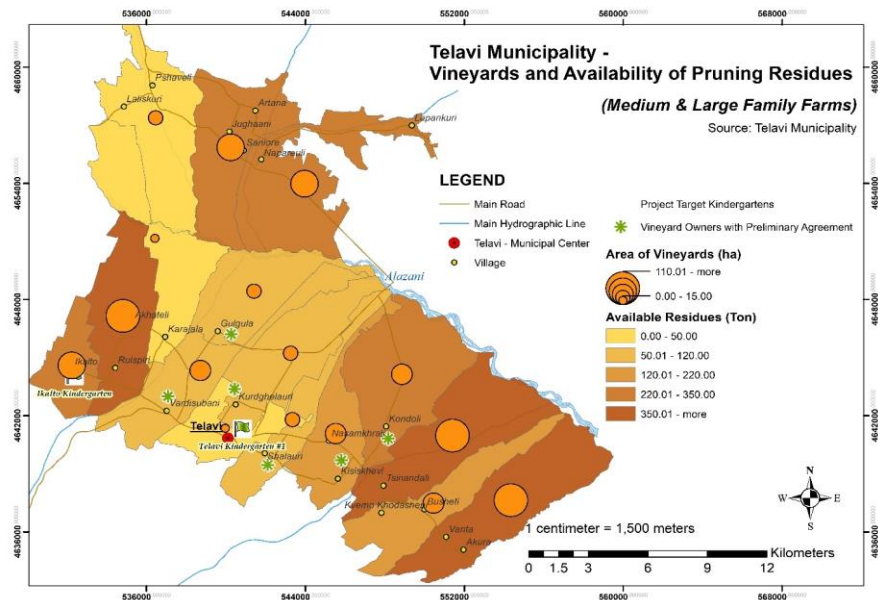
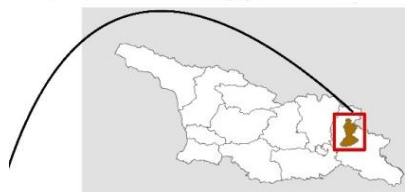


# Project's Core Activities – Implemented Measures

Establishment of renewable energy (biomass) supply chain in pilot  
Telavi municipality



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## The main findings revealed during testing process based on the Georgian reality

- ❖ According to 2018 statistics, the total amount of vineyards (ha) in Telavi Municipality is around 6000 hectares.
- ❖ In the Telavi municipality, the volume of biomass (vineyards pruning) is expected to be up to 12000 tons.
- ❖ The amount of pruning from one hectare is around 1.5-2 tons;
- ❖ Bales of vineyards pruning weigh 18-28 kg, with an average weight of 20 kg and a humidity of 35%.
- ❖ Bales' dry weight ranges from 11 to 15 kg, with an average weight of 12 kg at 8% humidity.

Approximately 35 ha of vineyards were farmed and 53.5 tons (humid) of pruning were gathered within 2 seasons (2020-21).

### Vineyards Pruning:

- ❖ Energy Content : 18.7 MJ/kg; 5.19 kWh/kg (International Survey)
- ❖ Energy Content : 17.3 MJ / kg (gross mass); 4.82 kWh / kg (Lab Test in GTU)

Total biomass (vineyards pruning) required for TELAVI #1 & IKALTO KGs for one (1) season: according to theoretical calculations up to 50 tons (dry mass): (Less than 1% of the local potential).

- ❖ IKALTO Kindergarten - not less than 10 tons (dry mass);
- ❖ TELAVI #1 Kindergarten - not less than 40 tons (dry mass);



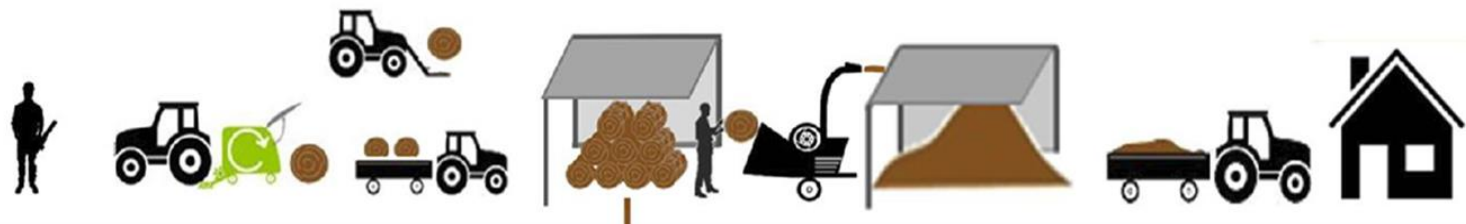




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# Project's Core Activities – Implemented Measures

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Within 2 seasons (2020-21 years) about 54 tonnes of biomass (vineyards pruning residues) was collected and shredded;



The total operation cost amounted 15 780 GEL for 2 years within the Project implementation period.





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## Achieved results: energy & CO2 savings, RES production, other effects



### Financial and social-environmental Benefits

#	Actual Consumption (kWh/a)	Baseline Consumption (kWh/a)	After EE Measures (kWh/a)	Annual Savings, kWh/a	Annual Savings, GEL	Annual Savings, CO2 t
IKALTO KG	78315	230607	50479	180128	19814	81.6
TELAVI #1 KG	169016	467865	151150	316715	34839	90.0
TOTAL	247331	698472	201629	496843.0	54653	171.6

### Challenges, Lessons learned & recommendations in terms of sustainable energy projects

- ❖ Low capacities and skills of involved various stakeholders implementing sustainable energy projects: architects, construction and/or mechanical engineers, workers, installers & etc related to the sustainable energy infrastructure projects,;
- ❖ Administrative – Institutional challenges related to the Management of the Biomass Supply Chain;
- ❖ Technical-engineering challenges requiring the innovative solutions of the heating systems;
- ❖ Mental and behavioral challenges related to the service and maintenance of the biomass heating systems;
- ❖ Low interest of the UoK's to be in charge of this process as it is not involved in the decision making and budget development process;







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# Capacity Building & Awareness Raising Campaigns

Information and awareness campaigns for promoting sustainable energy and tackling the climate change impact







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# Thank you!

More info on

[www.com-east.eu](http://www.com-east.eu)



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