

Where finance and green technologies meet

GEFF in Armenia Newsletter N18: Q2, 2023

Key results as of 30 June 2023

- GEFF in Armenia has financed 346 projects for EUR 30.4 million through five partner financial institutions (PFIs), thus reducing primary energy usage by 147,509 MWh/year, saving 32,944 tonnes of CO₂ annually and reducing water usage by 5,653 m³/year.
- Renewable energy projects with an installed capacity of 45.83 MW help avoid 25,348 tonnes of CO₂ annually.
- 1,461 EE and RE technologies provided by 179 vendors from 21 locations throughout Armenia are now available through the [Green Technology Selector](#).

Energy efficiency in buildings in Armenia



Armenia is undertaking an extensive effort to strengthen and modernise its ageing apartment buildings, aiming to extend their lifespan and improve energy efficiency. With most of these buildings constructed 30 to 60 years ago, the ongoing project involves thermal insulation, the installation of energy-efficient doors and windows, the modernisation of heating and cooling systems, and the implementation of solar photovoltaic systems and energy-efficient lighting. The initiative known as Energy Efficient Building Retrofitting has been led by the United Nations Development Programme since 2017 and is supported by the Armenian Ministry of Environment.

Residents such as Arus Mkrtychyan, who bought an apartment in a modernised building in Spitak, benefit from significant cost reductions. Previously, Arus spent up to AMD 50,000 (US\$ 105-130) to heat her two-room apartment during winter. However, after moving into her new three-room apartment, she only paid AMD 26,000 (US\$ 68) for gas and AMD 8,800 (US\$ 23) for electricity in January. The financial savings and increased comfort have made living in these modernised apartments highly desirable.

The programme has encountered challenges, as it is difficult to obtain consent from all the tenants of a building to participate. However, those who join the programme benefit from reduced energy costs. The government of Armenia along with local mayor's offices and the Reducing the Risks of Investments in Energy Efficient Modernization of Buildings programme co-finance the project. Energy efficiency expert Artur Tsugunyan estimates that modernisation measures can cut conventional costs by 40-50%, in addition to significantly increasing thermal comfort and improving the occupants' quality of life.

The programme extends beyond the borders of the capital city of Yerevan and includes various regions in the country. Buildings have been transformed and modernised in cities such as Alaverdi, Tashir, Dilijan, Spitak, Berd, Gyumri, Kajaran, and Ashtarak. This not only includes residential buildings but also kindergartens, schools, and cultural centres. The initiative also stimulates green loans from Armenian banks, facilitating investments in energy-efficient components such as solar panels, thermal insulation, and upgraded lighting.

Energy efficiency improvements contribute to a reduction of greenhouse gas emissions and help Armenia achieve its environmental goals. The energy savings resulting from the modernisation programme are expected to reduce carbon dioxide emissions by up to 1.4 million tons over 20 years. As household energy consumption comprises a significant portion of the country's energy usage, retrofits play a crucial role in reducing emissions. With more than 4,000 panel houses in Armenia, there is immense potential for energy efficiency improvements.

Apart from the environmental benefits, enhancing energy efficiency also has positive economic implications. An energy-efficient environment attracts both foreign and domestic investment, fosters job creation, and stabilises financial flows within the country. The construction sector experiences growth with labour force retention and increased tax payments. The process of improving energy efficiency in buildings creates new financial opportunities for professionals in related fields, further stimulating economic development.

The abovementioned energy efficiency measures for both old or new apartment buildings are also supported and financed through the Green Economy Financing Facility (GEFF). GEFF plays a crucial role in providing the necessary funding to implement these energy efficiency initiatives, thus contributing to Armenia's sustainable development goals and creating a greener future for its residents.

Developing a Green Taxonomy in Armenia



The Developing a Green Taxonomy in Armenia project, a collaborative initiative between the World Bank Group, the Ministry of Economy of the Republic of Armenia, and the American University of Armenia Acopian Center for the Environment, has been officially launched. This year-long project aims to create a policy and legal framework to promote green investments in the country. By adopting a green taxonomy, Armenia seeks to establish a robust system for identifying, selecting, and financing sustainable development projects. Green taxonomies have been developed worldwide, including in China, the European Union, Georgia, the UK, and various Asian and Central Asian countries.

Armenia's Ministry of Economy, in cooperation with the World Bank, requested support for the development of a national green and transition taxonomy. The project involves multiple government bodies and the Central Bank of Armenia as well as various business and civil society communities. The initiative is in line with the government's GREEN (Growth Recovery to Empower, Equip and Nurture) Armenia platform, which advocates for a transition to a green economy model. By adopting a green taxonomy, policymakers, and economic agents in Armenia benefit from clear definitions of environmentally sustainable economic activities and investments. This facilitates access to green and climate finance, promoting investments that advance the country's environmental, development, and social policy objectives.

To ensure substantive input, a dedicated expert working group has been established comprising representatives from government bodies, the Central Bank of Armenia and the municipality of Yerevan as well as thematic and sectoral specialists. The expert working group collaborates closely with the AUA Acopian Center for the Environment, which engages thematic and sectoral specialists to conduct research and focus-group discussions with industry, academia, and civil society. The findings of this research are used to create policy documents which are then approved by the government. Additionally, the Acopian Center supports capacity development in Armenia for the development and

implementation of green taxonomies.

Recently in Georgia, the National Bank of Georgia (NBG) took the lead in developing the Sustainable Finance Taxonomy (SFT) and associated regulations for loan classification and reporting. The SFT was developed in collaboration with local and international experts, stakeholders, and financial institutions. The aim of the SFT is to establish consistent and standardised regulations for loan classification, screening, and reporting in commercial banks and other financial institutions. The taxonomy is tailored to the context of Georgia and its development priorities while adhering to international best practices. It encompasses both green and social taxonomies and allows for continuous review and enhancement. Commercial banks play a crucial role in implementing the SFT, ensuring loans align with the regulation's criteria. Transparency and accountability are promoted through monthly reporting on green loans, contributing to the integration of sustainability principles into the Georgian financial system and advancing the country's transition to a greener economy.

In conclusion, the development of green taxonomies in Armenia and Georgia lays the foundation for robust and sustainable green finance ecosystems. These taxonomies provide clear definitions and criteria for identifying and promoting environmentally sustainable investments, attracting capital, and fostering the growth of green projects. By aligning with international best practices and enhancing transparency, Armenia, and Georgia position themselves as attractive destinations for sustainable investments, contributing to the global transition towards a greener and more sustainable future.

Simplified energy audit checklist

The following is a general guideline on how to tap into the opportunities to improve the energy efficiency of your business as well as adopt green practices and reduce overall costs. Before we discuss the specific checklist for an energy audit, the steps below will help you plan your strategy and resources:

1. Analyse the current state of energy efficiency of your business
2. Evaluate the opportunities to improve energy efficiency
3. Develop an energy efficiency improvement plan
4. Implement energy efficiency measures
5. Evaluate the results

Other means are also available such as researching industry standards and benchmarks,

identifying the best available technologies (BATs) for your sector, conducting a technology assessment, and monitoring and evaluating the results of your energy efficiency efforts.

Energy audit checklist

As explained above, the first step is analysing the current state of your business with regard to energy efficiency and conducting an energy audit. While specific requirements may vary depending on the nature of the business, here is a general simplified checklist that can help you conduct an energy audit and identify potential areas for improvement:

1. Gathering information on energy consumption:
 - Analyse the utility bills (electricity and natural gas) for the last 12 months to identify energy consumption patterns
 - Compile information about the business's operations, processes, and equipment
2. Lighting:
 - Type of lighting fixtures and bulbs used
 - Energy consumption and efficiency of lighting systems
 - Opportunities for upgrading to more energy-efficient lighting
3. Heating, ventilation, and air conditioning (HVAC) systems:
 - Efficiency and age of HVAC equipment
 - Proper maintenance and cleaning of HVAC systems
 - Opportunities for improving insulation and sealing to minimise energy loss
4. Equipment and appliances:
 - Inventory of equipment and appliances
 - Energy consumption of each item
 - Opportunities for upgrading to energy-efficient models
5. Insulation and weatherproofing:
 - Assessment of insulation levels in walls, roofs, and windows
 - Identification of air leaks and opportunities for weatherproofing
6. Water usage:
 - Review of water consumption and potential for water-saving measures
 - Evaluation of water heating systems and efficiency
7. Energy monitoring:
 - Analysis of energy bills and consumption patterns
 - Consideration of energy monitoring systems for real-time tracking
8. Employee engagement:
 - Awareness and education programs on energy-saving practices.
 - Encouraging employee participation and feedback.
9. Renewable energy:
 - Feasibility assessment for implementing renewable energy sources on-site
10. Report on main findings:

- Energy consumption analysis
- Identified energy efficiency improvement opportunities
- Potential cost savings
- Environmental impact
- Renewable energy feasibility
- Behavioural and operational changes needed

Please note that this checklist provides a general overview of areas to assess during an energy audit. It is important to delve deeper into each category and to tailor the audit based on the specific needs and characteristics of the business.

Untapped potential of wind energy in Armenia



Armenia has long relied on imported fossil fuels for its energy needs. However, in light of the global push for clean and renewable energy sources, the country is now exploring the untapped potential of wind energy. With favourable geographical conditions and growing international interest, wind power has the potential to transform Armenia's energy landscape, diversify its energy market, and reduce its dependence on imported resources. Despite being a clean and inexhaustible source of power, wind energy remains largely untapped in Armenia. In 2020, the country's installed wind power capacity stood at a mere 7.6 MW, contributing less than 1% to its total electricity generation. However, the Global


Wind Energy Council reports a significant growth trend in wind power installations worldwide, driven by advancements in technology, cost reductions, and supportive government policies.

Armenia's unique geographical location and topography offer favourable conditions for harnessing wind energy. The regions of Aragatsotn, Gegharkunik, and Syunik, which are characterised by high mountains and plateaus, experience strong and consistent wind flows. A study conducted by the United States Agency for International Development (USAID) estimates that Armenia has a technical wind energy potential of approximately 4,900 MW, capable of generating approximately 14.3 TWh of electricity annually.

Recognising the need to diversify its energy mix and reduce dependence on fossil fuels, the Armenian government has taken significant steps to promote renewable energy sources, including wind power. The National Energy Efficiency Action Plan (NEEAP) for 2017-2020 aimed to increase the share of renewable energy in the total energy consumption to 26% by 2020, with a particular focus on wind energy development. Additionally, partnerships with international organisations such as the European Bank for Reconstruction and Development (EBRD) have facilitated financing for wind energy projects in Armenia.

This exploration of wind energy potential in Armenia presents a significant opportunity for stakeholders involved in the GEF in Armenia. GEF stakeholders, including banks, businesses, and investors, can benefit from this information by actively participating in the development of wind energy projects. By supporting the expansion of wind power capacity, stakeholders can contribute to Armenia's energy security, reduce greenhouse gas emissions, and align with the country's commitments under the Paris Agreement. Furthermore, the diversification of the energy market presents a potential avenue for investment and growth, offering long-term sustainable returns.

In conclusion, the untapped potential of wind energy in Armenia holds promise for a greener and more sustainable future. With favourable conditions, government support, and growing international interest, wind power can transform the country's energy landscape and reduce its dependence on imported fossil fuels. GEF stakeholders have the opportunity to play a significant role in this transition by supporting wind energy projects, fostering a green economy, and contributing to Armenia's energy security and environmental goals.



Featured technology:

Biomass boilers

Biomass boilers are a low-carbon and renewable energy source which burn plant material to generate heat and electricity. A biomass boiler can burn pellets, logs, wood chips or other biomass fuels and can be connected to a central heating system. This technology is a great way to eliminate agricultural waste but also an efficient means of transforming this waste into usable energy and thus achieve cost savings.

See which energy efficient technology suppliers are available on the Armenian market through the [Green Technology Selector](#).

Success story



Founded in 2019 in Yerevan, LA Solar LLC produces PV panels. The production capacity of the plant is 350 MW/year, while the capacity of its PV modules is 340-550 W. All the company's products are certified according to modern quality standards, and each PV panel produced is thoroughly tested, which enables LA Solar to supply more than 40 countries, such as the USA and EU and CIS countries.

In order to expand its production line, the company is currently building a plant for the production of aluminium frames for PV panels and plans to produce innovative

Investor

LA Solar LLC

Location

Yerevan, Armenia

Investment

Working capital for a manufacturer of PV panels

Investment size

US\$ 1,152,900

Payback period

6 years

Energy savings

7,503 MWh/year

CO₂ savings

2,543 tCO₂/year

solar roof modules next year.

LA Solar is in the process of acquiring working capital for 450 W PV module assembly kits, which will enable the production of PV panels with a total capacity of 5.4 MW.

View more success stories on our [website](#).

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