COPENHAGEN CENTRE ON ENERGY EFFICIENCY
SEforALL EE HUB

Building Efficiency Accelerator

ENERGY EFFICIENCY IN BUILDINGS

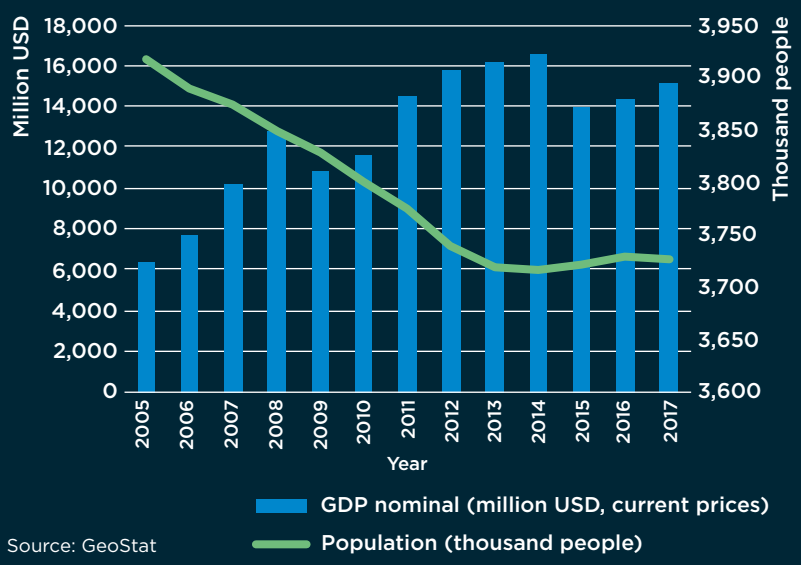
DECEMBER 2019

Georgia

STATUS AND TRENDS

Since the last decade, Georgia has been undergoing an economic recovery supported by multiple measures and reforms, which have boosted economic growth, net exports, job creation and private consumption of the country. The GDP has been growing at an average annual growth rate of +4.8%, arriving at more than 15 billion USD in 2017. This economic growth, coupled with a shrinking population, has led to a rapid growth of per capita GDP, from 1,637 USD/capita (2005) to 3,856 USD/capita (see Figure 1).

Figure 1. Georgia's GDP and population



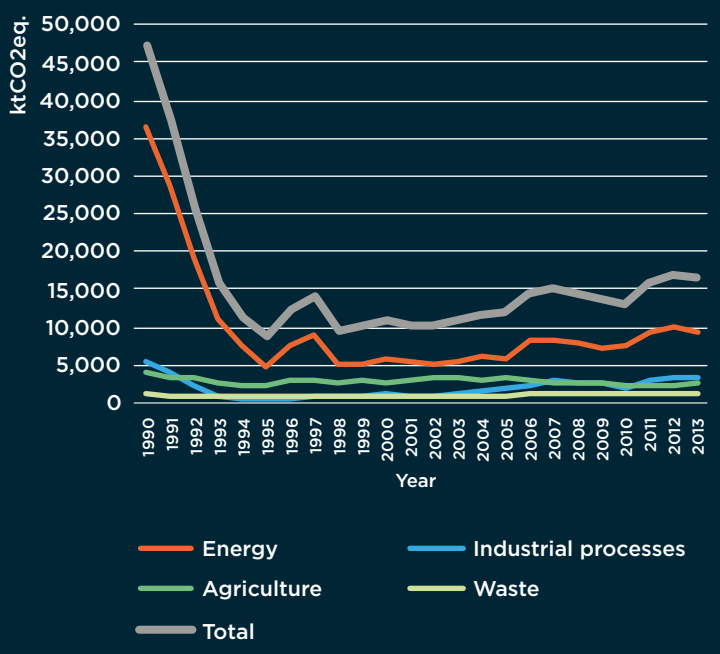
Source: GeoStat

KEY INDICATORS

- Population: 3.7 million people (2019)
- Primary energy intensity: 0.14 toe/thousand USD (2010)
- GHG emissions per capita: 2.4 tCO_2/capita (2015)

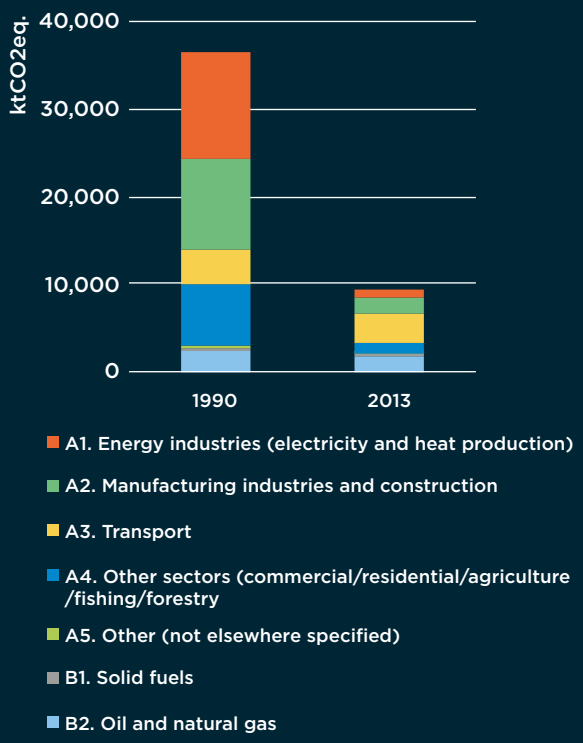
Source: GeoStat and IEA (2015)

Figure 2.1. GHGs emission trends by sector



Source: UNFCCC

Figure 2.2. GHG emissions per energy sector



A Fuel combustion. B Fugitive emissions

The dissolution of the Soviet Union in 1990 – and the subsequent decrease of energy and raw materials previously supplied to the Soviets – also caused significant reduction in Georgia's greenhouse gas (GHG) emissions, dropping to 8,799 $ktCO_2e$ in 1995. During the following decades, emissions rose again due to a flourishing economy and increases in commercial activities. The latest data indicated that the country's GHG emissions had reached 16,679 $ktCO_2e$ in 2013. Building stock is one of the major GHG emitting sectors, along with industry, transport and agriculture (see Figures 2.1 and 2.2).

Typically dominated by fossil fuel resources, Georgia's total primary energy supply (TPES) and final consumption (TFC) has decreased by more than half since 1990. Nevertheless, the per capita TPES has been growing steadily since 1999, reaching 1.29 toe/capita by 2016. This trend is partially due to the rising GDP and higher household and commercial energy demand intensities. Meanwhile, the share of renewables (including hydro, geothermal, solar, biofuels and waste) has increased, accounting for around 25.2% of the total energy consumption in 2016. Georgia produced more than 10 TWh of electricity in 2016. Nearly 80% of the power comes from hydro, the rest from natural gas. The share of renewables in the electricity mix of Georgia is among the highest in the world, 78% in 2015.

In Georgia, the buildings stock is diverse both in construction type and in function. Buildings cover a total surface of 129.2 million m^2, out of which about 86 million m^2 (67%) are subject to space heating. Residential buildings compose the biggest segment of the market — around 85% of the total floor surface area (110.2 million m^2). The remaining 15% belongs to non-residential, including commercial and public buildings (around 10.6 million m^2 and 8.4 million m^2, respectively). As for age composition, nearly half of the building stock was built between 1951 and 1981, before the independence from the Soviet Union.

In the residential sector, natural gas is the most important energy source (55%), followed by petroleum and renewables. The residential sector's final energy consumption was 1330 ktoe – around 5% of the national total. Space heating is the dominant use of residential energy (44.2%), followed by lighting & appliances (29.8%) and water heating (17.6%). The residential sector consumed 232.04 GWh of electricity in 2016, approximately 30% of the national total.

INSTITUTIONAL FRAMEWORK

Multiple public institutions and private companies are involved in the governance of building energy efficiency in Georgia, each of them playing a distinct role.

- The Ministry of Economy and Sustainable Development (MoESD) is responsible for regulating the economic activity in the country, including the elaboration of economic policies, policy planning process, monitoring and assessment of the policy implementation – while ensuring its sustainable progress. The MoESD also

promotes various initiatives on energy efficiency, including the development of innovative financing mechanisms (along with carbon financing) for investments in industrial energy efficiency and low carbon technologies, as well as energy efficiency training for the Georgian banking sector.
- The Georgian National Energy and Water Supply Regulatory Commission (GNERC) is an independent regulator in charge of the establishment of tariffs, licensing rules and standards. This body also resolves potential disputes between customers and companies.
- The technical operator or transmission services are divided into three principal agents: the GSE and ET (100% state-owned), and SakRusEnergo (50% state-owned and 50% private-owned).
- The electricity system commercial operator is an ESCO in charge of balancing the market, ensuring import/export of energy.
- Energy distribution companies are under private ownership, and examples of such companies include Telasi and ENERGO-PRO Georgia.
- The Building Permit Office (BPO) is responsible for the compliance of the building code. The parliament is the legislative authority on enforcement, while municipal agencies issue construction permits. The BPO divides constructions into five classes based on the complexity of the construction and risk factors. Class five is the most complex construction class, including power plants, dams, etc. The permits for this level of construction are issued by the technical and construction supervision agency (TACSA), a body of the MoESD.

POLICY FRAMEWORK

Georgia's policy framework on sustainable development and energy efficiency is strongly influenced by international commitments and cooperation agreements. In 2010, Georgia acceded to the Copenhagen Accord, declaring it would take steps to achieve a measurable, reportable and verifiable deviation from the baseline scenario. This commitment was followed by the Association Agreement with the European Union in 2014, in which Georgia agreed to strategically plan and develop measures on climate change mitigation and complying with the EU climate-related directives. Georgia is also a Contracting Party to the Energy Community Treaty, which makes the country bound to the EU Energy Directives that form part of the so-called EU Energy Package. Actions included increasing energy efficiency across sectors and developing larger capacities for renewable energy.

Similarly, in 2014, the Administration of the Government of Georgia (AoG) expressed high-level political support to prioritising the UN Sustainable Development Goals (SDGs). Subsequently, in 2017, Georgia ratified the Paris Agreement and submitted its first Nationally Determined Contributions (NDC). The NDC included a self-assessed 2030 business-as-usual (BAU) pathway of 38,420 $ktCO_2eq$. It also included an unconditional commitment to reduce GHG emissions by 15% below the BAU in 2030 (32,660 $ktCO_2eq$) and a conditional commitment to reduce emissions by 25% below BAU in 2030 (28,310 $ktCO_2eq$).

To fulfil these goals, Georgia employs several policy measures. The Law on Electric Power and Natural Gas, for instance, includes objectives related to improving the electricity, natural gas markets and tariff systems, aiming at making them efficient and competitive. It also promotes the use of indigenous hydro energy, other renewable energy sources and natural gas resources through encouraging investments. Another pertinent initiative is the 'Low Emission Development Strategy' (LEDS). The LEDS aims to improve national energy security by facilitating investments in new hydropower plants and establishing an energy trading mechanism. Other major climate strategies are the National Renewable Energy Action Plan (NREAP) for the Renewable Energy Directive 2009/28/EC and the Climate Action Plan (2021-2030). They define regulations, strategies, methods and actions in different sectors to identify synergistic pathways to reach national climate goals. In terms of building directives, based on the European Union framework, the Energy Performance in Buildings Directive (EPBD) is debated in the parliament; the Energy Efficiency Directive (EED) is under development and will be submitted to the parliament.

Concerning energy efficiency, one of the most relevant measures is Georgia's first National Energy Efficiency Action Plan (NEEAP). The NEEAP is an indicative policy document – not legally binding – that identifies energy efficiency actions, as well as expected energy savings across all sectors (i.e. buildings, transport, power generation, industry and services). It also sets indicative energy efficiency targets for 2020, 2025, and 2030 versus BAU. For the building sector, the main target is the retrofit of public buildings, according to energy-efficient standards. Both LEDS and NEEAP are highlighted in the Georgian NDC as a means to identify Georgia's pre-2020 actions. Likewise, the Strategy for Regional Development for 2010-2020 (Resolution of the Government No.172) considers climate change adaptation and sustainable development goals as important national objectives.

The building codes and standards are a mix of several requirements and specifications. Many of them were established during the Soviet Union era and have not been updated in over a decade. The lack of consistency of the existing building codes is aggravated by a lack of licensing in the construction practices. The latest building regulation is the "Building Safety Rules", in force since 2017. This code aims to define minimal requirements to achieve public safety, health and general welfare. It focuses on the provision of exit facilities, sanitation, proper lighting and ventilation, life and property protection from fire to the building. It also briefly addresses the energy efficiency of the building, as well as the upgrade of specific building components such as roofs.

BARRIERS TO ENERGY EFFICIENCY IN BUILDINGS

In Georgia, barriers to energy efficiency in buildings include four main categories: policy, socio-economic, institutional, and technical ones.

Policy

- The absence of fiscal or economic incentives, such as subsidies, loans or tax deductions leads to low investments in energy efficiency measures, both in residential and non-residential buildings.
- The lack of updated and consistent building codes, coupled with an absence of minimum energy performance standards (drafted but not approved yet), impede the large-scale diffusion of energy efficiency actions across the different building types.
- Deficiency of information programs, including energy-efficient labelling, energy performance certificates (EPCs), or billing advice, weaken the general level of knowledge and awareness of energy efficiency, curtailing the demand for technologies, appliances and actions.
- The absence of educational and outreach campaigns to promote energy efficiency and saving practices in households, also limit the demand for energy efficiency products and services. This is aggravated with low or no institutional capacities of homeowner's associations to develop and implement such practices.

Socio-economics

- The low energy prices cause long payback periods for energy efficiency investments and reduce their attractiveness.
- Insufficient access to energy efficiency finance and limited involvement of the private investors reduce the potential for implementation and replication of efforts in the building sector.
- The ESCO market in Georgia is still in the early stage of development, due to lack of financial incentives and guarantees to secure credits.

Institutional

- Absence of authorities dedicated to supporting energy efficiency in the building sector creates difficulties in the effective design and delivery of actions.

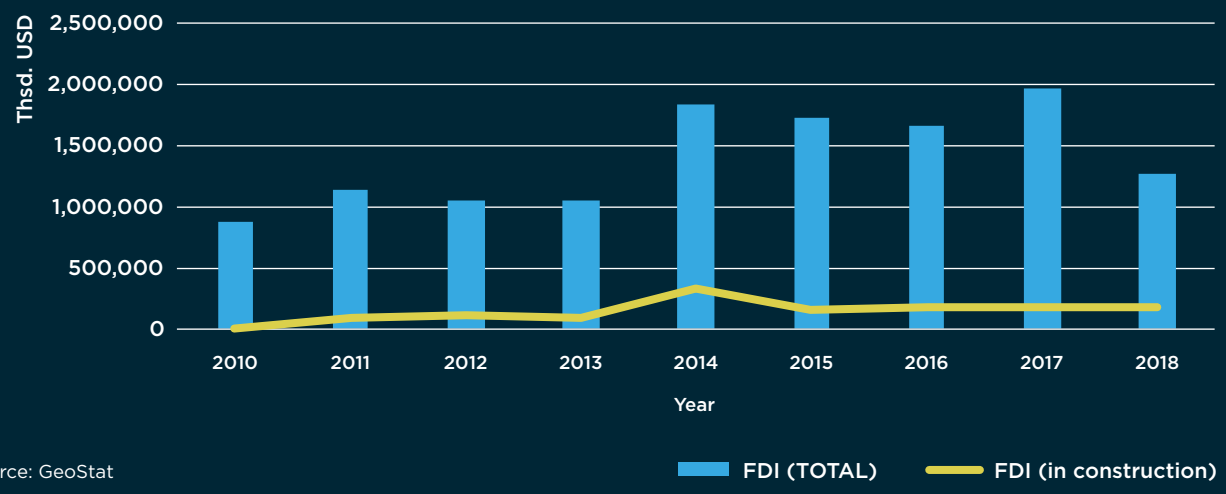
Technical

- From the technology suppliers' side, the lack of marketing and promotion of efficient energy technologies and management hinders a higher technology uptake.
- The low skilled workforce in the construction sector in relation to energy efficiency technologies installation and maintenance is also a hurdle to the large-scale diffusion and optimum performance of these solutions.

INTERNATIONAL SUPPORT

During the past decade, Georgia has strengthened its relationship with the European Union (EU), as well as other global parties through its engagement in multiple international treaties and commitments (e.g. SDGs, NDCs). An international initiative relevant for buildings energy efficiency is "Towards energy-efficient cities", supporting local authorities in improving their energy security, reducing GHG emissions, and improving citizens' quality of life. On a regional scale, the Covenant of Mayors,

Figure 3. Total FDI and the FDI in construction



Source: GeoStat

(now Global Covenant of Mayors, GCoM) is one of the most active foreign alliances, focusing on the voluntary commitments to develop Sustainable Energy Action Plans (SEAP) at the city level. The purpose of the SEAPs is to identify pathways for reducing Gerogia's dependence on energy imports, while also enhancing energy security through energy efficiency projects at the local level.

The next step in the implementation of these policies is to secure finance. The OECD recently estimated 7.5 billion USD of long-term investment needed for energy efficiency and buildings. One of the main on-going initiatives is the JSC Partnership Fund, a sovereign equity fund that has invested in the facility producing energy-efficient construction materials in the Caucasus region. The main driver of this investment has been Georgia's obligation to ensure energy-efficient construction under the Association Agreement to the European Union. Although further international climate investment is expected in the upcoming years, the planned expenditure is unlikely to be sufficient to meet Georgia's NDCs targets, particularly for energy efficiency in the building sector.

Besides climate finance, foreign direct investment (FDI) has been playing a critical role in the growth of the construction sector in the past years. Around 225 million USD have been annually invested in this area, representing an average of 13% of Georgia´s total GDP (Figure 3). The FDI in the construction sector saw a record high in 2014, with 325 million USD devoted to planning or construction building activities, accounting for 20% of the total FDI. Due to this boost, in 2017 investments in construction stood at 295 million USD strong, only behind transportation (488 million USD) and finance (304 million USD).

CONCLUSIONS

Georgia is a model of growth, international cooperation and commitment against global warming. During the past decade, it has implemented a number of internal reforms, leading to the political, social and economic transformation of the country and resulting in a flourishing economy and an increase of commercial activities. In 2017, it ratified the Paris Agreement and in its NDC, it made an unconditional commitment to reduce GHG emissions by 15% below the BAU in 2030.

The building sector is responsible for 15% of the total GHG emissions (excluding electricity), playing a pivotal role in the achievement of the NDCs. Furthermore, it is estimated that more than 5% of the buildings are in a state of decay, with limited lifetime left. In this context, the energy-efficient transformation of the building sector offers a unique opportunity to achieve the country´s decarbonisation targets, while upgrading the stock, and attaining a wide range of ancillary benefits, such as local job creation and energy security.

Currently, various plans and initiatives are taking place at national and local levels to promote the energy-efficient upgrade of the building stock, most of which are driven by international commitments and cooperation agreements. However, to ensure their large-scale success, further policy instruments and activities should be developed connecting national targets with local action plans. To avoid potential lock-in effects and ensure the optimization of resources, they should be implemented quickly and coordinated with efforts in transport, tourism and other sectors. Likewise, investments are critical to enabling the materialization of such plans on the ground. The planned expenditure seems insufficient to meet Georgia's carbon targets, particularly in the building sector. Thus, further actions should focus on mobilizing finance for energy efficiency in buildings.

RECOMMENDATIONS

In order to foster energy efficiency improvements of buildings in Gerogia, actions are needed at different levels.

International level

- Strengthen the engagement with the foreign donor community and champion alliances to mobilize climate finance at scale;
- Facilitate the establishment of international partnerships between public and private investors, to foster and mobilize green infrastructure financing;
- Strengthen the investments through managing risks and uncertainties, such as supporting the development of robust project plans, developing solid business cases or identifying its replication potential;
- Increase the participation in international platforms and forums to learn from best practices on large-scale deployment of energy-efficient technologies in the building sector;

National level

- Promote alliances and collaborations between stakeholders across the building value chain as well as across scales (i.e. from the national to local levels), to enable energy-efficient building projects;
- Enforce comprehensive building codes addressing strict energy-efficient requirements;
- Strengthen the presence and outreach of the Building Permit Office (BPO) to ensure that all building projects comply with the building code in force.
- Establish a robust data collection framework, including various open data sources, from national agencies, city government collection arrangements, audits of individual buildings, etc.; This should include defining methodologies and frequency of data collection and reporting;
- Enhance transparency and dissemination of best study cases to support the promotion of replication of best practices;
- Establish an audit and retrofit program for existing buildings, maybe starting with those owned by the government to lead by example;
- Apply environmental taxes to construction companies which do not follow energy-efficient standards, mainly targeting at publicly owned buildings;
- Offer soft loans to those building or portfolio owners willing to undertake an energy-efficient project;
- Facilitate subsidies to promote specific energy-efficient technologies, especially those doomed most promising in the market to reach climate protection goals.

Local/city level

- Develop an energy efficiency action plan for cities including models to translate identified actions into implementable projects;
- Mobilize local investors to promote energy-efficient building projects;
- Increase the local knowledge and interest in energy efficiency, its opportunities and benefits by building local capacity and raising awareness;
- Promote educational programs on energy conservation practices in the residential sector, its positive impact on the energy bill, as well as other ancillary benefits of energy-efficient measures such as health and wellbeing, local air pollution, asset value, etc.;
- Develop and implement demonstration projects to show benefits of energy efficiency in buildings to building owners, tenants and other stakeholders.

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