Ex-post evaluation
Expansion of the electricity transmission grid, Georgia

Title	Open programme Expansion of the electricity transmission grid in Georgia
Sector and CRS code	Energy; transmission and distribution of electricity (interconnected networks) CRS code: 23630
BMZ number	2013 66 327
Client	Federal Ministry for Economic Cooperation and Development (BMZ)
Recipient and executing agency	Georgian Ministry of Finance / Electricity Transmission Company JSC Georgian State Electrosystem (GSE)
FC financing volume and instrument	Interest-subsidised loan of EUR 35 million
Project duration	2013-2023 **Reporting year** 2025 **Sample year** 2025

Overall rating

Successful

1: very successful – **6:** completely unsuccessful

Project objectives and implementation

The objective at the outcome level was to improve the electricity supply for consumers connected to the Georgian electricity grid. At the impact level, the objective was to achieve a more sustainable energy supply for Georgian consumers. The construction of the 500/220 kV Jvari substation (component 1) and the 500 kV Ksani-Stepantsminda power transmission line (component 2) were financed.

Key findings

The project was successful overall. The most important results include:

- Despite the successes achieved so far, eliminating bottlenecks in Georgia's electricity transmission network remains a political priority and a necessity.
- Synergies with the European Bank for Reconstruction and Development (EBRD) were exploited, particularly during the preparatory phase.
- The outcome-level objective was largely achieved. Delays are due to external factors, as some of the planned hydropower plants that were to be connected directly to the line or indirectly to the substation have not (yet) been completed.
- Environmental and social aspects of the construction of the Ksani-Stepantsminda transmission line led to re-routings, which caused cost increases and delays and consequently reduced efficiency. Although the transmission line has only been used at 110 kV level to date, the forward-looking design at 500 kV level is plausible.
- The objective on impact-level, measured in terms of greenhouse gas savings, have been achieved only partially and with some delay, similar to the outcome-level indicator (delayed feed-in of hydropower). Significant internal learning effects were achieved, particularly with regard to environmental and social aspects.
- The modern, incentive-based regulatory system enables the transmission system operator to implement a professional operation and maintenance concept, which has a positive impact on the sustainability of the project/programme.

Conclusions

- Environmental and social aspects have a significant impact on the timely and cost-effective implementation of power transmission and distribution projects. In particular, it is necessary to involve the population affected by the project through an early, participatory elaboration and careful implementation of stakeholder engagement plans.
- In order to clarify land use issues, sufficient time and budget for compensation payments should be planned before implementation begins.
- Arbitration proceedings before international bodies can be time-consuming and lead to considerable additional costs.

Contents

Abbreviations

ADB	Asian Development Bank
BMZ	German Federal Ministry for Economic Cooperation and Development
DAC	Development Assistance Committee
EBRD	European Bank for Reconstruction and Development
EIB	European Investment Bank
EPE	Ex-post evaluation
ESAP	Environmental and Social Action Plan
EU	European Union
EUR	Euro
FC	Financial cooperation
FC E	FC Evaluation
GDP	Gross domestic product
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GNERC	Georgian National Energy and Water Supply Regulatory Commission
GSE	JSC Georgian State Electrosystem
GWh	Gigawatt hours
HDI	Human Development Index
HPP	Hydropower plant
ICC	International Chamber of Commerce
IFC	International Finance Corporation
kg	Kilogram
kJ	Kilojoule
MP	Module proposal
MW	Megawatt
NDC	Nationally Determined Contributions
NIF	Neighbourhood Investment Facility
OECD	Organisation for Economic Cooperation and Development
OPK	Operational review criteria
PA	Project appraisal
PCR	Project completion report
PP	Project proposal
RAP	Resettlement Action Plan
SDG	Sustainable Development Goals
SEP	Stakeholder Engagement Plan
TC	Technical cooperation
TWh	Terawatt hours
UNDP	United Nations Development Programme
USAID	United States Agency for International Development
USD	US Dollar
USVP	Environmental and social impact assessment

Overview

General conditions and classification of the project

The electricity generation capacity installed in Georgia in 2023 amounts to 4,621 MW and is based on approximately 74% hydropower, approximately 25% thermal (mostly gas) power plants and just under 1% wind power.[1] In 2024, electricity generation of 13,982 GWh consisted of around 80% hydropower, 19% thermal generation and 1% wind power.[2] Grid losses (including own consumption) have averaged between 7% and 9% in recent years, which is an acceptable level. Due to the low diversification of energy sources and the seasonality associated with hydropower, Georgia is dependent on electricity imports from neighbouring countries, particularly in the months from October to April. From May to September, however, electricity is exported. Imports and the associated grid infrastructure are needed to compensate for seasonal fluctuations in hydropower and to cover the increase in national electricity consumption. In 2024, for example, electricity imports rose by around 55% compared to the previous year to around 1,228 GWh. Electricity exports from Georgia totalled 1,047 GWh in 2024. The main destination for Georgian exports in 2024 was Turkey (83%), followed by Armenia (13%) and Azerbaijan (4%). The share of Russian electricity imports has increased significantly in recent years, mainly due to the sharp rise in Georgian energy consumption and the devaluation of the Russian currency and the associated reduction in the price of Russian electricity. In 2024, Russian electricity imports accounted for 79% of Georgia's total electricity imports (mainly to meet electricity demand in Abkhazia, the Russian-occupied territory of Georgia).

The Georgian electricity grid is characterised in particular by the fact that generation is concentrated in the west and consumption in the east of the country **(**Figure1 **).**

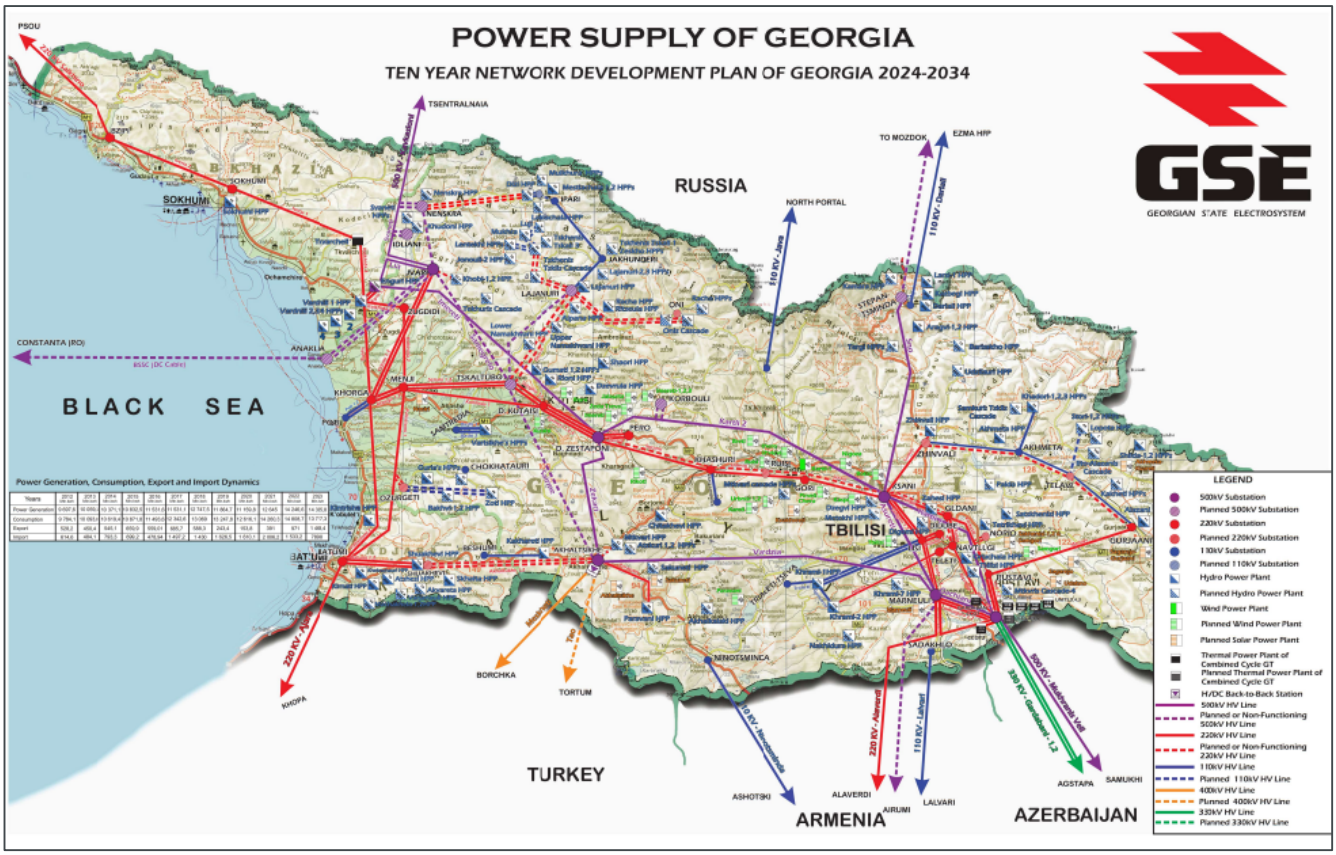

Figure1 *: GSE 10-year grid development plan for Georgia 2024-2034*
Source*: GSE (2025a)*

According to the 10-year report by JSC Georgian State Electrosystem (GSE), the main transmission grid bottlenecks in the west-east connection occur particularly in spring and summer, when the thermal power plants in the east cannot be operated due to the high water levels of the rivers there. Furthermore, cross-border lines are generally not duplicated, meaning that failures of these lines can

[1] The data is based on: GSE (2025a).
[2] Data from GNERC (2025).

have a significant impact on the electricity supply. Grid stability has been negatively affected, particularly due to increased demand in recent years. One of the challenges is the lack of sufficient operational grid regulation reserves, which can lead to power cuts, especially in more remote regions.

Due to its geographical location, Georgia is also an important transit country for electricity transport in the region. A significant increase in installed hydro and wind power capacity in particular is expected by 2034, which should lead to total generation capacity of 10,336 MW. While domestic demand is expected to rise to 19.0 TWh by 2034 (+ 39 % compared to 2024), exports are expected to increase around 23-fold to 17.0 TWh.[3] In order to enable the integration of the newly planned hydropower plants and the associated exports, as well as to avoid bottlenecks, the Georgian transmission grid needs to be significantly expanded.

The main legal basis for the Georgian energy sector is the Energy and Water Supply Act. The Georgian electricity market has been partially liberalised since the project's was appraisal and was most recently reorganised in 2021. This process was still ongoing at the time of the evaluation. The electricity market is divided into various generation, transmission and distribution companies. There are state-owned and (especially in the hydropower sector) private electricity generation companies. GSE is the state-owned transmission system operator (≥ 110 kV) in Georgia, while Telasi JSC (in Tbilisi and the surrounding region) and Energo-Pro Georgia JSC (in the rest of Georgia) have been appointed as the respective distribution system operators. The function of public supply has been transferred to Tbilisi Electricity Supply Company JSC (Telmico) with 720,000 electricity customers in and around Tbilisi and to Energo-Pro (EP) Georgia Supply with more than 1.2 million electricity customers in other regions of Georgia. GSE transmits electricity to Telmico (3,194 GWh in 2024) and EP Georgia Supply (4,117 GWh) as well as to large customers (3,160 GWh). At the same time, GSE is responsible for grid stability and electricity exchange with neighbouring countries. In 2021, Energotrans Ltd., formerly an independent GSE subsidiary, merged with GSE. In 2022, an electricity exchange was opened, but it was slow to start operating and was not yet fully operational at the time of the evaluation. A developed grid code had only been partially implemented at the time of the evaluation. Georgia has been a member of the Energy Community since April 2017.[4] In 2023, GSE and the European Network of Transmission System Operators for Electricity (ENTSO-E) signed a cooperation agreement. The Georgian electricity market is supervised by the Georgian National Energy and Water Supply Regulatory Commission (GNERC).

Brief description

The project was designed as an open programme and supported the implementing agency in reducing existing bottlenecks in the Georgian transmission grid in order to improve the electricity supply for consumers connected to the Georgian electricity grid. Specifically, the following measures were financed as part of the project: the 500/220 kV Jvari substation (component 1), the 500 kV Ksani-Stepantsminda power transmission line (component 2) and consulting services. The project built on prior FC projects in the electricity transmission sector, in particular the Black Sea Energy Interconnection project (BMZ No. 2008 65 543). Component 1 was co-financed by the European Bank for Reconstruction and Development (EBRD).[5] The project's target group was all consumers connected to the Georgian electricity grid.

Breakdown of total costs

Various cost estimates provided during the planning phase of the project cannot be clearly verified ex post, as there were different figures and estimates at different points in time. The amount of Georgia's own contributions is also not always clear.

[3] It is unclear whether and to what extent these plans will be realised. The 10-year plan from 2015 forecast an installed capacity of 7,541 MW for 2025. In 2023, 4,612 MW were installed. Generation was planned at 27.3 TWh for 2023, but the actual figure was around 14.4 TWh.

[4] The Energy Community (formerly known as the Energy Community of South East Europe) is an international organisation consisting of the European Union and its neighbours. Its main objective is to extend the rules and principles of the EU internal energy market to countries in South-East Europe, the Black Sea region and beyond (see EC (2025): Energy Community homepage).

[5] See EBRD (2025): GEORGIA - Jvari-Khorga Interconnection | We invest in changing lives.

	Component 1 (Plan 09/2013)	Component 1 (Actual)	Component 2 (Plan 11/2014)	Component 2 (Actual)	Total*** (Actual)
Investment costs (total) in million EUR	36.2	19.1	33.6	37.6	56.7
Own contribution in EUR million	6.0	0.7	9.7	5.8	6.5
External funding in EUR million	30.2	18.4	23.9	31.8	50.2
of which BMZ funds in EUR million (BMZ No. 2013 66 327) in EUR million (BMZ No. 2015 68 286)	22.2 -	10.4 -	23.9 -	24.6 7.2	35.0 7.2
of which EU NIF funds in EUR million	8.0	8.0	0	0	8.0

Table1 *: Cost breakdown*
Source*: various project documents and information provided by GSE.*
** Information provided by the implementing body 2024, in the PCR report for component 1, approximately EUR 3.6 million was stated as own contribution in the form of taxes.*
*** Information provided by the sponsor 2024: in the PCR report for component 2, EUR 5.4 million was stated as own contribution (excluding final compensation payments).*
**** Due to the different planning dates, it is not possible to provide a clear overview of the planned total costs.*

Map of the project region

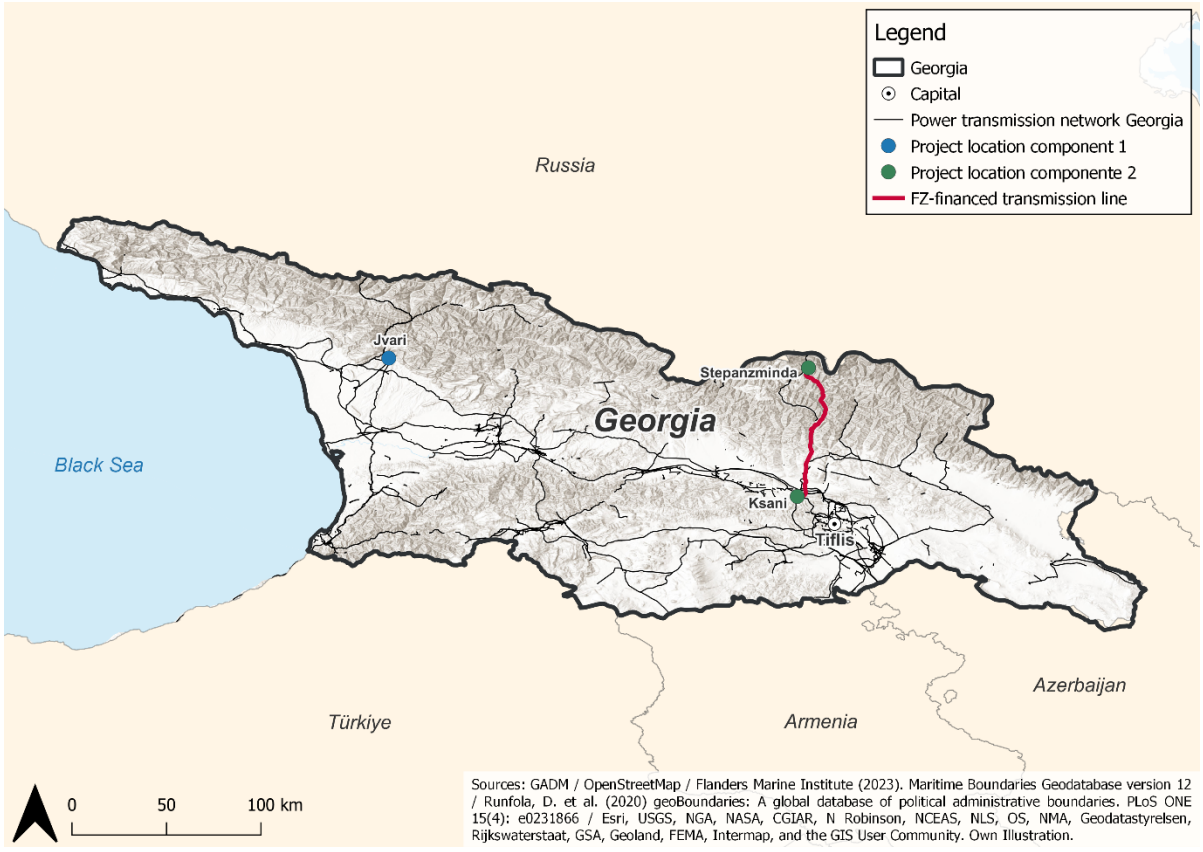

Figure2 *: Map of the project region*
Source*: openstreetmaps.org, edited by KfW (see also legend on the map).*

Project-specific strengths and weaknesses

The strengths include in particular:

- The project is highly relevant. Despite the successes achieved, eliminating bottlenecks in Georgia's electricity transmission grid remains a political priority and a technical necessity.
- Good cooperation with the European Bank for Reconstruction and Development (EBRD) in the preparation and implementation of Component 1 (Jvari substation).
- The thorough review and improvement of environmental and social aspects, including the development and implementation of relevant requirements (e.g. an environmental and social action plan and a stakeholder engagement plan).
- The implementation of the project benefited from a competent and motivated implementing agency, which operates the Jvari substation and the Ksani-Stepantsminda transmission line professionally and continued to maintain them after the project's completion. This ensures sustainability.

The weaknesses include in particular:

- The target system with the formulation of the objectives and the selected indicators was only partially appropriate in view of today's requirements.
- The time frames for clarifying land use rights for route alignments and connections to hydropower plants, which were to be implemented by external investors, were considered too short. The actual implementation took or is taking much longer, with the result that the expected effects are only materialising after considerable delay.
- Environmental and social aspects were not sufficiently taken into account in the planning of both components. There were considerable delays due to necessary changes to the route of the Ksani-Stepantsminda transmission line (Component 2).
- Additional costs were also incurred as a result of a lengthy arbitration procedure before the International Chamber of Commerce (ICC), which reduced efficiency.

General conclusions/lessons learned

- Environmental and social aspects have a significant impact on the timely and cost-effective implementation of the project. In particular, it is essential to involve the population affected by the project through the early preparation and careful implementation of stakeholder engagement plans.
- In order to clarify land use issues, sufficient time and budget for compensation payments should be planned before implementation begins.
- Arbitration proceedings before international bodies can be time-consuming and lead to considerable additional costs.

Assessment according to OECD DAC criteria

Relevance

1. Alignment with policies and priorities

At the time of conception in 2013 and at the time of evaluation, the objectives of the project were in line with Georgian energy policy.[6] The Georgian government has committed itself to reforms in the energy sector as part of its national development agenda.[7] The main reform objective for the energy sector is to establish an efficient and liberalised electricity market in line with EU regulations, based on the EU model, to ensure Georgia's energy security and, at the same time, to reduce its energy dependence on neighbouring countries. The current Energy Strategy of Georgia 2020–2030 also explicitly refers to the need to create a sustainable and reliable energy infrastructure and emphasises the importance of interconnection with the four neighbouring countries and the goal of integration into the European internal energy market. The project contributes to the achievement of these objectives and promotes Georgia's central position as an energy hub in the region. In addition, it supports the Georgian government in implementing the national strategy for expanding the electricity transmission grid (see chapter 'General conditions and classification of the project') and in meeting Georgia's commitments within the Energy Community. Georgia signed the Paris Climate Agreement in 2016 and ratified it in 2017. As part of its Nationally Determined Contributions (NDC), Georgia committed itself in 2021 to reducing its greenhouse gas emissions by 35% by 2030 compared to 1990 levels. With international support, the target will be increased to 50–57%.[8]

The objective of the project was in line with the BMZ's sector concepts at the time, "Sustainable Energy for Development" and "Sustainable Energy for Development".[9] Furthermore, the project's objective corresponds, both then and now, to a) the German Federal Government's objectives of protecting the global climate and the environment, b) the BMZ's current core strategy "Responsibility for our planet – climate and energy" (action areas 1 "Climate protection and adaptation to climate change" and 2 "Renewable energies and energy efficiency")[10] and c) the Just Transition approach, which aims to ensure that everyone is included on the path to a climate-neutral, resilient and socially just social and economic order.[11]

Furthermore, the objectives of the project were and are in line with the Sustainable Development Goals (see chapter 'Contribution to the 2030 Agenda'), the 2015 Paris Climate Agreement and the corresponding follow-up agreements, as they aim to reduce greenhouse gases at the impact level. The project was designed in line with the Accra Agenda[12] with regard to the requirements for a) ownership and self-financing, b) use of the partners' financial systems, and c) harmonisation.

At the time of the project's appraisal energy was one of the priority sectors of Georgian-German cooperation. It fitted into the development cooperation target system with its three components: (i) promoting renewable energies, (ii) ensuring a reliable, cost-effective and efficient energy supply, and (iii) greater integration with the electricity markets of neighbouring countries. It also fitted in with the regional concept for the priority area of energy and climate protection within the framework of the BMZ Caucasus Initiative. At the time of the evaluation, there was neither a country strategy for Georgia nor a country-specific development cooperation programme for the core theme of "climate and energy". However, the project supports the "Concept for Development Cooperation with Transition Partners in South-Eastern Europe, Eastern Europe and the South Caucasus" published in 2023.[13] As there is no coal-fired power generation in Georgia, the project also retrospectively meets the requirements for financing in accordance with the KfW exclusion list.[14]

[6] See, among others, "Main Directions of the State Energy Policy of Georgia" from 2006 and the Georgian government's 2013 white paper.
[7] In June 2024, the Georgian Parliament adopted the National Energy Policy, including the National Energy and Climate Plan as an appendix.
[8] See (UNFCCC 2021): NDC Georgia_ENG WEB-approved.pdf
[9] See (i) BMZ strategy paper "BMZ Concepts 145 – Sector Concept Sustainability Energy for Development" (01/2007) and (ii) BMZ information brochure: "Sustainability Energy for Development (01/2014).
[10] BMZ core issue strategy: "Responsibility for our planet – climate and energy" from June 2021. The core issue strategy aims to meet rising energy demand with a climate-neutral energy supply and contribute to the complete net decarbonisation of the energy sector by 2050.
[11] Just Transition | BMZ
[12] See: https://www.oecd.org/dac/effectiveness/parisdeclarationandaccraagendaforaction.htm.
[13] See Concept for Development Cooperation with Transition Partners in South-Eastern Europe, Eastern Europe and the South Caucasus: The concept emphasises the importance of a diversified energy economy based on renewable energies in the partner countries in order to reduce dependence on imports of fossil fuels, especially from Russia, and to be able to pursue a climate and environmental policy in line with EU convergence.
[14] See KfW exclusion list version 2 2023, No. I footnote 3: "Investments in electricity transmission grids with significant coal-fired power feed-in will only be pursued in countries and regions that have an ambitious national climate protection policy or strategy (NDC), or if the investments are specifically aimed at reducing the share of coal-fired power in the grid concerned."

2. Alignment with the needs and capacities of stakeholders and beneficiaries

The project's appraisal report does not explicitly formulate the core problem. Implicitly, it consisted of bottlenecks in the Georgian electricity transmission grid (see also the chapter 'General conditions and classification of the project'). The core problem and its significance for further economic development were correctly addressed in the objectives and specific measures. Due to the continuing increase in demand for electricity in Georgia and the growing potential for international electricity exchange, it was and is necessary to further expand the Georgian electricity transmission grid in order to prevent bottlenecks. The core problem remains relevant at the time of the evaluation.

During the appraisal, the project was characterised as being distant from its target group, i.e. no clearly definable target group could be identified that would benefit directly from the project and for which a corresponding impact assessment could have been carried out, particularly in the case of disadvantaged or vulnerable groups: all consumers connected to the electricity grid (industry, agriculture, commerce, administration and private households) benefit. This also appears plausible in retrospect and is common practice for comparable projects in the electricity transmission sector.

When the project was designed, no effects on gender equality were expected and no specific measures to promote gender equality were planned, even though it can be said that, globally, the energy sector has historically been male-dominated[15] , which is also the case in Georgia.[16] Overall, the conception of the project can be considered gender-neutral. However, positive gender effects could have been addressed earlier through accompanying support for gender equality strategies or targeted support for female GSE employees. On a positive note, gender measures have been agreed upon in follow-up projects in cooperation with GSE. At the time of the evaluation, GSE had a code of conduct and ethics in place that requires the observance of general human rights. GSE is also committed to gender equality and social inclusion, which is reflected in its recruitment and employment agreements.

With regard to environmental and social impacts, it was agreed with GSE during the course of the project that compliance with international environmental and social standards for the individual projects to be financed would be subject to appraisal and ensured in accordance with KfW's sustainability guidelines. This created added value compared to purely local financing, as Georgian law usually requires less stringent environmental and social assessments. Georgian project participants thus gain important experience in this area, and the relevant knowledge is increasingly being applied beyond the projects financed by international donors.

3. Appropriateness of design

The project design was based on the experience gained from FC projects in the electricity transmission sector, in particular the Black Sea Energy Interconnection project (BMZ No. 2008 65 543). The design as an open programme with financing for both sub-components (substation and transmission line) addressed the core problem of bottlenecks in the Georgian electricity transmission grid and was suitable for contributing to its solution. In organisational and financial terms, particularly taking into account the co-financing of further measures by the EBRD (component 1), the design was only partially realistic. In retrospect, it can be said that Georgia's own contributions were overestimated (see chapter on 'Efficiency'). Technically, the concept faced the challenge of designing the Ksani-Stepantsminda line (Component 2): at the time of design, there were plans for a 500 kV connection between Stepantsminda and the Mozdok substation in Russia. The Ksani-Stepantsminda line was therefore also planned at 500 kV on the Georgian side, although it was unclear when the line would be built on the Russian side, making cross-border electricity exchange at this voltage level possible. After careful consideration, it was decided to build component 2 at 500 kV as well, with a view to the future, and to operate it at 110 kV (temporarily, until the Russian connection is established). From the perspective of the evaluation, the decision taken at the time appears plausible in retrospect, even though the timing of a possible connection to the Russian electricity transmission grid remains unclear (see chapter on "Efficiency").

The target system proved to be appropriate to a large extend and was adjusted as part of the evaluation (see also the chapters on "Effectiveness" and "Impact"). Some of the indicators originally selected were at the output level, could not be directly influenced by the project or were difficult to quantify. Figure 3 shows the Theory of Change developed as part of the evaluation, which contains the updated target and indicator formulations compared to the original impact matrices.

[15] According to the International Energy Agency, on average 76% fewer women than men work in the energy sector, which, according to data from 29 countries (22 IEA members) from 2018, represents a significant difference from the average difference of 8% in the total workforce. The average gender pay gap, taking into account qualifications in the energy sector in these countries, is around -15%, which means that women in this sector earn 15% less than men, even when taking into account qualification levels. In the non-energy sector, the pay gap is slightly lower at -13% (see Gender and Energy Data Explorer – Data Tools - IEA).

[16] For basic information on women's rights in Georgia, see Country Fact Sheet | UN Women Data Hub. The United Nations generally attests to Georgia's progress in terms of women's rights. According to information from the Asian Development Bank, significantly fewer women than men work in the Georgian energy sector. This proportion is even lower in senior management, with women holding only 14% and 10% of positions in management and on executive and supervisory boards, respectively.

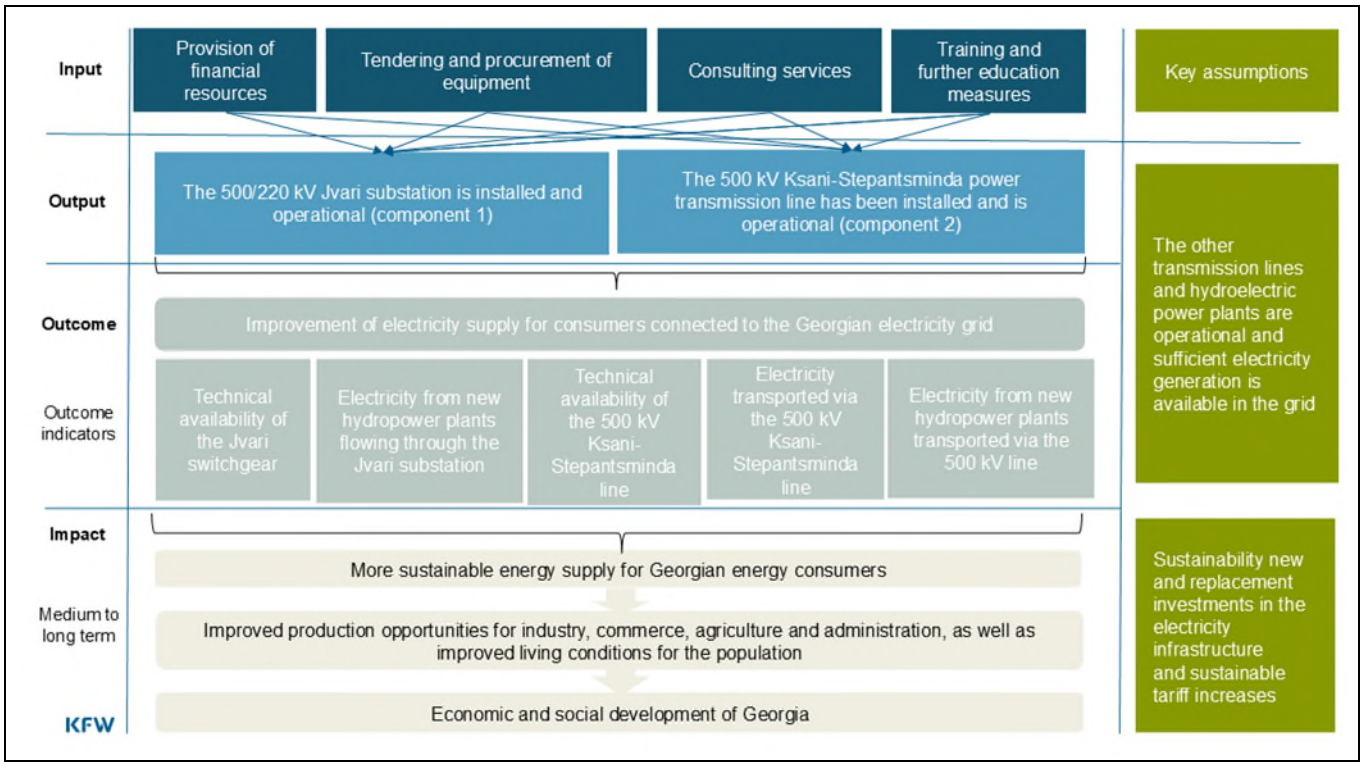

Figure3 *: Theory of Change.*
Source*: own illustration.*

The concept envisaged that, as part of the project, funds would be made available to finance various capital goods to be procured through tenders, as well as consulting, training and further education measures (input). Once implementation is complete, the 500/220 kV Jvari substation (component 1) and the 500 kV Ksani-Stepantsminda power transmission line (component 2) will be available to the implementing agency in fully operational condition (output). Assuming that the other transmission lines and hydropower plants (to be implemented outside the project) are operational and that sufficient electricity is generated in the grid, the electricity supply for consumers connected to the Georgian electricity grid will be improved (outcome). If sustainable new and replacement investments are made in the Georgian electricity infrastructure as a whole and there are sustainable tariff increases with a view to covering the costs and financing these investments, this will contribute at the impact level to making the entire supply to Georgian end energy consumers more sustainable (impact) and that further positive medium to long-term development effects will materialise, e.g. in the form of improved production opportunities for businesses and the administration. It should be emphasised that the effects at the impact level can only be achieved gradually and are heavily dependent on risks, e.g. the further development of the Georgian economy.

The choice of GSE as the implementing agency made sense, as the company acts as the electricity transmission company in Georgia.

The concept was based on a holistic approach to sustainable development. It is positive to note that, even before committing to comply with the KfW Sustainability Guidelines, the implementing agency committed to implementing the EBRD Environmental and Social and Resettlement Guidelines. This also included the Environmental and Social Action Plan (ESAP), the Stakeholder Engagement Plan (SEP) and the Resettlement Action Plan (RAP). These were to be monitored independently. Component 1 (Jvari substation) was given the ESIA rating "B" on the basis of an in-depth environmental and social impact appraisal. In-depth appraisals were not considered necessary for the areas of emission reduction and adaptation to climate change. A classification in category B also appears appropriate at the time of evaluation. An environmental and social impact assessment (ESIA) for Component 2 (Ksani–Stepantsminda line) was not submitted to the BMZ as part of the coordination of this specific component of the open programme. With regard to environmental and social impacts, the risk of inadequate implementation or compliance with an Environmental and Social Action Plan was assessed as low, given the high degree of influenceability. An ESIA was later carried out for Component 2 as part of the detailed planning of the project, taking into account the KfW Sustainability Guidelines. The BMZ was also informed accordingly as the project progressed.

4. Adaptability – response to change

During the implementation of the two components, there were no significant changes in the general conditions that would have had a serious impact on the project (see also the chapter 'General conditions and classification of the project'). Adjustments were made to the route of the Ksani-Stepantsminda line due to land availability and public protests by local residents: According to interviewees, the protests were based in particular on fears of electromagnetic radiation from the line, which was originally planned to run close to houses, especially along the village of Passanuri. The alternative route through a protected area presented challenges that were adequately addressed during the implementation of the project (see chapter "Effectiveness").

Rating summary of relevance: successful (2)

At the time of planning, the project was highly relevant due to existing bottlenecks in the Georgian electricity transmission grid. Due to the further increase in electricity demand and higher regional electricity transport needs, the high relevance can also be confirmed at the time of evaluation. The basic concept of the project addressed the core problem and was fundamentally suitable for contributing to its solution. The objectives were and remain in line with political priorities. The decision to build the Ksani–Stepantsminda line at 500 kV and initially operate it at 110 kV appears plausible. The adjustments made under Component 2 were adequate. Overall, the relevance is considered as still successful.

Coherence

5. Internal coherence

The project was part of the energy focus of Georgian-German cooperation, which was also in place at the time of the evaluation. There is no current development cooperation programme for the energy sector. In sectoral terms, the design and implementation of the project complied and continues to comply with the relevant BMZ guidelines and the fundamental orientation of German development cooperation (see chapter on 'Relevance'). German TC was and is not active in the Georgian energy sector, so there was and is no potential for synergies.

The project complemented the diverse, long-standing bilateral FC engagement in the Georgian energy sector. It built on the experience gained from the already completed FC project "Open Programme for the Expansion of Electricity Transmission" (OP I; BMZ No. 2013 663 27) and complemented the ongoing bilateral FC project "Programme for the Expansion of Electricity Transmission in Georgia, Phase 2" (OP II; BMZ No. 201568 286) and "Open Programme for the Energy Sector" (OPE; BMZ No. 2017.6834.0). The experience gained in the course of the project was also incorporated into the design of the project "Open Programme Energy Sector II" (BMZ No. 2023 68 199).

The evaluation did not reveal any inconsistencies with the international norms and standards to which German development cooperation is committed.

6. External coherence

The Georgian government supported (and continues to support) the domestic electricity sector with public funds. Considerable own funds were made available for the implementation of the project (see also Table 1). The principle of subsidiarity was upheld, as the project effectively complemented the activities of the Georgian government.

At the time the project was set up in 2013, the main active donors alongside the German FC were the EBRD, the European Investment Bank (EIB) and the International Finance Corporation (IFC). At the time of conception, the Asian Development Bank (ADB) began cooperating with Georgia in the electricity transmission sector as an additional donor. The EU, the United States Agency for International Development (USAID) and the United Nations Development Programme (UNDP) were active in the field of technical cooperation. At the time of the evaluation, the EBRD, the World Bank and the ADB were the main donors in the electricity transmission sector. According to the evaluation, coordination between the donors was and is appropriate given the political context.

The design of the project, in particular Component 1, was closely coordinated with the EBRD. A positive aspect worth highlighting is that the EBRD covered the consulting costs for Component 1[17] and agreed that the EBRD's environmental and social guidelines, including the EBRD Resettlement Guidelines, the Environmental and Social Action Plan (ESAP), the Stakeholder Engagement Plan (SEP) and the Resettlement Action Plan (RAP), would also apply to the FC project. The EBRD's reporting under Component 1 was shared.

[17] The EBRD financed the construction of an 8 km long 500 kV double transmission line between Jvari and Kavkasioni and a 60 km long 220 kV double transmission line between Jvari and Khorga. the costs for unforeseen events, consulting services for EBRD and FC activities, materials for operation and maintenance, and compensation payments for environmental and social measures.

Rating summary of coherence: successful (2)

The project was designed and implemented within the energy focus of German-Georgian cooperation. It continues to fit in well with the current sectoral priorities. As German TC was not and is not active in the Georgian energy sector, there was no potential for synergies. There was close coordination, particularly with the EBRD, in the design and implementation of Component 1. Overall, coherence is assessed as successful.

Effectiveness

7. Achievement of objectives

The outcome-level objective adjusted within the framework of the evaluation was: The electricity supply for consumers connected to the Georgian electricity grid is improved. The following indicators, which were adjusted in terms of quality and quantity compared to the project design, were used to measure the outcome objective for the two components:

Indicator	Status at appraisal	Target value at EPE (audit)	Actual value at Project completion	Actual value at evaluation
Component 1				
(1) Technical availability of the 500/220 kV Jvari substation	0 % p.a.	≥ 99 from the first full year after commissioning	98 % p.a.	100 % (2024) Target value achieved
(2) Electricity fed into lines connected to the Jvari substation by new hydropower plants.	0 GWh p.a.	≥ 200 GWh from the first full year after commissioning	-	104 GWh (2024) 207 GWh (from 2025) Target value partially achieved (expected to be achieved from 2025)
Indicator	**Status at appraisal**	**Target value at EPE (audit)**	**Actual value at Project completion**	**Actual value at evaluation**
Component 2				
(3) Technical availability of the 500 kV Ksani-Stepantsminda line	0 % p.a.	≥ 99 from the first full year after commissioning	98 % p.a.	100 % (since 2021) Target value achieved
(4) Electricity transported via the 500 kV line.	0 GWh p.a.	≥ 490 GWh p.a. From the first full year after commissioning at the 110 kV level to energisation at the 500 kV level.	-	542.1 GWh (2024) Target value achieved (exception 2023)
(5) Electricity from new hydroelectric power plants transported via the 500 kV line.	0 GWh p.a.	≥ 100 GWh starting in the first full year after commissioning	-	0 GWh p.a. (2024) Target value not achieved

***Table2** : Outcome target achievement*
***Source**: Own illustration.*

8. Contribution to the achievement of objectives

The Jvari substation was completed at the end of 2016 and handed over to the implementing agency with a few remaining tasks to be implemented subsequently. Work on the 98 km long 500 kV Ksani-Stepantsminda line was completed in September 2019 and tests were carried out at the 110 kV level. It was provisionally handed over in October 2019, including a list of outstanding work. However, there were disagreements between the general contractor for Component 2 and GSE regarding the actual handover date, so a dispute resolution procedure involving the Dispute Adjudication Board was initiated in 2020. In December 2023, a final agreement was reached in proceedings before the International Court of Arbitration in Paris (see chapter 'Efficiency').

Indicator 1:

The Jvari substation has been 100 % technically available since its completion at the end of 2016. It should be noted that the Jvari substation was part of an overall KfW-EBRD concept. The components financed by the EBRD, in particular the line components, were only completed after a considerable delay (see also the section on 'Efficiency'). As a result, the Jvari substation was only operated as a switchgear facility until February 2022. However, this function was important for the secure supply of the region and also influenced the control of load flows to Abkhazia.

Indicator 2:

The target value for the indicator was set at ≥ 200 GWh p.a. as part of the evaluation. This corresponds to the retrospectively expected feed-in of electricity into the lines connected to the Jvari substation. At the time of the evaluation, one hydropower plant (HPP), the Khobi 2 HPP, was connected to the lines financed by the EBRD. Electricity production, which began in September 2024, amounted to around 104 GWh by December 2024, with an installed capacity of 45 MW. Based on an expected full load of 4,600 hours per year, derived from comparable plants, this results in an annual electricity production of around 207 GWh. It is reasonable to assume that the indicator will be met, albeit with a delay.

Indicator 3:

The 500 kV Ksani-Stepantsminda line was commissioned at the end of 2019 / beginning of 2020 and has been 100 % technically available since its completion. It should be noted that, as agreed, it has so far only been operated at the 110 kV level. Among other things, this contributes to the stabilisation of the 110 kV grid in our country and thus increases security of supply (see also the "Impact" chapter).

Indicator 4:

The target value for the indicator was set at ≥ 490 GWh for the first year of full operation as part of the evaluation. This is derived from the installed capacities and the estimated full-load hours for the three hydropower plants currently connected to the line: Dariali (109 MW; 4,700 full-load hours), Larsi 1 (19.5 MW; 3,800 full-load hours) and Kazbegi 2 (6 MW; 5,000 full-load hours) connected to the line to date. The value was adjusted by a deduction factor of 20 % to take into account seasonal fluctuations in generation, among other things. Figure 4 shows the feed-in from the three hydropower plants from 2020 to 2024. It can be seen that the target value of 490 GWh is achieved with the exception of 2023 **(** Figure4 **)**.

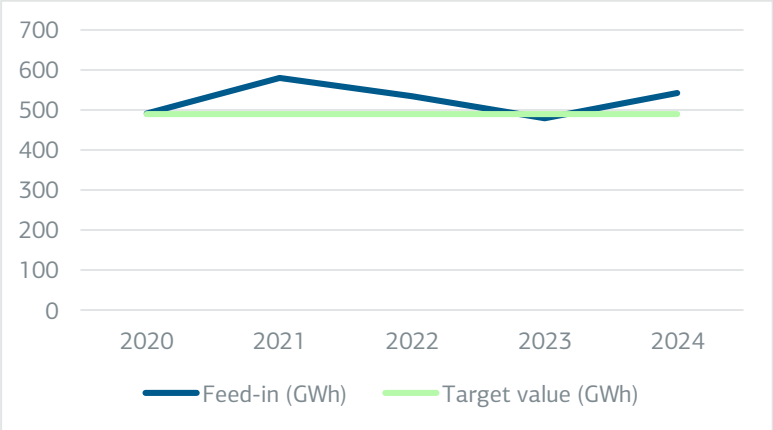

Figure4 *: Feed-in of hydroelectric power into the Ksani-Stepantsminda power transmission line*
Source*: Data: GSE; own illustration.*

Indicator 5:

The direct impact of the new transmission line is also measured by the additional electricity transmission from new hydropower plants to be connected to the line. When designing the component, the construction of additional hydropower plants was anticipated on the basis of the current 10-year grid development plan (see also Figure1). The target value of the indicator was set at ≥ 100 GWh for the first year of full operation as part of the evaluation. This is derived from the installed capacities and expected generation data of the three planned hydropower plants Larsi 2 (5.9 MW; 28.4 GWh), Barisako (13.5 MW; 64.3 GWh) and Udzilauri (8.5 MW; 41.5 GWh). As with indicator 4, the value was adjusted by a deduction factor of 20% to take into account seasonal fluctuations in generation, among other things. None of the three power plants have been built to date and are therefore not feeding electricity into the grid, meaning that the target value has not been achieved.

Even without concrete data on the number and duration of potential power cuts, it is reasonable to assume that the power supply in the project region has improved, as additional power generation is being transported or transformed and the stability of the Georgian grid as a whole has increased in terms of the n-1 criterion.

Overall, the target at the outcome level has been largely achieved, even if some of the target values have been delayed or have not yet been met.

9. Quality of implementation

As part of the evaluation, an inspection was carried out at the Jvari substation (component 1) and selected sections of the Ksani-Stepantsminda transmission line (component 2). The financed infrastructure was implemented to a very high standard and remains in very good condition. The recommendations for operation formulated during the final inspection were implemented according to the information gathered during the evaluation mission.

GSE was supported by an international consultant during the implementation of both components. Cooperation during the implementation phase was described as good, and valuable lessons were learned, including in the areas of contract design and cooperation with consultants. Overall, the implementing agency can be said to have managed the project in a good and goal-oriented manner.

10. Unintended effects (positive or negative)

Unintended negative social effects occurred particularly in the context of Component 2. The originally selected route was rejected by the local population in Passanauri and Chartali, mainly due to fears of electromagnetic radiation. This led to public protests. The project responded by organising public hearings and ultimately by rerouting the line, although the process of dealing with the protests and rerouting the line cannot be considered entirely transparent in retrospect. In the meantime, payment suspensions were imposed. Parts of the new route affect a national park area. Consultants were subsequently hired to draw up a biodiversity action plan and conduct a bird study. The latter concluded that the new route did not pose any significant problems for birds. GSE subsequently implemented individual measures, including the installation of bird diverters[18] at selected passages and compensation measures for the felled trees, which can be considered appropriate ex post. According to the mayor of Passanauri, all compensation had been paid by the time of the evaluation, with only eight households lacking official land registration. The delays caused by the route relocation were considerable (see also the chapter on 'Efficiency').

During the evaluation mission, no information was received about any accidents or other significant negative events. GSE reported a small oil leak at the Jvari substation, which is not unusual during normal operation. The leak was repaired within a short period of time and had no negative impact on the environment.

Rating summary of effectiveness: successful (2)

The outcome-level target has been largely achieved, even though some of the indicator targets have been delayed or have not yet been met. The targeted availability of the two technical facilities has been achieved. The amount of electricity that was to be transported via the Ksani-Stepantsminda line has been achieved, albeit at a different voltage level. The additional amount of electricity from the hydropower plants directly or indirectly connected to the Jvari substation or the 500 kV Ksani-Stepantsminda line is expected to be achieved from 2025 for component 1; for component 2, the date of commissioning of the new hydropower plants is unclear. External factors are largely responsible for the delay in implementing the project. The quality of the measures implemented is very good, even at the time of evaluation. The expected environmental and social risks have materialised; the project sponsor's approach to addressing these risks is considered appropriate. Overall, the effectiveness of the project is rated as just about successful.

Efficiency

11. Production efficiency

The total costs of Component 1 amounted to EUR 19.1 million (see Table1 on page 6). This is significantly below the original cost estimate of EUR 36.2 million and can be considered reasonable overall. According to the final control report, the significant shortfall in relation to the original cost estimate is primarily due to the reduced scope of the substation compared to the planning and the lower than planned own contribution. I It should be noted that the EBRD already covered the consulting costs for the FC-financed part of the overall programme, in which Component 1 was embedded. The share of consulting costs amounted to around 6 % of the total investment costs. This can be considered reasonable given the complexity and delays involved.

[18] Bird diverters are devices designed to protect birds from danger by making power lines more visible to them. This helps to prevent collisions.

The total cost of Component 2 amounted to EUR 37.6 million. This exceeds the original cost estimate of EUR 33.6 million at the time the Separate Agreements were signed in November 2014. Funds from a follow-up phase had to be made available to finance the additional costs of Component 2. However, given the highly complex terrain and the weather conditions in some parts of the high mountains, the costs can be considered just about reasonable overall. Additional costs were incurred as a result of the dispute resolution proceedings before the International Court of Arbitration (ICC) in Paris between GSE and the contractor. These proceedings were initiated due to the disputed actual takeover date. The proceedings were concluded at the end of 2023. As a result, GSE had to make compensation payments to the contractor.

The investment components were procured through international public tenders. The tendering processes took place in a competitive environment, which led to reasonable procurement costs for the components. During the evaluation some criticism was regarding the controllability of local (sub)contractors.

The Georgian regulatory system for the electricity transmission sector provides for incentive-based "cost-plus regulation", which enables GSE to covers its costs via the approved tariff. Against this background, microeconomic profitability is ensured.

The Jvari substation (Component 1) was constructed within the planned two-year period, but was only operated at a single voltage level during the first four years until February 2022. This delay is due to the late commissioning of the associated lines financed by the EBRD and is beyond the control of the project. Their completion was delayed in particular due to unresolved land use rights. The completion of the Ksani-Stepantsminda transmission line (Component 2) was originally planned within 22 months, which proved to be unrealistically short. The actual implementation period was exceeded by two years. This was partly due to weather-related lack of access to parts of the routes during the construction period. However, the main reason was the need to update the route due to protests by local residents, particularly in Passanauri (see chapter on ‘Effectiveness’).

12. Allocation efficiency

Even at the planning stage, it was anticipated that the Ksani-Stepantsminda line would not yet be operated directly at 500 kV, but initially only at 110 kV. The reason for this was the delay in connecting to the Russian supply network. At the time of the evaluation, both the 500/110 kV substation in Stepantsminda and the 500 kV Stepantsminda-Mozdok line are still only in the planning stage as part of the GSE's current 10-year plan. According to this, completion is scheduled for 2034. Whether this date will be met is unclear, also in view of the current political situation.

The question remains as to whether it would have been more efficient to build the line at 110 kV from the start. The costs for the design at the chosen 500 kV level are within the cost framework of EUR 26.7–43.2 million/100 km expected by GSE. Even without specific calculations, it is reasonable to assume that the costs for the 110 kV design would initially be lower, but would be higher if the line were later upgraded to 500 kV operation. The material costs that were already expected at the time of conception and which have in fact risen since implementation must also be taken into account: the costs for construction at the 500 kV level are many times higher at the time of evaluation. At the time of the conception of component 2, the expansion plans for new hydropower plants to be connected to the line were already known. The expected total capacity could hardly have been evacuated via a 110 kV line, which made the chosen design necessary, at least at the 220 kV level. In addition, assumptions about the electricity exchange with Russia expected at the time via the Armenia-Georgia-Iran-Russia connection were taken into account in the decision. In retrospect, the decision to design and build the line for use at the 500 kV level is understandable.

As part of the conception of the project, the operational appraisal criteria (OPK) were analysed and deemed to have been met. At the time of the evaluation, according to the regulatory authority GNERC, electricity losses at the transmission level (2024: 1.9%, see ‘Impact’ chapter) and at the distribution level (Energo Pro: 9.9%; Telasi: 6.1%) are cumulatively below the 20 % threshold of the OPK. At least at the electricity transmission level, cost recovery based on regulation can be assumed (see ‘Production efficiency’ chapter). Conceptually, the project aimed to strengthen the Georgian transmission grid and thus increase security of supply. Even without specific calculations, it is reasonable to assume that there was no more cost-effective alternative to the construction of an additional substation and a further transmission line.

Rating summary of efficiency: moderately successful (3)

While costs for component 1 were lower than expected due to updated technical designs, costs for component 2 were exceeded. Both components were or will be fully utilised only after considerable delays compared to the original schedule. The delays due to land use issues were to be expected, but the delays due to the arbitration proceedings could have been avoided. The design of the transmission line at 500 kV level can be considered reasonable and plausible, despite the longer use at 110 kV level that was already foreseeable at the time of conception. A more cost-effective alternative for stabilising the transmission grid and increasing security of supply does not appear plausible. Overall, the efficiency of the project/programme is appraised as moderately successful.

Impact

13. Overarching developmental changes

The impact-level objective was: The energy supply for Georgian consumers is more sustainable. The following indicators were used to measure the impact objective/no indicators were specified.

Indicator	Status at appraisal	Target value at evaluation	Actual value at Project completion	Actual value at evaluation
(1) Avoidance of greenhouse gas emissions	0 t CO_2 p.a.	≥ 65,000 t CO_2 p.a. (beginning with the first full year after commissioning of both components)	...	~ 10,500 t CO_2 (2024) ~ 21,000 t CO_2 (from 2025) Target value partially achieved
(2) Electricity transmission losses	~ 2 % (2012)	≤ 2 % (starting with the first full year after commissioning of both components)	...	2024: 1.9 % Target value achieved

Table3 *: Impact target achievement*
Source*: Own illustration.*

14. Contribution to overarching intended developmental changes

Indicator 1:

The avoidance of greenhouse gases targets the ecological component of the concept of sustainability in the formulation of objectives. The target value of at least around 65,000 tonnes of CO_2 p.a. is calculated taking into account the FC financing share from the expected electricity generation from the hydropower plants that are directly or indirectly connected to the Jvari substation or the 500 kV Ksani-Stepantsminda line (see also the indicators at outcome level in the chapter on 'Effectiveness'). An emission factor of 0.328 kg CO_2 /kWh is applied. At the time of evaluation, the target value is only partially achieved. As the planned new hydropower plants to be connected to the Ksani-Stepantsminda transmission line are not yet producing and feeding electricity into the grid, only around 104 GWh from the electricity generation of the Khobi 2 hydropower plant (component 1) can be allocated to the project in 2024. This results in CO_2-emission savings of around 10,500 tonnes for 2024. Based on the expected electricity generation in 2025 and subsequent years, it can be assumed that the indicator will be met, albeit with a delay.

Indicator 2:

Since both the Jvari substation and the Ksani-Stepantsminda transmission line are new grid components that cannot be rehabilitated, transmission losses are suitable as an impact-level indicator of the economic component of sustainability.[19] The development of losses in the entire Georgian transmission grid between 2018 and 2024 is shown in . With the exception of 2023, the target value of 2 % will be achieved. This target value is already considered ambitious in an international context.

[19] In the case of rehabilitation, the reduction of transmission losses is a suitable indicator at the outcome level.

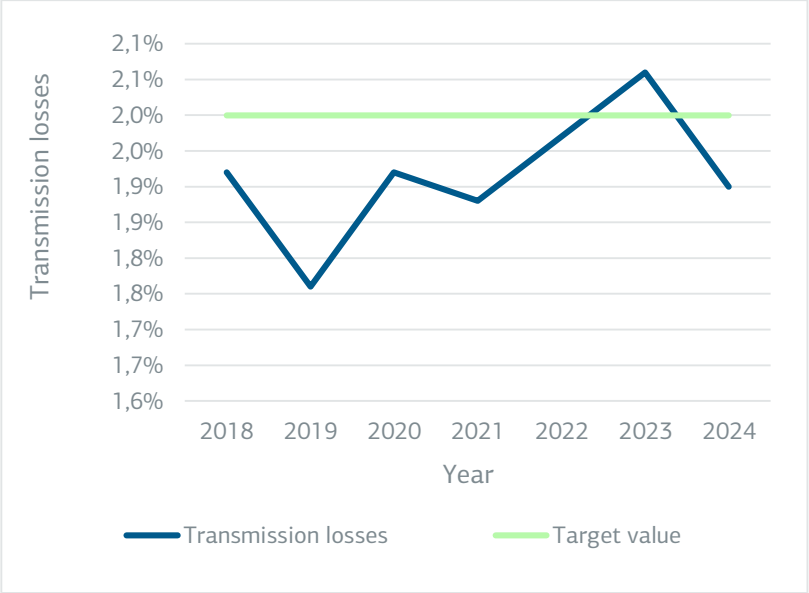

***Figure5** : Electricity transmission losses on the Ksani-Stepantsminda line*
***Source**: Data: GSE; own illustration.*

Even though GSE's performance can be considered good, the overall quality of supply has deteriorated from the perspective of electricity consumers who are not directly connected to the GSE grid. According to GNERC, the quality of electricity supply in the Telasi distribution network (Tbilisi and surrounding area) has deteriorated continuously between 2018 and 2024 in terms of both the duration and number of (unplanned) power cuts. The figures for the Energo-Pro Georgia electricity distribution network (rest of Georgia) remained roughly constant or improved slightly over the same period. It should be noted that the quality of supply at the distribution network level is outside the scope of the project.

According to GSE employees, the project, in particular Component 2, served as a very good learning example for dealing with environmental and social risks and for defining the role of implementation consultants. The agreement on the FC sustainability standard creates added value compared to purely local financing, as Georgian law usually requires less stringent environmental and social assessments. The evaluated project was one of the first in the context of GSE's international cooperation with various donors. The positive experiences already gained in the planning and implementation phases helped to acquire further donor financing. Overall, a positive broad impact can be attested.

The expansion of transmission capacities will enable private and/or donor-financed power plants based on renewable energies (in future also increasingly wind and solar power plants) to be connected to the Georgian electricity grid, which will enable the diversification of Georgia's electricity generation mix in the medium term and promote Georgia's energy independence from neighbouring countries, in particular Russia.

15. Contribution to overarching unintended developmental changes

No overarching (unintended) development policy changes were identified during the evaluation.

Rating summary of impact: successful (2)

The impact-level objective measured in terms of greenhouse gas emissions avoidance had only been partially achieved by the time of the evaluation. This is due to external factors, as the connection of new hydropower plants was beyond the project's sphere of influence. However, it is reasonable to assume that the emissions' reduction target will be achieved with delays. The target level of transmission grid losses was high and was achieved. The project had a broad impact within GSE and provided positive learning experiences. The lack of significant improvement in the quality of electricity supply in Georgia at the distribution level is beyond the scope of the project. Overall, taking into account the potential for connecting new renewable energy power plants and the associated diversification of Georgia's electricity mix, the impact of the project is still considered successful.

Sustainability

16. Capacities of beneficiaries and stakeholders

At the time of the evaluation, GSE appeared to be very professional in terms of its finances, personnel and organisation. Its employees are adequately trained, have the necessary qualifications to operate and maintain the financed infrastructure, and demonstrated a high level of motivation and ownership. Maintenance is carried out according to a fixed schedule. Training measures for GSE employees were financed as part of subsequent phases of the FC and also by other donors. In 2023, around 23 % of the workforce took part in various training events.

Awareness of risks that could jeopardise the effects achieved to date was demonstrated, among other things, in the implementation of recommendations from the final inspections with regard to technical aspects of selected towers, a general maintenance concept, the use and maintenance of access roads to towers, construction site organisation and support measures for communities. Based on the experience gained, particularly in the context of Component 2, GSE has allocated additional budget for potential claims from landowners. A separate department has been set up to deal with environmental and social issues. Monitoring of the implementation of the Resettlement Action Plan by an international consultant attested to GSE's competent handling of stakeholder engagement. In addition, GSE is taking precautions to be prepared for the possible consequences of climate change (e.g. excessive snowfall and/or increasing heavy rainfall events).

17. Contribution to supporting sustainability capacities

As part of the project, training courses were held for GSE staff and manuals were produced to help ensure the quality of maintenance and operation. In addition, the intensive dialogue during the implementation phase, particularly on environmental and social issues, promoted the expertise of GSE employees in this area. Positive learning experiences were highlighted by interview partners, and as part of the follow-up phase of the project, an Environmental and Social Management Plan[20] was drawn up for the entire GSE programme. GSE also receives support on selected topics such as environmental and social management, procurement standards, etc. within the framework of the ongoing FC. In this context, seminars focusing on promoting the professional development of GSE employees and creating a supportive working environment for women are also to be held.

18. Durability of impacts over time

The construction work in both components was carried out to a high standard and subsequently operated and maintained. The regulatory system for electricity transmission tariffs in force at the time of the evaluation provides for adequate cost coverage for GSE within the framework of an incentive-based cost-plus regulation. GSE's financial situation continues to allow for the proper operation and adequate maintenance of the financed facilities, so that the effects can be expected to be sustainable. At the same time, it should be noted that Georgian end-user tariffs are relatively low by international standards and that the electricity supply system is therefore dependent on state subsidies. In order to make an investment, GSE continues to depend on external financial support, which is mainly provided in EUR and USD. As revenues are generated in local currency, GSE is affected by exchange rate fluctuations.

Georgia has had EU candidate status since December 2023. In March 2024, the Georgian government adopted the 2024 Action Plan for Integration into the EU. At the time of the evaluation, it is not possible to assess the extent to which the political changes that have occurred since then will affect the sustainability of the project's effects.

Rating summary of sustainability: successful (2)

The sound economic, personnel and organisational structure of GSE and its growing expertise and professionalism suggest that the financed infrastructure will be operated sustainably and have a lasting impact. Financially, GSE appears to be in a position to maintain the impact over time in the future. Sustainability is therefore appraised as successful.

[20] The Environmental and Social Management System comprises Environmental and Social Management Plans, a Land Acquisition and Resettlement and Compensation Framework, and a Stakeholder Engagement Plan.

Overall assessment: successful (2)

Overall, the project can be appraised as a success. The elimination of power bottlenecks in Georgia's electricity transmission grid was and remains of high relevance and politically significant in German-Georgian cooperation. The concept was appropriate and changes were responded to adequately in conceptual terms. The measures were in line with the German-Georgian energy focus of cooperation, synergy effects with international donors were exploited, and coordination with the EBRD in particular deserves special mention. The coherence of the project can therefore also be considered successful. The outcome-level objective was largely achieved and the key indicators were met, although the indicators influenced by external factors were met with some delay or have not yet been met. As the quality of implementation and the financed infrastructure is very good, the overall effectiveness of the project is rated as just successful. The efficiency of the project is below expectations: there were cost overruns for component 2 (Ksani-Stepantsminda transmission line) and significant delays. A more cost-effective alternative for stabilising the transmission grid and increasing security of supply does however not appear plausible. Despite the longer use at 110 kV level that was already foreseeable at the time of conception, the design of the transmission line at 500 kV level can be considered understandable and plausible, so that, in summary, efficiency is rated as moderately successful. The impact-level target is not expected to be fully achieved until later, which is mainly due to external effects: the connection of new hydroelectric power plants and the expected greenhouse gas reductions were beyond the scope of the project. The indicator for transmission losses was met and high learning effects were achieved, so that the impact of the project is appraised as just successful. Due to the high level of professionalism of GSE as project executing agency and its current adequate financial situation, which is due to regulatory requirements, it can be assumed that the effects achieved will continue, so that sustainability is considered successful.

Contribution to Agenda 2030

The international community has agreed on the Sustainable Development Goals (SDGs) of Agenda 2030 and the implementation of the Paris Climate Agreement. SDG 13 on climate action includes measures to combat climate change, and SDG 7 includes measures to ensure access to affordable, reliable, sustainable and modern energy for all. The aim of the Paris Agreement is to limit global warming to well below 2 degrees C and, if possible, below 1.5 degrees C compared to the pre-industrial era.

The measures taken as part of the project/programme in the area of the transmission grid will make the electricity supply more secure and enable the integration of renewable energies, which will lead to a reduction in CO_2-emissions. The project thus contributes to the achievement of SDG 7 and SDG 13. Ultimately, securing the electricity supply and expanding renewable energies as a cost-effective alternative in the face of increasing energy demand will also contribute to ecologically sustainable economic development (SDG 8). The "cooperation for sustainable development" with the partner country Georgia will also make a contribution to partnerships for achieving objectives (SDG 17). In view of the even greater fluctuations in precipitation that are to be expected in future due to climate change, and the resulting greater fluctuations in hydro power generation, the project also contributes to the resilience of the energy infrastructure (SDG 9) by expanding electricity transmission capacity.

Methodology

Evaluation methodology

The ex-post evaluation follows the methodology of a rapid appraisal, i.e. a data-based, qualitative contribution analysis, and represents an expert opinion. The project is attributed effects based on plausibility considerations, which are based on a careful analysis of documents, data, facts and impressions. Where possible, this also includes the use of digital data sources and modern techniques (e.g. satellite data, online surveys, geocoding). The causes of any contradictory information are investigated, attempts are made to resolve them, and the assessment is based on statements that are confirmed by several sources of information (triangulation), where possible.

The analysis of the effects is based on assumed causal relationships, documented in the impact matrix developed during the project appraisal and updated during the ex-post evaluation, if necessary. The evaluation report sets out arguments as to why certain influencing factors were identified for the effects observed and why the project under review probably made a certain contribution (contribution analysis). The context of the development measure is taken into account in terms of its influence on the results. The conclusions are put into relation to the availability and quality of the data basis. An evaluation concept serves as the reference framework for the evaluation.

The method offers a balanced cost-benefit ratio for project evaluations, on average, with a balance between knowledge gain and evaluation effort, and allows for a systematic assessment of the effectiveness of DFG projects across all project evaluations. Individual ex-post evaluations cannot therefore meet the requirements of a scientific assessment in the sense of a clear causal analysis.

The main objective of the evaluations (knowledge interest) is to measure impacts, provide accountability, promote transparency and enable institutional learning.

Type of evaluation:

Site-visit to the project area.

Key questions of the evaluation according to the evaluation concept:

- What are the current priorities in Georgian energy policy?
- How does the EBRD assess the activities financed in parallel under Component 1?
- Is there sufficient data available for the newly proposed indicators? If not, what alternatives are available?
- What are the actual costs (including own contributions) of the two components? When will the 500 kV Ksani-Stepantsminda line (Component 1) be connected to the Russian 500 kV grid? What are the effects of using it at 110 kV? Does this justify the additional costs for the 500 kV design?
- Is there plausible data for assigning values to the indicators? Have there been any significant incidents, accidents or similar during the construction and/or since the completion of the components? What is the status of the outstanding cases relating to compensation payments?
- How are GSE's financial situation and its willingness to finance O&M measures appraised?

Non-public (internal) documents

Internal and EBRD project documents, strategy papers, context, country and sector analyses, impact evaluations, comparable evaluations.

List of public sources

ADB (2018): *Georgia: Country Gender Assessment*

BMZ: *Third Development Policy Action Plan on Gender Equality (2023–27)*

BMZ: *Concept for development cooperation with transition partners in South-Eastern Europe, Eastern Europe and the South Caucasus*

EBRD (2025): GEORGIA - Jvari-Khorga Interconnection | We invest in changing lives.

EC (2025): Energy Community Homepage).

GNERC (2025): *Georgian National Energy and Water Supply Regulatory Commission; Activity Report of 2024, Tiblisi, 2025.*

GSE (2025a): *Ten-Year Network Development Plan (Approved) and other annual reports of the GSE.*

IEA: Georgia Energy Profile: Georgia Energy Profile

National Action Plan of Georgia for the Implementation of the UN Security Council Resolution on Women, Peace and Security: *2022-2024 National Action Plan of Georgia for Implementation of the UN Security Council Resolutions on Women, Peace and Security | Publication | UN Women – Georgia*

UNFCCC (2021): Georgia's Updated Nationally Determined Contribution (NDC).

Data sources and analysis tools

Literature (see list of public sources); on-site data collection; monitoring data from the partner.

Project sites visited

Selected towers of the Ksani-Stepantsminda power transmission line and the Jvari substation were visited as part of the evaluation mission.

Interview partners and modality (in person, virtual/by telephone, in writing)

KfW project management (in person and virtually); consultant (by telephone); project executing agency GSE (in person, in writing); Ministry of Economy and Sustainable Development / Energy Department (in person); regulatory authority GNERC (in person); various donors: Asian Development Bank, EU Delegation, World Bank, EBRD (each in person).

The following aspects limited the evaluation

There were no aspects limiting the evaluation.

Evaluation methodology

A six-point scale is used to assess the project according to OECD DAC criteria, with the exception of the sustainability criterion. The scale values are as follows:

Level 1 Very successful: results significantly above expectations

Level 2 Successful: results fully in line with expectations, without significant shortcomings

Level 3 Moderately successful: results below expectations, but positive results predominate

Level 4 Moderately unsuccessful: significantly below expectations and negative results dominate despite recognisable positive results

Level 5 Unsuccessful: despite some positive partial results, the negative results clearly dominate

Level 6 Highly unsuccessful: the project is useless or the situation has deteriorated

The overall rating on the six-point scale is based on a project-specific weighting of the six individual criteria. Levels 1–3 of the overall rating indicate a 'successful' project, while levels 4–6 indicate an 'unsuccessful' project. It should be noted that a project can generally only be classified as "successful" in terms of development policy if both the achievement of objectives at the outcome level (effectiveness) and impact level, as well as sustainability, are rated at least as "moderately successful " (level 3).

The annex to this report is available upon request (German only).

Imprint

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