

Ex-post evaluation

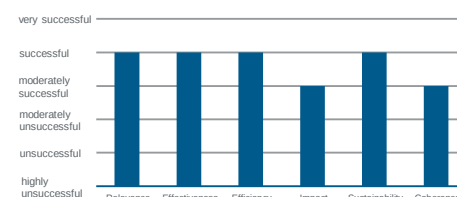
Davié substation, Togo

Title	Development of grid infrastructure in the context of the West African Power Pool (WAPP) – Davié substation		
Sector and CRS code	Energy – transmission and distribution of electricity (interconnected grids) – 23630		
Project number	2009 67 083		
Commissioned by	Federal Ministry of Economic Cooperation and Development (BMZ)		
Recipient/Programme executing agency	Electricity Community of Benin		
Project volume/ Financing instrument	EUR 17.5 million / budget funds		
Project duration	2009 – 2019		
Year of report	2025	Year of random sample	2021

Objectives and project outline

The objective of the FC measure was to contribute to securing and stabilising the electricity supply in the project region of southern Togo within the framework of the West African Power Pool (WAPP) regional interconnection system (outcome). Improved qualitative and quantitative security of supply was intended to strengthen economic development in the project region and regional cooperation (impact). The primary target group of the measure was electricity consumers connected to the grid in the project region of southern Togo and the manufacturing industry.

Overall rating:
successful



Key findings

The project is characterised by high relevance and very good donor coherence through their participation in the WAPP. Implementation was successful but delayed. Nevertheless, the effects are unfolding at national and regional level, but sustainability remains at risk in the long term.

The project is still considered successful for the following reasons:

- High relevance of the project due to the high demand for better electricity in Togo and the greater Lomé area as a result of population growth and economic development.
- The Davié substation connects the electricity exporters Ghana and Nigeria via Togo and Benin and is therefore an important part of the WAPP backbone connection.
- The expected objectives were basically achieved, but the commissioning of the substation was delayed. The reason for this is the delayed commissioning of the 330 kV line that transports electricity to Ghana and Benin.
- The project should have had a positive impact on regional development and the economy in the greater Lomé area. At the same time, the sustainability of the project is reduced by the uncertain financial situation of the project promoter.

Conclusions

- Precarious financial situations at the project promoter and/or in the sector as a whole, particularly due to tariffs that do not cover costs, pose a high risk to the sustainability of the impacts achieved.
- The development of a regional electricity grid can be an important instrument for promoting the reliability of the electricity grid through better regional exchange.
- Substations can be cost-effective measures that reduce technical losses and thus improve the security of the electricity grid if the possibilities for further renewable energy generation are limited or expensive.

Ex-post evaluation – assessment according to OECD DAC criteria

Overview of the rating per criterion:

Relevance	2
Coherence	2
Effectiveness	2
Efficiency	3
Overarching developmental impact	2
Sustainability	3
Overall rating:	2

Abbreviations:

AfDB	African Development Bank
PCR	Project completions report/final inspection
BMZ	Federal Ministry for Economic Cooperation and Development
BOAD	West African Development Bank
CEB	Electricity Community of Benin
CEET	Togo Electricity Company
DAC	Development Assistance Committee
ECOWAS	Economic Community of West African States
EIB	European Investment Bank
EU	European Union
EUR	Euro
FC	Financial cooperation
FC E	FZ Evaluation
MCC	Millennium Challenge Corporation
NEPAD	New Partnership for Africa's Development
PAIP	Interim Priority Action Plan
PA	Project appraisal
PAR	Project appraisal report
PP	Project proposal
SDG	Sustainable Development Goals
TC	Technical cooperation
USD	US dollar
WAPP	West African Power Pool
WB	World Bank

General conditions and classification of the project

The project "Development of grid infrastructure in the context of the West African Power Pool (WAPP) – Davié substation" supported the construction of a new substation in Davié (Togo), which will connect Nigeria and Ghana via Togo and Benin via a 330 kV line and supply the greater Lomé area with electricity via a 161 kV line.

The substation is integrated into the WAPP grid system and makes an important contribution to securing and stabilising the power supply in the Lomé Basin. The aim of the project was to strengthen the WAPP grid system while benefiting the local population in the Lomé Basin.

The Davié substation project is closely linked to the construction of a 330 kV line financed by the African Development Bank (AfDB), the World Bank (WB), the West African Development Bank (BOAD) and KfW Development Bank, which runs from the border with Ghana via the Davié substation to the border with Benin. The connection to another 330 kV line will ultimately link Ghana to Nigeria.

The project proposal for the substation was presented in 2009, the contract for the construction work was signed in 2013, and the construction work was completed in 2019 after an increase in FC funds in 2015. Due to a number of problems, the construction of the 330 kV line from Ghana via Togo to Benin and Nigeria could only be completed later. The assessment focuses here on the substation in Davié, but the 330 kV line is an important part of the infrastructure without which the substation could not operate and be integrated into the WAPP grid system.

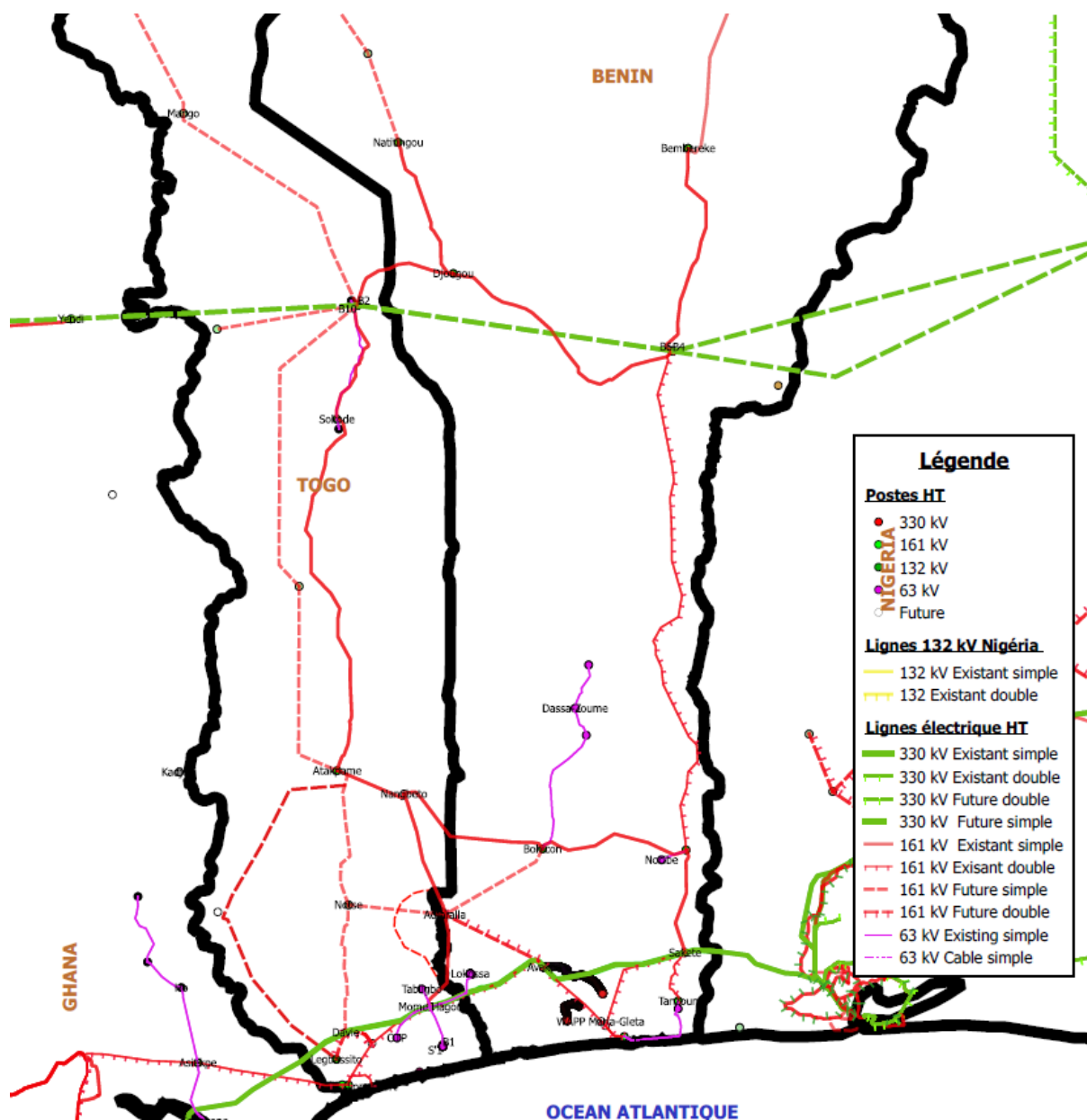
Brief description of the project

To support the further expansion of the WAPP regional power grid and at the same time help secure and stabilise the power supply in the coastal area around Lomé, a substation was financed in Davié, approximately 30 km north of Lomé. The station connects Ghana and Benin as part of the WAPP and supplies electricity to the greater Lomé area. The project therefore targeted businesses, households and public buildings in the region around and in Lomé, as well as all consumers connected to the WAPP power grid.

Breakdown of total costs

In million EUR	Inv. (planned)	Inv. (Actual)
Total costs	17	17.5
Own contribution	5.0	0
External financing	12.0	17.5
<i>of which BMZ funds</i>	<i>12</i>	<i>17</i>

West African Power Pool network including Davié substation



Source: CEB

Rating according to OECD DAC criteria

Relevance

1. Alignment with policies and priorities

The project's objectives were in line with the Millennium Development Goals (in particular Development Goal 7, "Ensure environmental sustainability"), the current Agenda 2030 (in particular SDG 7, "Affordable and clean energy") and the Paris Climate Agreement. Furthermore, the project's objectives were and remain in line with the German Federal Government's goal of protecting the global climate and the environment and ensuring access to clean, affordable and secure electricity supplies.¹ At the time of the evaluation, the project was part of the German development cooperation programme "Promoting a climate-friendly electricity grid in West Africa".

The measure aimed to stabilise and secure the electricity supply in Togo and neighbouring countries, in line with regional and national development strategies: Within Togo, the development and expansion of energy infrastructure was an important focus of the government at the time the project was proposed in 2009 as part of the Plan Intérimaire d'Actions Prioritaires (PAIP) 2008-2010. Improving access to energy and promoting economic development were also identified as important objectives in the country-wide national strategy. For the project implementer, Communauté Electrique du Benin (CEB), which is responsible for the development of the electricity supply in Togo and Benin, the construction of the Davié substation was part of a 20-year strategic plan for the period from 2007 to 2026.

At the regional level, the project contributes to the objectives of establishing and further developing the WAPP. The regional electricity grid WAPP is an institution of the Economic Community of West African States (ECOWAS) and covers almost all member states of the economic union. The strategic objective of the WAPP is based on the political goal of West African integration. The aim is to merge the national energy supply systems into a regional energy market that will provide the population of the member countries with a stable and reliable energy supply at competitive prices in the medium and long term. Through long-term energy cooperation, unhindered electricity exchange and increasing electricity trade in the region, the members of the network aim to create favourable conditions for their economic development. In addition, the various energy resources, such as hydropower in Ghana and natural gas in Nigeria, are to be developed for the common good of the region. The substation in Davié is part of the WAPP backbone line and primarily connects Nigeria and Ghana via Togo and Benin.

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

Togo has a rapidly growing population, which has increased from 6.5 million in 2009, when the project proposal was drawn up, to 9.1 million in 2022, when the substation will be fully operational. During the same period, annual per capita energy consumption in Togo also increased from 118 kWh in 2009 to 192 kWh in 2022. Both the strong population growth and higher per capita energy consumption during the period between the project proposal and the first use of the substation demonstrate the high importance of and strong demand for a reliable power supply in Togo. The development was similar in other countries in the West African region. The construction of the Davié substation with the aim of securing and stabilising the power supply in the coastal area around Lomé while supporting the expansion of the West African Power Pool therefore addressed a relevant core problem. This is considered appropriate from both a contemporary and historical perspective.

In addition, the Togolese electricity sector is heavily dependent on electricity imports from both Ghana and Nigeria. There are two relevant state-owned companies: the Communauté Electrique du Benin (CEB) is a small electricity producer (see criteria on coherence and sustainability), but is primarily an electricity importer and fully responsible for the transmission lines. At the time of the project proposal in 2009, almost 70 per cent of electricity was imported from Nigeria and Ghana. In 2022, this figure was still 65 per cent. The electricity imported by the CEB is purchased by the distribution company Compagnie Energie Electrique du Togo (CEET). The costs of electricity imports are high and place a strain on the CEB's budget, especially as rising purchase prices are not passed on directly to the CEET. A more efficient supply through the construction of the Davié substation, which would reduce electricity losses, was an important factor at the time and remains so today, alongside the

¹ See, among others: (i) No. 100 of the BMZ materials "Erneuerbare Energie für nachhaltige Entwicklung und Klimaschutz" (10/1999), (ii) BMZ strategy paper "BMZ Konzepte 145 – Sektorkonzept Nachhaltige Energie für Entwicklung" (01/2007), (iii) BMZ core strategy: "Verantwortung für unseren Planeten – Klima und Energie" of June 2021 (action area 2 "Erneuerbare Energien und Energieeffizienz"): [BMZ-Kernthemenstrategie: "Verantwortung für unseren Planeten - Klima und Energie"](#)

expansion of new generation capacity. However, the latter is limited due to the topographical and hydrographical conditions in Togo.

As the construction of a substation is a measure that does not directly benefit the target group, there is no specific target group in the narrower sense that would have required consideration of the needs and capacities of particularly disadvantaged or vulnerable groups. This also applies to potential gender impact; a measurable increase in the female employment rate was not expected either.² At the time of the evaluation, the intended effects of the project are considered gender neutral. Further potential through other conceptual designs is also not apparent ex post.

3. Appropriateness of the design

The design of the measure was both technically and financially appropriate and realistic in order to address the core problem of inadequate energy supply in Togo. Energy imports played and continue to play an important role in Togo's electricity supply, and the substation played an important role in transporting these imports.

The impact chain was assumed to be as follows: Construction of the Davié substation → Increased energy imports from Nigeria and Ghana via the 330 kV line built in parallel → Improvement in voltage reduction with lower losses → Transmission of part of the energy to Lomé → Households and businesses benefit from better energy quality and availability → Promotion of economic development in the Greater Lomé area and strengthening of regional cooperation within the WAPP.

The underlying impact chain and its interdependencies were generally plausible at the time of the review and at the time of the evaluation.

At the impact level, the promotion of economic development and the strengthening of regional cooperation are highlighted. It is considered plausible that the secure and sufficient power supply ensured by the construction of the substation is an important basis for economic development. Even though it is not possible to directly or quantitatively attribute the contribution to the overall economic development of Togo or the greater Lomé area, the link between electricity supply and economic development is plausible.³ The same applies to the regional integration of electricity grids, with which southern Africa already had good experience in the Southern African Power Pool (SAPP) before the WAPP.

The indicators selected at the outcome level – a maximum feed-in capacity of 75 MW and 99% availability of the substation – are considered appropriate overall, as they are directly linked to the objectives of the measure. For the evaluation, they were supplemented at the impact level with the indicators "reduction of technical losses of the CEB" and "reduction of power cuts in the Greater Lomé area".

The measure pursues a holistic approach that takes into account the social, environmental and economic dimensions of sustainability, which supports the long-term effectiveness of the measure. However, there are different aspects to this: the focus is strongly on economic sustainability, as the construction of the substation represented a cost-effective solution for the economy as a whole at the time of the PA, enabling the increased demand for electricity to be met through lower losses and connecting the region. This was intended to reduce imports of hydropower from Ghana on the one hand, and imports of electricity from Nigeria, which is often produced using oil and gas, on the other. Ultimately, however, the project also has an impact on the social dimension of sustainability through an efficient, reliable and secure long-term electricity supply.

4. Adaptability – response to change

The Davié substation was completed within the adjusted project period. At the same time, the construction of the 330 kV transmission lines, which were essential for the substation to go into operation, was delayed. This led to the project duration tripling from the original 36 months to 119 months (see efficiency criterion). However, this delay did not necessitate any adjustments or changes to the concept for financing the Davié substation project.

² For information on the fundamental status of women's rights in Togo, see, among others, [Country Fact Sheet | UN Women Data Hub](#).

³ See also: Stern, D. I., Burkes, P. J., and Bruns, S. B. (2017). *The Impact of Electricity on Economic Development: A Macroeconomic Perspective*. UC Berkeley: Center for Effective Global Action.

Rating summary

The project addressed a key bottleneck and was conceptually suitable for helping to solve the core problem. It was and is, at the time of evaluation, in line with the policies and priorities of both the Togolese and German governments. Against this background, its relevance is rated as successful.

Relevance: 2

Coherence

5. Internal coherence

Due to the close ties between Togo and Benin and the project executing agency, the project is part of Germany's energy sector engagement in both countries. Various projects are underway in Benin and Togo in the areas of power generation and the expansion of transmission capacities. German development cooperation's commitment in this area is long-term: electricity transmission has been improved through the construction of a 161 kV line between Sakété and Porto-Novo (BMZ No. 2008 66 855) and the expansion of lines in both countries (BMZ No. 2009 67 091). Electricity distribution is being strengthened through joint projects by AFD, the EU and FZ to expand the distribution network in Lomé (BMZ No. 2016 68 201) and to rehabilitate and expand the electricity distribution network in the five regions (BMZ No. 2019 67 546). The restoration of the Nangbeto hydropower plant was completed in 2024. The power plant is one of the largest renewable power plants in Togo (BMZ No. 2012 66 931, 2012 66 998, 2014 68 974, 2014 68 982) and is intended to reduce dependence on electricity imports.

In addition to projects within the framework of German financial cooperation, GIZ focuses on systematically building the capacities and skills of regional and national actors. The approach is coordinated. The project is part of the German development cooperation programme "Promoting a climate-friendly power grid in West Africa". The modules described above are interlinked and confirm the coherence of German cooperation. The Davié Station project as a sub-component and the entire programme "Promoting a climate-friendly electricity interconnection in West Africa" are in line with the priorities of the Federal Republic of Germany and correspond to both Sustainable Development Goals 7 and 13 (see alignment with policies and priorities and Agenda 2030).

6. External coherence

The Davié station was financed exclusively by German development cooperation, so no coordination was necessary with regard to the construction of the substation. However, as part of the development of the Togolese energy market, regular consultations take place between donors in various formats, such as the Team Europe initiative (European donors) and often also with the World Bank and BOAD. The implementation of the project was agreed within this framework.

The WAAP's task is to integrate and expand the regional power grid in West Africa. The ultimate goal is for all member countries to have a more secure, environmentally friendly and cost-effective electricity supply. This project is also part of this. There is a WAPP master plan that defines the grid expansion, including transmission lines and substations. At half-yearly meetings, the donors coordinate their efforts and adjust the WAPP master plan. In addition to KfW, the most important financiers of WAPP projects are the AfDB, the EIB, the EU, the AFD, NEPAD, MCC and the World Bank, as well as, of course, the member countries themselves. It is primarily within this framework that regular and important coordination of the expansion of the regional power grid in West Africa takes place.

Rating summary The project is part of a long-term German development cooperation strategy for the development of the energy sector in West Africa. Coordination within Togo and Benin is working well. Particularly noteworthy, however, is the development of a regional electricity market within the framework of the WAPP, which leads to regular coordination between donors and member countries. External coherence can be assessed as successful.

Coherence: 2

Effectiveness

7. Achievement of (intended) objectives

The objective adjusted as part of the EPE was to stabilise the electricity supply in southern Togo.

The achievement of the target at the outcome level can be summarised as follows:

Table Target achievement outcome:

Indicator	Status at PA	Target value according to PA/EPE	Actual value at EPE
(1) The maximum power fed into the substation	0	75 MW from the first full year of operation	186.75 MW The indicator is fully met.
(2) Availability of the substation	0	99	100% (2019 – 2020) 67 50 83 The indicator is only partially fulfilled.

8. Contribution to the achievement of objectives

The project consisted of the construction of the substation in Davié near Lomé. Construction work was completed in 2017, but the commissioning of the 330 kV line running from Ghana via the substation to Benin and then on to Nigeria was significantly delayed. After 125 months instead of the planned 36 months, the substation was finally able to start transforming the 330 kV line from Ghana to Davié in 2019. It was not until July 2022 that the entire transmission line from Ghana to Nigeria was able to go into operation, making 2023 the first full year of operation for the Davié substation.

Indicator 1:

The substation is equipped with a nominal capacity of 400 MVA, which is distributed across two autotransformers, each with 200 MVA for 330/161 kV conversion. In its first full year of operation in 2023, the maximum power fed into the station exceeded the planned 75 MW, reaching 186.75 MW. Previously, the substation was only connected to the line from Ghana and reported lower values of 26 MW (2019) and 59 MW (2020). Given the ever-increasing demand for energy in the area, it can be assumed that the substation was rather undersized. By way of comparison, in 2019, when only the line from Ghana was connected, 26,398 MWh were transformed. With lower availability in 2023 (see indicator 2), the maximum amount transformed has nevertheless increased massively to 115,956 MWh due to the connection of the 330 kV line from Nigeria via Benin. This demonstrates the importance of the substation for the power supply. It can also be assumed that an expansion of the substation capacity will be necessary in the near future, even taking into account the n-1 security criterion (see also the chapter on sustainability).

Indicator 2:

When the Davié station was connected to the link to Ghana, the station's availability was 100% and remained so in the following years. Subsequently, one of the two transformers (ATR2) failed, meaning that availability in the following years no longer met the planned indicator of 99%. Following the connection from Nigeria via Benin in early 2023, it can be assumed that the indicator will be achieved in 2024. Overall, it can be said that availability is fluctuating.

9. Quality of implementation

Construction of the substation began in 2013, and the construction work and electromechanical installation were completed in 2017. They were therefore completed on schedule. After the 330 kV line was connected from the Ghanaian side, technical problems arose during functional tests under high voltage. However, these were resolved during the final inspection in 2019.

In addition to other points, the final inspection also recommended the completion of the telecommunications and fibre optic cables and the replacement of the batteries in the emergency power system. The telecommunications equipment was installed and inspected during the mission on site. In addition, the network configuration has been optimised in the meantime by setting up a station in Legbassito. This allows for greater flexibility in supplying Lomé and the greater economic area. The batteries have not yet been replaced (see sustainability criterion).

During the final inspection, random checks were carried out to verify the proper use of FZ funds in the accounts and physically on site. No irregularities or suspected misuse of funds were found. The evaluation did not reveal any indications of misuse of funds.

10. Unintended effects (positive or negative)

No significant positive or negative unintended effects occurred.

Rating summary

The input indicator has been more than fulfilled, even though availability has only been partially fulfilled in the past and final operationalisation took place considerably later than planned. However, it is reasonable to assume that availability will reach the target value in the short term and then stabilise. The quality of implementation is considered satisfactory. Overall, effectiveness is rated as just successful.

Effectiveness: 2

Efficiency

11. Production efficiency

The contract for the substation in Davié was signed in 2013 and construction work was completed in September 2016. Although the substation was completed more or less on schedule, the budget borne by the FC had increased significantly. While the original estimate was EUR 12.0 million, with the partner CEB contributing EUR 5.0 million, the FC subsequently took over this contribution, including an increase of EUR 0.5 million, bringing the FC's final contribution to EUR 17.5 million. The funds for the increase were taken from unspent funds for the 330 kV line. One of the main reasons for taking over the CEB's own funds was that the CEB was responsible for maintaining the substation, which was also the case at the time when the 330 kV line had not yet been finally connected: Reprogramming the funds from the 330 kV line is therefore not without a certain logic. In addition, residual funds from the 161 kV transmission line project between Sakété and Porto Novo (BMZ No. 2008 66 855) were used to finance telecommunications components for the substations in the grid. The investment components were procured through international public tenders. The tendering processes took place in a competitive environment, which resulted in reasonable procurement costs for the components. The total costs for the construction of the substation are in line with industry standards. However, full commissioning was significantly delayed and it was not until July 2022 that the station could be fully connected to the line between Ghana and Nigeria via Benin. The section between Ghana and Davié, which is necessary to supply the substation, had already been completed in December 2017 and connected on the Ghanaian side. However, completion of construction work on the section from Davié to the Togo-Benin border was delayed from 36 months to 125 months and was not completed until the first quarter of 2019. This delay can be explained by lengthy negotiations with the residents of a village in Togo located on the edge of the power line. As a result, the AfDB had to withdraw from financing the section in Benin between the Togo-Benin border and Sakété due to the financing period being exceeded. This financing was later taken over by the World Bank, leading to a further four-year delay and the final connection of all lines to the substation in 2022.

12. Allocation efficiency

At the impact level, the project aimed to reduce losses in order to improve the electricity supply both in the Lomé area and in the WAPP member states. This was the right approach at the time the measure was designed, and it still holds true today. There were no other options for achieving these two objectives, namely improving the supply in Lomé while connecting it to the WAPP electricity grid. In this respect, there are no other technical alternatives with the same objective.

The project aimed to reduce technical and commercial losses in order to improve the electricity supply. This was the right approach at the time the measure was designed, and it still applies today. The module proposals already addressed the "operational review criteria" (ORCs) that were binding for FC energy projects at the time. The analysis concluded that the OPK were only partially fulfilled. While the cost recovery ratio was still acceptable at the time, it has deteriorated significantly in recent years. For this reason, Togo is currently making efforts to increase the tariff.

Consequently, the addition of new generation capacity was and is not cost-covering. This also has implications for CEB (see sustainability criterion). The main challenges lay in the system losses, which were above the specified limit at the time. The implementation of the project was justified by the fact that it focused precisely on reducing losses and also facilitated the import of cheap electricity from neighbouring countries. This is still considered appropriate and efficient today. The choice of project region still appears justified today, on the one hand due to coordination with other donors' projects and on the other hand due to the relatively high consumption density in Lomé and the surrounding area, which led to high loss reduction potential (e.g. compared to more rural supply areas).

An alternative approach, namely achieving similar savings or improving the electricity supply through purely demand-side energy efficiency measures or rather increasing the electricity supply by building a new power plant, appears less cost-effective even without concrete calculations and is also difficult due to the geographical conditions in Togo.

The specific impact of the Davié substation on future tariff design cannot be identified, as its significance for the entire Togolese energy market is (a) too small and (b) total energy demand rose massively during the same period. However, it can be said that the Davié station has improved the energy supply, which may have an impact on tariff design. Furthermore, the entire WAPP electricity grid has also been positively affected, which could lead to lower tariffs in the long term through cheaper imports from Ghana or Nigeria.

Rating summary

The total costs of the project are in line with expectations, although the share of financial resources has risen sharply. Delays in the installation of the 330 kV line led to significant delays in the full commissioning of the substation. Production efficiency is therefore considered to be rather unsuccessful. Due to the high electricity losses, it proved expedient to focus on this point in the value chain from electricity generation to consumption. Neither the financing of new generation capacities nor demand-side energy efficiency measures would have been cost-effective in achieving the desired effects. Overall, the efficiency of the project is therefore assessed as only partially successful.

Efficiency: 3

Overarching development policy impacts

Overarching (intended) developmental changes

The objective adjusted as part of the EPE was to increase the security of electricity supply in the Greater Lomé area and to strengthen regional cooperation.

The achievement of the objective at the impact level can be summarised as follows.

Table Target achievement Impact:

Indicator	Status PA	Target value according to PA	Actual value at EPE
(1) Technical losses of the CEB after the substation is fully operational	N/A	N/A	97 MW (2023) Met
(2) Number of power outages in the greater Lomé area after connection of the substation	N/A	N/A	37 Fulfilled

13. Contribution to overarching (intended) developmental changes

The effects of the Davié substation are felt on three different levels via three different lines that run from the substation. These are a 20 kV line that supplies the surrounding houses, a 161 kV line that supplies the greater Lomé area, and a 330 kV line from Ghana to Nigeria via Benin and th . In this case, it is difficult to quantify the causal link between the strengthening of economic development and the project, so quantitative indicators are used where possible and supplemented by qualitative assessments. Possible effects are evident:

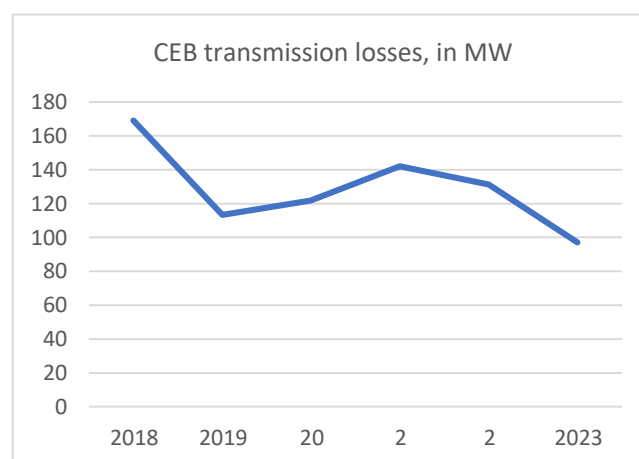
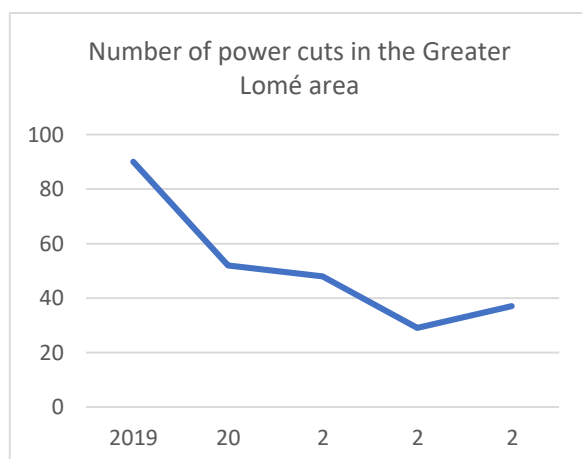
- ⇒ **National effects:** The greater Lomé area will receive more electricity via the 161 kV line from the Davié substation. The region will thus benefit from an improved electricity supply, much of which will come from Ghana and Nigeria. It can be assumed that the local economy and households will benefit from a stable electricity supply (see also the relevance criterion). Two further indicators can provide useful information in this regard:

Indicator 1: Reduction in technical losses at CEB

The aim of the project was to increase the security of electricity supply through the Davié substation, among other things by reducing technical losses in transmission lines. It was not possible to obtain figures prior to 2018 within the framework of the EPE, but since then a reduction in CEB transmission losses from approximately 169 MW in 2018 to 97 MW in 2023 has been observed. This is a significant reduction of 43 per cent overall over the years, with a trend towards further reductions in electricity losses. This is certainly not only due to the Davié substation, but also to further rehabilitation measures and other investments. However, it can be assumed that the substation has contributed positively to this development. The indicator is therefore considered to have been met.

Indicator 2: Reduction in power outages in the Greater Lomé area

Another indication of a contribution to positive economic development may be the number of power cuts in the Greater Lomé area. These have also fallen sharply since 2018. While there were still 90 power cuts in the Greater Lomé area in 2018, this figure has fallen steadily since then to 37 power cuts in 2023, a reduction of 60 per cent. This indicator is also considered to have been met.



⇒ **Regional effects within the framework of WAPP:** The substation in Davié is a central component of the WAPP master plan and has had a positive impact on further development in the implementation of WAPP. With its approach to regional integration, WAPP is likely to ensure the most cost-effective energy production, i.e. the cheap surplus can also be exported from the country where electricity can be generated most cost-effectively. In the long term, this should also influence tariffs in importing countries such as Togo. The Davié station was an important proof of concept in this regard and, as such, can achieve broad impact.

14. Contribution to overarching (unintended) developmental changes

Contributions to overarching (unintended) development policy changes were not identified during the evaluation.

Rating summary

A secure power supply is a prerequisite for economic growth, especially in an increasingly digitalised world. While the exact effect of the substation on economic growth cannot be quantified, there are credible indications of positive effects for the area around Davié, the greater Lomé area and integration within the West African Power Pool. The effects are therefore described as successful.

Overarching development policy impacts: 2

Sustainability Capacities of the beneficiaries and stakeholders

The CEB is a binational agency responsible for both Benin and Togo. It has been operating the substation since its completion in 2016. Although the 330 kV line was not yet in place at that time, the project-executing agency has been operating the substation for some time. The station itself is well maintained and in good condition. At the same time, the quality of the batteries has deteriorated over time and will need to be replaced soon. The operator is aware of this, but the financial situation does not seem to allow for this at the moment.

The financial situation of CEB may have a lasting negative impact in the long term, but the extent and further development of this is unclear. Following a decision by government representatives of Benin and Togo in 2022, CEB lost its mandate for direct electricity distribution and is now solely a transmission system operator. This has significantly reduced CEB's income, while at the same time the fees for electricity transmission and distribution have not been brought to an adequate cost-covering level. Before the change in mandate, the agency received regular payments, for example from large industrial customers, which enabled CEB to cover part of its operating costs. Since then, only a few power plants, such as the hydroelectric power plant in Nangbeto, have served CEB to compensate for transmission losses. CEET is now responsible for purchasing electricity from CEB and for direct distribution. This is loss-making due to both the low price of electricity and the low number of paying customers. This has a direct impact on CEB. Due to non-payment by CEET (and also by the Beninese electricity

supplier SBEE), CEB's financial situation is strained. On a positive note, the feed-in of additional power generation capacity via the WAPP and the improved grids make it easier to import and export electricity within the power pool. This contributes to a sustainable improvement in the power supply for households and businesses, while reducing dependence on supplies from neighbouring countries.

16. Contribution to supporting sustainable capacities

The Davié station is well maintained and in good condition. The developer CEB has its own training centre where staff are trained and receive regular further training. This is also reflected in the good condition of the substation and should contribute to its continued operation. At the same time, CEB has further developed its technical capacities to provide support for repair work between the substations in Davié (Togo) and Sakété. This includes, among other things, the replacement of available spare parts to counteract long-term bottlenecks.

17. Durability of impacts over time

From a technical point of view, it can be assumed that the operator is able to maintain the effects over time. The substation in Davié is fully digital, which allows for good management flexibility for CEB (). Nevertheless, from a technical point of view, the batteries should be replaced soon as their quality continues to deteriorate. CEB is aware of the problem. The substation is currently operating at full capacity and further expansion will certainly have to be considered in the future. In principle, one of the two transformers has already failed in the past, resulting in a significant drop in performance. Even if this does not seem likely at present, the possibility of such a failure should be given greater consideration. The current lack of resources, which could potentially hinder the necessary rehabilitation work, could exacerbate this. As the electricity sector is fundamentally underfunded and tariffs do not cover costs, state subsidies are necessary to keep the electricity sector functioning.

Rating summary

The substation in Davié is properly operated and maintained, and the project implementer CEB also has its own training centre on site. The possibilities for forward-looking replacement and possible expansion investments are limited due to a lack of financial capacity. Overall, sustainability is assessed as only partially successful.

Sustainability: 3

Overall rating: 2

The project is highly relevant. On the one hand, there has been and continues to be high demand for more reliable and better electricity in Togo and the greater Lomé area, driven in part by strong population growth and economic development. On the other hand, the Davié substation was intended to connect the electricity exporters Ghana and Nigeria via Togo and Benin (both electricity importers) as part of the West African Power Pool. This also contributed to successful external coherence among the donors to the project. Based on the data provided, the expected objectives had generally been achieved at the time of the evaluation. While the maximum power provided is more than twice as high as expected, the capacity utilisation was slightly below expectations but should now be met. Due to its dependence on the 330 kV line, the commissioning of the substation has been significantly delayed, so that its efficiency can ultimately only be described as limited. The contribution to the WAPP has had an impact at the regional level, and economic development in the greater Lomé area has also benefited from the construction of the substation. Possible financial constraints on the project promoter due to tariffs that do not cover costs prevent a more successful sustainability performance. Overall, the project can just about be classified as successful.

Contributions to the 2030 Agenda

The international community has agreed on the Sustainable Development Goals (SDGs) of the 2030 Agenda (UN, 2015) and the implementation of the Paris Climate Agreement (UNFCCC, 2015). SDG 13 on climate action includes measures to combat climate change, SDG 8 aims at economic growth, and SDG 7 includes measures to ensure access to affordable, reliable, sustainable and modern energy for all. Increasing the efficiency of electricity distribution by reducing losses promotes economic development and regional integration of the electricity market. The project thus contributes to the above-mentioned SDGs.

Project specific strengths/weaknesses and general conclusions/lessons learned

The strengths and weaknesses of the project include in particular:

- The project addressed an important issue in the Togolese electricity sector with the transmission grid and was able to influence both regional integration and economic development in the Greater Lomé area.
- Through its integration with the WAPP, the project was well embedded in the activities of other donors at the time and today.
- Both the impacts and the outcome-level objectives were generally achieved.
- Staff training is covered by the establishment of a training centre on the site of the Davié substation.
- The future of the project promoter is unclear. On the one hand, tariffs do not cover costs, and, on the other hand, there are ongoing discussions about restructuring the project promoter. As a result, the project promoter does not have sufficient funds to finance upcoming repair work.

Conclusions and lessons learned:

- Precarious financial situations at the project promoter and/or in the sector as a whole, particularly due to tariffs that do not cover costs, pose a high risk to the sustainability of the impacts achieved.
- The development of a regional electricity network can be an important instrument for promoting the reliability of the electricity grid through better regional exchange. It also has the potential to promote climate protection through lower production costs for renewable energies.
- The construction of substations can be a cost-effective measure to reduce technical losses and thus improve the security of the electricity grid and electricity supply if losses in a system are high or if the possibilities for further renewable energy generation are limited or expensive.

Evaluation approach and methods

Methodology of the ex-post evaluation

The ex-post evaluation follows the methodology of a rapid appraisal, i.e. a data-based, qualitative contribution analysis, and represents an expert judgement. This involves attributing impacts of the project through plausibility considerations 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). Causes of any contradictory information are investigated, attempts are made to eliminate them and the assessment is based on statements that are confirmed by several sources of information (triangulation) where possible.

Documents:

Internal project documents (module proposals, reports, final control report, etc.), project reports from other donors (World Bank), secondary specialist literature, strategy papers, context, country and sector analyses.

Data sources and analysis tools:

World Bank, International Energy Agency (IEA) and other databases, data collection on site, interviews (see below).

Interview partners:

Representatives of the project executing agency, the target group, other donors and the West African Power Pool.

The analysis of impacts is based on assumed impact relationships documented in the impact matrix developed during the project appraisal and updated during the ex-post evaluation, if necessary. The evaluation report presents arguments as to why which influencing factors were identified for the identified results and why the analysed project presumably made which contribution (contribution analysis). The context of the development project is taken into account with regard to its influence on the results. The conclusions are set in relation to the availability and quality of the data basis. An evaluation design is the reference framework for the evaluation.

For project evaluations, the method offers a – on average – balanced cost-benefit ratio, in which the knowledge gained and the evaluation effort are in equilibrium, and allows for a systematic assessment of the effectiveness of FC projects across all project evaluations. The individual ex-post evaluations can therefore not fulfil the requirements of a scientific assessment in the sense of a clear causal analysis.

Methodology for the performance evaluation

A six-point scale is used to assess the programme in accordance with the OECD DAC criteria. The scale values are assigned as follows:

- Level 1** Very successful: results significantly above expectations
- Level 2** Successful: results fully in line with expectations, without significant deficiencies
- Level 3** Limited success: below expectations, but positive results dominate
- Level 4** Moderately unsuccessful: is 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 considered developmentally "successful" if the achievement of the project objectives ("effectiveness") and the impacts at the overall objective ("overarching developmental impacts") as well as the sustainability are rated as at least as "Moderately success" (level 3).

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

Imprint

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