Impact Evaluation of the AfDB-funded Ghana Fufulso-Sawla Road Project

Executive Summary
IDEV conducts different types of evaluations to achieve its strategic objectives.
Executive Summary

Introduction

The African Development Bank (AfDB or “the Bank”) prioritizes transport infrastructure as a critical means of achieving sustainable economic growth and reducing poverty. Transport forms a key focus area in the Bank’s Ten-Year Strategy (2013–2022) core operational priorities. The road sub-sector makes up the bulk of the Bank’s transport sector investments, funding the construction of national roads and major international corridors. The Ghana Fufulso-Sawla Road Project (FSRP) is one such investment. The overall thrust of the Fufulso-Sawla Road Project was to support the improvement of the investment environment through transport infrastructure development comprising the construction of a 147.5 km road as well as the provision of ancillary works along the main road corridor including: (i) rehabilitation and expansion of the main District Hospital at Damongo; (ii) construction/rehabilitation of eight main health centres; (iii) education facilities; (iv) construction of Mognori Bridge to better provide all-weather access for transportation of agricultural inputs and produce; (v) construction of a water treatment plant and borehole and; (vi) construction of four main market centres. The road project is located along a transit corridor linking landlocked countries (Burkina Faso, Mali, and Niger) in the north to the coastal Tema Port in Ghana, and providing access for improved trade between Ghana and its northern neighbors. To address key developmental challenges faced in the Project Area (PA) in the northern part of Ghana, additional interventions aside the main road corridor work included access roads, hospitals, schools, markets, water supply, etc., to generate positive benefits to all aspects of human development. The project, worth UA 110.58 million, was approved in 2010 and completed in 2015. It aimed at enhancing accessibility along the Fufulso-Sawla Road and improving livelihoods in the PA of influence. The project stands out as a flagship one in terms of its inclusive and integrated design for providing a holistic response to the socio-economic needs of the beneficiary districts. This summary report presents the findings, conclusions, lessons, and recommendations of the impact evaluation of the AfDB’s support for a road transport intervention in Ghana—the Fufulso-Sawla Road Project. The summary report is prepared based on detailed technical reports.

What was evaluated

The Independent Development Evaluation (IDEV) conducted an impact evaluation of an integrated infrastructure project—the Fufulso-Sawla Road Project in Ghana. The evaluation estimates the average impact of all components of the project on development outcomes. The impact estimation results reflect the combined impact of all the components of the project.

Purpose of the evaluation

The purpose of this impact evaluation is to generate lessons and provide recommendations to maximize the impacts of ongoing and future inclusive and integrated infrastructure projects. The specific objectives are: (i) to estimate the impacts of AfDB supported integrated infrastructure projects on key intermediate and long-term outcomes; (ii) to identify explanatory factors that affect the development outcomes of the project; and (iii) to generate lessons and provide recommendations for improving the impacts of ongoing and future integrated infrastructure interventions. The overarching evaluation question is: “What are the differences made by the Bank-supported integrated infrastructure project in Ghana?”
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Methodology used

This impact evaluation applied a mixed-methods approach, and quantitative and qualitative approaches, in addressing the evaluation questions. In the quantitative studies, an attempt has been made to estimate the impacts of the road project on key variables of interest (traffic intensity; travel time and transport cost; and access to socio-economic services, such as education, health, water supply, markets, and touristic attractions; and long-term outcomes, such as poverty, health, education, and employment) using household and community surveys. The qualitative study helped to provide further insights into contextual issues and perspectives with strong relevance for the design of the impact evaluation that enable or constrain the effectiveness and sustainability of integrated road project interventions. Quantitative methods included household surveys in 2,393 households across 17 treatment and 13 control communities. Furthermore, the secondary data collection involved an analysis of six household-level national surveys obtained from the Ghana Statistical Services (GSS) at the enumeration levels, and tourism data from Mole National Park authorities.

To establish evidence of the accurate project impact, it is necessary to compare an outcome on project beneficiaries with the counterfactual—a hypothetical outcome that would have been achieved in the absence of the intervention. Thus, the central issue in impact evaluations is to appropriately estimate the counterfactual, which cannot be directly observed. While the random assignment of the intervention is an ideal way to estimate a credible counterfactual, it is not always feasible to randomly assign the intervention, particularly for infrastructure projects, and this project is no exception. In the absence of an appropriate baseline, the evaluation used quasi-experimental methods of evaluation to measure the impacts of road project interventions. The evaluation employed the following strategies to have an appropriate estimate of the counterfactual.

Evaluation limitations and mitigation strategies

As with any evaluation, this evaluation inevitably has some limitations. This evaluation focused on “micro” impacts that were brought about by the project to households and/or individuals along the road project. Although it is important to examine potential “macro” impacts of the improvement of the road, such as enhancement of overall regional economic activities observable characteristics, but that was not improved by the project. For the control group, the road between Yendi and Tatale was selected. This main road has similar characteristics to that of the Fufulso-Sawla road conditions before the FSRP implementation. It has urban areas, towns, and rural villages along the road, comparable to the treatment group, as well as proximity to a neighboring country. Communities included in the control and treatment groups were selected randomly from treatment and control district groups within four identified strata (urban areas, towns, villages along the road, and villages removed from the road). Balance tests were carried out to ensure comparability between the treatment and control groups. Overall, estimations suggest statistical comparability between communities selected along the Yendi-Tatale Road and those selected along the Fufulso-Sawla Road, as they show similar characteristics before the FSRP implementation.

In order to carry out the analysis, the evaluation utilized Ordinary Least Squares (OLS), analysis of covariance (ANCOVA), regression discontinuity, and interrupted time series analysis estimations in the context of an integral economic development approach. Underpinning this approach is the recognition of an individual’s social dimension, which therefore considers the interpersonal-relational dimension of economic actions, i.e., the ways in which people interact to help or jeopardize sustainable development. The holistic design of the evaluation allows for the assessment of both the direct and long-term impacts of the intervention on households and communities. Furthermore, balanced test outcomes confirmed the comparability of the control and treatment groups.
beyond the areas around the road project, it is beyond the scope of this evaluation. Second, the results of the estimation have some potential limitations highlighted by the literature and identified during the scoping mission. These limitations were taken into consideration to ensure unbiased estimates and adequate attribution of outcomes. These included: (i) the absence of appropriate baseline data; (ii) time inconsistency bias controlled through the use of control variables and panel regressions estimated with state-time fixed effects for time and communities; (iii) self-selection bias, addressed by selecting a counterfactual group with similar characteristics as the group treated; and finally (iv) results show only the average effect of all the components of the project, while the income declaration in the household survey has its limitations, which required caution in interpreting income outcomes. The inclusion of other aspects, such as a multidimensional poverty index (MPI), allows for a triangulation of the results.

**Findings**

Based on the theory of change, in this evaluation, we examined the key variables of interest. The estimated impact of the project on these outcomes are the following:

**What was the net effect of the road on the intensity of the traffic, travel time, and travel cost?**

The evaluation finds positive results of the impact of the FSRP on improved transportation conditions in beneficiary communities. It estimates that the FSRP led to a positive and statistically significant reduction in commuting time (by 33 percent) in 2019, equivalent to a reduction in commuting time of 120 minutes per month. The construction of the road significantly reduced households’ commuting time for accessing key facilities such as markets, clinics, hospitals, and schools.

The evaluation also finds that traffic flows within major towns of project beneficiary districts increased significantly. The evaluation estimates that average daily traffic flow across three main stations—Fufulo, Larabanga, and Grupe—increased by 121 percent in 2015. However, findings show that the project led to a significant increase in transport costs by 14.5 percent compared with the control group.

**The road project improved domestic tourism markedly in the beneficiary districts.** The findings show that average households reported improvements in tourism activities within beneficiary districts by 25 percent. Evidence from the discussions with key informants revealed that the road project, including the construction of an access road to the national park, significantly improved accessibility, even during rainy seasons.

**What were the net effects of the road and related ancillary works on household income, employment, and access to social and economic services?**

The quantitative analysis revealed that the road and related ancillary works indeed had positive impacts on a range of outcomes and affected livelihoods in different ways.

**The road project interventions improved market conditions in beneficiary communities.** Market conditions improved, including households’ access to both farming and non-farming opportunities, inputs of production, and access to agricultural and other skills training, with an average increase of 14 percent in 2019, as a result of the road project.

**The evaluation finds positive results of the impacts of the interventions on market integration and diversification.** The FSRP led to a significant increase in the market integration index (by 7 percent) and market diversification (by 2.2 percent) in 2019. Specifically, households that received assistance with business development achieved better integration into other markets than those that did not. As was the case for previous economic outcomes analyzed, findings on the market’s diversification lend support for comprehensive interventions rather than singled-focused ones.
The evaluation finds positive results on the development/arrival of new business. The project led to a significant increase in the development and arrival of new business (by 12 percent). However, the impact on employment opportunities for both adults and youth was only significant when the road was associated with health facilities.

The road project had a significant positive impact on household incomes. The findings show that the project had significant positive effects on household incomes in 2019 (a monthly increase of around US$68 or 84 percent from the mean in 2012). The impact was not uniform across ancillary interventions. Evidence of a more positive impact on household incomes was found in communities where the road construction was accompanied by health-care facilities (an increase of US$18 or 100 percent). As expected, communities closer to the road reported higher increases of income, but the difference was not statistically significant.

Access to quality water supply and sanitation improved due to the road project. The project significantly improved households’ access to a quality water supply. The water quality index among beneficiary households increased by 17 percent in 2015, compared with the control group. This improvement is partly accounted for by the water treatment plant that accompanied the road project, which covered some 10,000 people. Also, the evaluation found a statistically significant impact of the project on households’ sanitation conditions, yielding an average improvement in sanitation conditions index among beneficiary households of 14 percent in 2019.

The integrated transport project had a positive impact on health and education outcomes. The findings show statistically significant positive effects of the transport project on the overall health of beneficiaries, increasing by 9 percent in 2015 compared with control households. No statistical evidence of the construction of the road was found on child mortality or prenatal care, apart from households alongside the road, for which a significant increase of 41 percent was observed in terms of prenatal care. The evaluation found statistically significant positive effects on education outcomes. Children who benefited from the new road when they were in primary school completed 5.5 grades more than those who did not. If they were living in urban areas, they completed 11 years more education than those who lived in rural areas. Also, children who were of school-age when the road was constructed had a 3.96 times higher probability of attending school.

The evaluation demonstrated that the Bank-supported integrated road project had the desired effects on poverty reduction. The multidimensional poverty definition used in the study considers that poverty reduction can come from changes in sources of income and better access to social services. Statistical evidence showed that with the road only, the MPI decreased by 2.16 percent among beneficiary households compared with control households in 2015, and by 2.59 percent in 2019. These results show that the project had significant positive effects not only on the living standards of beneficiaries but also on education and health outcomes. In communities where road construction was accompanied by schools and market centers, impacts on household poverty reduction were amplified. This underscores the significance of adopting integrative approaches in road projects, especially those targeting poor and economically disadvantaged areas.

**How were the costs and benefits distributed?**

The ancillary works generated a proportionately greater additional effect than their additional costs (8.2 percent of the total project cost). As indicated, road construction alone was estimated to have led to a statistically significant reduction in the MPI among beneficiary households by 2.16 percent in 2015. Households that benefited from a school in addition to the road experienced a significant additional reduction in the MPI by another 0.54 percent (to 2.7 percent), or 20 percent of the total effect. The construction of a market in addition
to the road led to an additional statistically significant reduction in MPI by 0.39 percent (to 2.55 percent), or 15 percent of the total effect. The ancillary works thus generated a proportionately greater additional effect on the MPI than their additional cost.

The intervention benefited women and girls specifically, albeit to a lesser degree than men. Indeed, there is evidence of males using the road more than females, but females with higher levels of education also used the main road more frequently by 2019. The project also led to an additional reduction by 0.25 percent in the MPI for male- versus female-headed households. Males also benefited more than females from the positive impact on education effects of the road. However, female school enrolment and retention increased, maternal death decreased, access by women to local markets and water collection improved, and their economic opportunities also expanded.

**What were the unintended impacts?**

The project promoted greater social cohesion among beneficiary communities. The equitable distribution of the ancillary facilities brought greater social cohesion and peace to communities along the road corridor. Indeed, inter-community conflict decreased because communities depend on each other for varying social services. On security, the project contributed to reduced highway robbery.

The project also helped to catalyze investments from other development partners to build on its outputs and outcomes. The World Bank is expanding the network of the water treatment plant—one of the many ancillary interventions supported under the FSRP—with an amount of US$1 million.

On unintended negative consequences, qualitative interviews point to an impact on environmental degradation. The project negatively affected the environment due to marked growth in charcoal-burning activities in the three beneficiary districts, although they also positively impacted district assemblies through the generation of higher revenues from the booming charcoal-burning business. Also, the construction of the road facilitated Rosewood logging within the project’s enclave - a phenomenon that continues to threaten the Mole National Park, in particular.

**Are development benefits from the projects sustainable?**

The sustainability of development outcomes of the Bank-supported road project and related ancillary works were highly unlikely. Regular maintenance is a critical precondition for sustaining the positive impacts that road and ancillary facilities bring to communities. Under this project, however, the field visit and interviews with beneficiaries revealed that poor maintenance affected many of the facilities provided, especially health centers, schools, and bungalows built for teachers and nurses. For instance, solar panels installed to power some health centers were either burgled or were not fully functional. For the water treatment plant, no maintenance plan was in place because of the under-utilization of the plant. This problem was further aggravated by a lack of maintenance plans at the local government authority level. For the road, the Larabanga-Sawla section was degraded even before its delivery, reducing the impact of the project. Several reasons contributed to this: poor scheme design, weak organizational and institutional capacity, and the lack of active community and government ownership of the project.

**Lessons**

The following are the key lessons from this impact evaluation.

**Lesson 1:** Integrating community development interventions into road transport infrastructure brings an added value to, and fast tracks, the Bank’s poverty reduction, job creation, and inclusive development efforts.
Results from the evaluation showed that combining road construction with the construction of market centers and schools in a largely rural context yielded additional positive impacts on multidimensional poverty reduction. This underscores the need to pay close attention to the context when designing such integrated road interventions.

**Lesson 2:** Relational factors are key to the sustainability of integrated road interventions such as the FSRP, as they can amplify or jeopardize a project’s impact.

For example, the failure to ensure active participation of project beneficiaries beyond ‘information sharing’ undermined the maintenance of the ancillary facilities and thus affected sustainability. Conversely, greater multisector collaboration demonstrated among staff of the Bank’s Ghana country offices contributed to the success of the project by drawing on the availability of the right caliber and mix of staff. This lends credence to the important role of the Bank’s Development and Business Delivery Model (DBDM) which, among others, underscores the importance of having the full complement of staff to support its operations in Regional Member Countries (RMCs).

**Lesson 3:** Coupling road projects with community development interventions can increase the likelihood of benefits accruing to women and girls.

In particular, the evaluation demonstrated marked gains regarding women’s and girls’ access to social services such as health and education. This form of integrated intervention can add a layer of gender sensitivity to road interventions.

**Recommendations**

IDEV makes the following recommendations:

**Recommendation 1:** Enhance the Bank’s integrated approach to its road investments to foster development impact in terms of poverty reduction.

Evaluation results showed that a road alone is not enough to tackle poverty. The poor, lacking assets to take advantage of better opportunities that a road may bring, benefit from additional support. This suggests that integrated projects are necessary to tackle poverty effectively. Indeed, while the inclusion of community development projects in road projects such as the FSRP make up a small fraction of overall cost, they can make a significant difference, particularly for increasing access to social services. Such projects provide an impetus for amplifying the social impacts of roads, which in the long run brings an added value to multidimensional poverty reduction and inclusive development. Thus, first, the Bank should explore more of these integrated road projects and proactively adopt them as flagships for its inclusive growth, poverty reduction, and rural development efforts. Second, it should, on the back of its One-Bank approach, step up support for community development components of road projects by deliberately committing more financial resources to them and not treating them as add-ons or afterthoughts. However, the Bank should also be cognizant of the fact that such approaches may not work in all contexts and, hence, should adapt the choice of the ancillary works/services to local realities.

**Recommendation 2:** Improve the quality of road projects’ design and results focus.

Given the multidimensional nature of such interventions, having a theory of change that demonstrates causal relationships and impact linkages is critical. This will facilitate the design, implementation, and evaluation of the interventions. The Ghana FSRP used an integrated approach. However, the project documents did not clearly present how the road will interact with the ancillary works to achieve the expected intermediate outcomes. Therefore, for similar future investments: (i) the Bank should base its integrated road intervention design on an evidence-based well-articulated theory of change, with a clear pathway through which the logic model would occur; and (ii) the baseline for the treatment and
control groups should be established during the design phase of the intervention for such large-scale, innovative, and flagship projects to determine not only whether an intervention is effective, but also to compare options for making interventions more effective.

**Recommendation 3: Strengthen the human and institutional capacity to sustain development gains.**

Neglect of periodic maintenance threatens long-term social and economic benefits from the road and ancillary facilities. The Bank should strengthen the human and institutional capacity for the sustainability of road projects and their ancillary facilities by: (i) engaging in dialogue with the government to explore partnership-based approaches where a memorandum of understanding can be signed with local government authorities on maintaining the facilities; (ii) encouraging meaningful beneficiary participation and contribution in all infrastructure maintenance activities, including labor and material inputs, thus creating ownership through risk-sharing, to guarantee the sustainability of actions; and (iii) adequately mitigating or minimizing unintended environmental degradation.
About this evaluation

This summary report presents the findings, conclusions, lessons, and recommendations of the impact evaluation of the AfDB’s support for a road transport intervention in Ghana - the Fufulso-Sawla Road Project. The project, worth UA 110.58 million, was approved in 2010 and completed in 2015. It aimed at enhancing accessibility along the Fufulso-Sawla Road and improving livelihoods in the project area of influence. The project stands out as a flagship in terms of its inclusive and integrated design, which provides a holistic response to the socio-economic needs of the beneficiary districts.

The objectives of this impact evaluation were: (i) to estimate the impacts of AfDB supported integrated infrastructure projects on key intermediate and long-term outcomes; (ii) to identify explanatory factors that affect the development outcomes of the project; and (iii) to generate lessons and provide recommendations for improving the impacts of ongoing and future integrated infrastructure interventions.

As a result of the evaluation, IDEV drew lessons on integrating community development interventions into road transport infrastructure, the key factors for the sustainability of such projects, and the benefits for women and girls. It made the following recommendations: i) enhance the Bank’s integrated approach to its road investments to foster development impact in terms of poverty reduction; ii) improve the quality of road projects’ design and results-focus; and iii) strengthen the human and institutional capacity to sustain development gains.