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Independent Development Evaluation  
African Development Bank

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

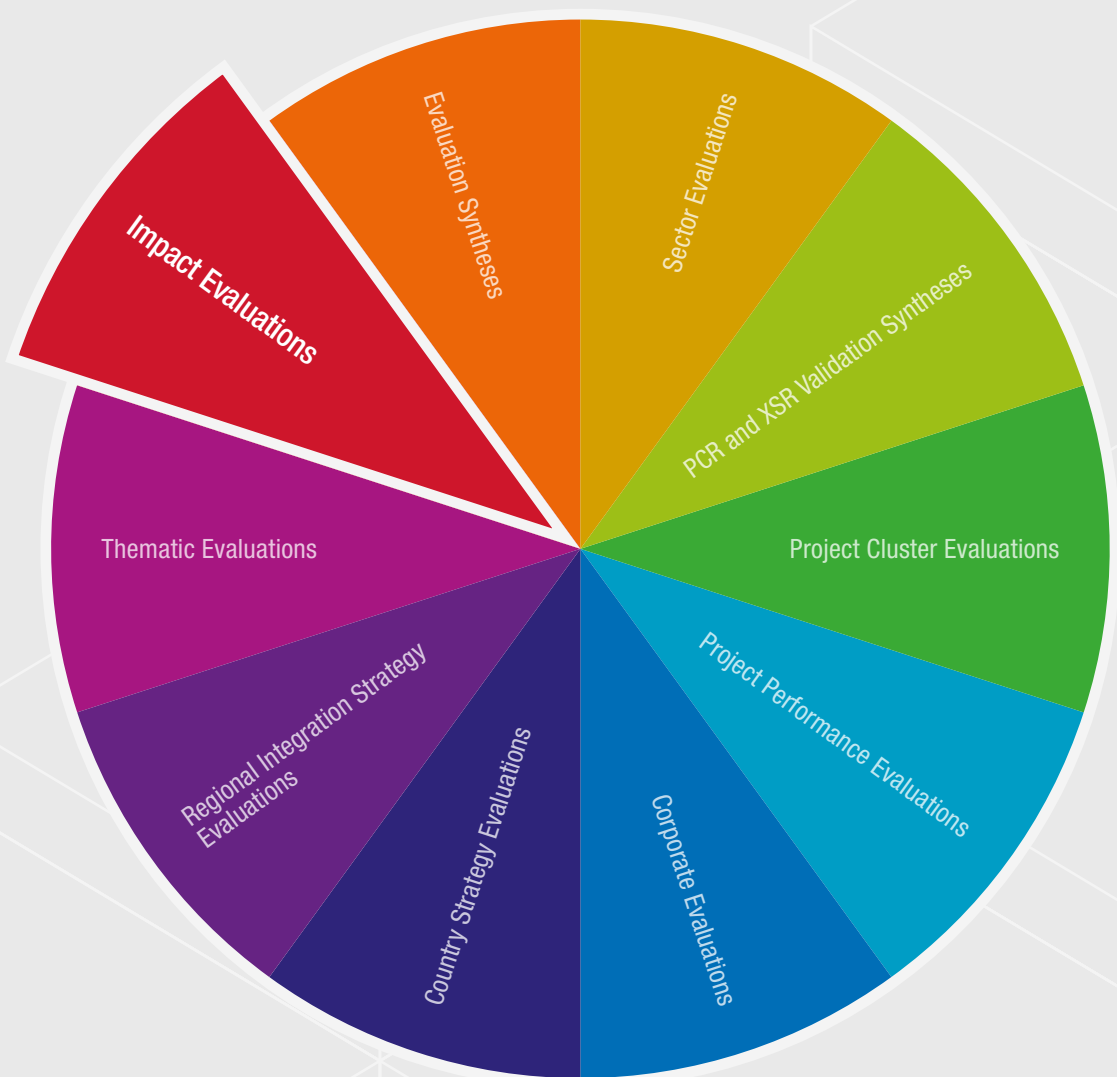
Summary Report



AFRICAN DEVELOPMENT BANK GROUP

August 2020

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AFRICAN DEVELOPMENT BANK GROUP

August 2020

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#### Impact Evaluation of the AfDB-funded Ghana Fufulso-Sawla Road Project – Summary Report IDEV Impact Evaluation, August 2020

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## Abbreviations and Acronyms

<b>AfDB</b>	African Development Bank	<b>KVIP</b>	Kumasi Ventilated Improved Pits
<b>ANCOVA</b>	Analysis of Covariance	<b>MPI</b>	Multidimensional Poverty Index
<b>CDC</b>	Centers for Disease Control and Prevention	<b>OIC</b>	Officer in Charge
<b>COGH</b>	Ghana Country Office	<b>PA</b>	Project Area
<b>FSRP</b>	Fulfulso-Sawla Road Project	<b>PICU</b>	Infrastructure, Cities and Urban Development Department
<b>GLSS</b>	Ghana Living Standards Survey	<b>RCT</b>	Randomized Control Trial
<b>GSS</b>	Ghana Statistical Services	<b>RDGE</b>	Regional Directorate General for East Africa
<b>GIS</b>	Geographic Information System	<b>RDGW</b>	Regional Directorate General for West Africa
<b>IDEV</b>	Independent Development Evaluation	<b>RDTS</b>	Transition States Coordination Office
<b>KM</b>	Kilometer		





# 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 Ffulso-Sawla Road Project (FSRP) is one such investment. The overall thrust of the Ffulso-Sawla Road Project was to support the improvement of the investment environment through transport infrastructure development comprising the construction of a 147.5km 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 Ffulso-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 Ffulso-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 Ffulso-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?”

## 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.

We carefully selected a comparison road that is as “similar” to the target road as possible, based on 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.

## 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 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—Fufulso, 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 single-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. ■





# Management Response

Management welcomes the independent evaluation of the Fufulso-Sawla Road Project (FSRP) in Ghana, four years following the project's completion. The FSRP can be described as an integrated project that addressed transport, education, health, agriculture, water and sanitation, trade, and tourism. The report makes good recommendations and assessments that will enhance the Bank's ongoing efforts to render its operations more inclusive and address development challenges more holistically, particularly in rural areas. Overall, Management agrees with the evaluation's findings and recommendations, especially the need to deepen projects' integrated approach, improve the quality of project design at the preparation stage, and develop institutional and human capacity to sustain the Bank's investments. The independent evaluation generates knowledge that will improve the design and impacts of similar interventions in future.

## Introduction

Over the years, Ghana's transport sector has been guided by government policies and strategies designed to provide efficient transportation services in order to catalyse economic growth. The sector draws on the National Transport Policy, the Integrated Transport Plan, and national medium-term plans rolled out by the government every four years following the election cycle. The country's medium-term development agenda seeks to make Ghana the transportation and logistics hub of West Africa, providing air, road, rail, and sea linkages to countries in the subregion, especially Ghana's landlocked neighbours in the Sahel.

For its part, the Bank prioritises transport infrastructure as a critical means of achieving sustainable economic growth and reducing poverty. Transport is a key focus of the Integrate Africa priority and the Bank's Ten-Year Strategy 2013–2022.

The Fufulso-Sawla Road Project (FSRP) was aligned with the Bank's and Ghana's strategies in this regard. It aimed to improve transport supply with a view to promoting the integration of the neighbouring regions within the national economic space and boosting inter-regional trade and tourism.

To address key developmental challenges in northern Ghana, the Bank collaborated with the Government

of Ghana to pilot an integrated approach that added interventions to the main road project. These interventions consisted of rural feeder roads, health centres, schools, markets, and water and sanitation facilities, all of which benefited populations in the region. The road project is located along a transit corridor that links landlocked countries in the north (Burkina Faso, Mali, and Niger) to Tema Port on Ghana's coast. The project made it possible to improve trade between Ghana and its northern neighbours.

Management welcomes the independent evaluation. Not only will it inform future country strategy papers (CSPs) for Ghana, it will also shape the design of future road projects, helping the Bank meet its objective of preparing holistic transport projects as a means of improving impacts in the sector. Management takes note of the following lessons:

- Integrating community development interventions into road transport infrastructure adds value and fast-tracks poverty reduction, job creation, and inclusive development. These elements are key to sustaining integrated road interventions such as the FSRP. How a project treats these elements can amplify or jeopardise the project's impact.
- Adopting an integrated approach to a project like this one, means including sectors beyond transport. To manage this, projects should develop

a framework that project teams can use to capture all sector inputs at the beginning, monitor them as the project proceeds, and evaluate them at the end. Such a framework would make it possible for teams that cut across several sectors to work more effectively together. This is also in line with the Bank's selectivity approach to prioritise fewer and larger projects.

- Coupling road projects with community development interventions can increase the likelihood of benefits accruing to women and girls. The independent evaluation documented marked gains in women's and girls' access to social services such as health and education. This demonstrates that integrated interventions can add a layer of gender sensitivity to road projects.
- Project sustainability is still very much an issue. Management must do more to make sure that when projects are being prepared, the investments—whether in transport or in other sectors—will be secured and protected after the project has been delivered.

## Main findings

### Transport-related outcomes

Management welcomes the evaluation's findings with regards to two of the intervention's impacts: the increase in traffic and the reduction of travel times and travel costs. The improvement in road conditions developed several economic activities and increased traffic between the towns and villages along the project corridor and within the project's zone of influence. Notable, too, is the 33% reduction in travel times. In addition, upgrading the road boosted inter-regional/ inter-district trade and facilitated exchanges between areas of agricultural production and market centres. Greater access to inputs also caused agricultural productivity to grow.

In addition, upgrading the road significantly reduced households' commuting time to essential facilities

such as market centres, clinics, hospitals, and schools. Before the road project, only big buses could travel. After road conditions improved, private cars, pickups, and taxis could also use the road, carrying commuters between towns or bringing tourists to visit destinations along the road corridor. The independent evaluation also flagged an increase in travel fares, but in fact, fares decreased in real prices. More specifically, inflation averaged 12.9% per year between 2014 and after the project was completed in 2019. The fare in 2014 was US \$3.5, equivalent to US \$6.40 in real prices, compared to US \$5.25, equivalent to US \$5.70, in 2019. The value of the fare in 2014 as of 2019 is US \$5.90 and still shows a reduction as compared to the real fares of US \$5.25.

Management is of the view that the independent evaluation should have considered that inflation and competition between transport operators played a key role in prices.

### Socioeconomic impacts

The project's impact on households' socioeconomic conditions is worth mentioning. Upgrading the road reduced poverty amongst beneficiary households. It also improved employment opportunities for adults and youth at a statistically significant level. In addition, local communities benefited from better socioeconomic infrastructures such as schools, markets, and healthcare facilities, which produced an additional positive and significant impact on occupational opportunities.

Management takes note of the improvement in market conditions—including households' access to farming and non-farming opportunities, inputs of production, and agricultural areas—which continued four years after the project was completed.

The patronage of tourism amongst Ghanaians also experienced a marked increase in the beneficiary districts. Households reported more tourism activity and interviews of key tourism stakeholders revealed new developments and investments in the hospitality industry as a result.

Management welcomes the evaluation's confirmation of the findings disclosed in the project completion report.

Management has always held the view that transport infrastructure enables socioeconomic change; that once a road opens to a remote community, opportunities for many more interventions in other sectors ensue. Households experienced a general improvement in their health and access to social amenities because the project did not just provide a road, but also supplied other socioeconomic infrastructure facilities that are critical to improving the quality of life. Management notes that the FSRP significantly improved women and girls' day-to-day activities. Although men may have benefited more than women, female school enrolment and retention nonetheless increased, maternal death fell significantly, access to local markets and water collection improved, and economic opportunities expanded for women and girls. These impacts underscore the importance of the transport sector developing projects using an integrated approach.

### **Impacts on institutional networks and relationships**

Management noted that the project's ancillary works generated an effect on the Multidimensional Poverty Index (MPI) that was proportionally greater than the expenses they cost the project. However, Management also acknowledges the evaluation's finding that the project's integrated approach failed to ensure that social amenities were properly maintained. In practice, the sustainment of ancillary facilities depends on such factors as inclusion of the facilities in sectors' maintenance programmes, on ownership, and on training staff to operate the facilities or equipment. Much effort was made to engage communities in the design and implementation of the ancillary works, and the Bank ensured that stakeholders were engaged adequately during the preparation and appraisal of the project. Yet no formal structure was put in place to sustain the commitment to maintain the investments. This is an important lesson.

Management acknowledges the need for a framework to guide the formulation and design of integrated infrastructure projects that cut across sectors to resolve the issues highlighted in the independent evaluation and generate greater impacts and sustainability.

### **Unintended impacts**

Strong catalytic leverage and greater social cohesion amongst beneficiary communities are two of the positive unintended results generated by the road project. The project's integrated approach helped catalyse investments from other development partners to build on the project's outputs and outcomes. More specifically, the World Bank agreed with the Government of Ghana to expand Ghana's network of water treatment plants, one of the many ancillary interventions supported under the FSRP.

During project design and formulation, the Government of Ghana and the Bank made every effort for the project to be as inclusive as possible. Every town and settlement along the road corridor benefited not only from the road but also from other socioeconomic infrastructure such as schools, health facilities, and water services. Some zones outside the project area also benefited from the water treatment plant, because of the plant's location. The plant has the capacity to accommodate future expansions, which have already begun.

Management notes that although the resources allocated to ancillary works were small, their benefits have been considerable.

### **Conclusion**

Management agrees with the findings of the independent evaluation. The lessons learnt from the FSRP will improve the formulation, design, and implementation of future transport projects. The Management Action Record, below, sets out specific actions against the recommendations made in the evaluation report. ■

Management Action Record	
Recommendation	Management Response
<b>Recommendation 1:</b> Enhance the Bank's integrated approach to its road investment to foster development impact in terms of poverty reduction.	
<p>a. 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.</p> <p>b. The Bank 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 treat them as add-ons or afterthoughts. Besides, 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.</p>	<p><b>Agreed.</b> Management broadly agrees with the recommendation; however, governments need to lead the process and include the preparation of integrated projects in their development agenda. On the Bank side, Management is of the view that integrated designs should consider including infrastructure that will support the developmental logistics chains (e.g., bus stations, storage facilities, markets centres, and sanitary facilities). Transport projects should also be measured in terms of both their transport-related outcomes and their socioeconomic impacts on people's quality of life. However, this recommendation may not apply everywhere; for example, it may not apply to middle-income countries.</p> <p><b>Further Action:</b></p> <ol style="list-style-type: none"> <li>1. Management will develop an operational framework to guide integrated road infrastructure projects. This Framework will be tailored to suit each country based on their specific dynamics. The framework will describe how to design and implement projects across sectors using multi-disciplinary project teams and how the whole programme will be measured for success. Developing the framework will involve collaboration between the infrastructure sector and such sectors as water and sanitation, agriculture, education, and trade. <b>(PICU, Q4 2022)</b></li> </ol>
<b>Recommendation 2:</b> Improve the quality of road projects design and results focus.	
<p>a. 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</p> <p>b. The baseline for the engagement of control groups should be established during the design of a project 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.</p>	<p><b>Agreed.</b> Management agrees with the recommendation. Countries will be advised and supported from the onset to prepare integrated infrastructure projects that can easily be appraised. Management will also consider revising the theory of change for the road sub-sector and the results measurement framework to better account for integrated projects. This will improve the quality and readiness of projects before appraisal.</p> <p><b>Further Action:</b></p> <ol style="list-style-type: none"> <li>2. Revise the Bank's standard terms of reference for road studies to provide for an integrated approach, including the collection of baseline data. <b>(PICU Q2 2021)</b></li> </ol>

Management Action Record	
Recommendation	Management Response
<b>Recommendation 3:</b> Strengthen the human and institutional capacity to sustain development gains.	
<p>a. The Bank should engage 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;</p> <p>b. Encourage 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</p> <p>c. Bank ensures that the Borrower implements the disclosed Environmental and social documents in compliance to the Financing Agreement.</p>	<p><b>Agreed.</b> Management broadly agrees with the recommendation. Although the maintenance culture has improved in most client countries, there is still a long way to go to preserve and sustain investments in infrastructure assets. One of the lessons learnt from this project is that stakeholders should be involved from the start in selecting sites and identifying socioeconomic infrastructure and priority activities by means of a more participatory approach involving government representatives at the central and decentralised levels, community development committees, civil society associations, users, and production cooperatives. This will lead to agreement on how socioeconomic infrastructure will be managed and maintained. In addition, the Bank should assist countries to implement decentralisation reforms and empower local authorities/communities. Finally, the Bank will encourage greater involvement of the private sector in the operation and maintenance of facilities through public-private partnerships. There will also be an agreement with decentralized authorities on how socioeconomic infrastructure will be managed and maintained.</p> <p><b>Further Actions:</b></p> <p>3. Include in projects' logical framework a measure of stakeholder engagement on a project. <b>(PICU Q4,2021).</b></p> <p>4. Strengthen implementation support to borrowers/clients by providing technical assistance and check compliance during the implementation phase, as indicated in the approved Safeguards Strengthening Action Plan (SSAP). <b>(PICU, Ongoing)</b></p>



BURKINA FASO

# Ghana

- International boundary
- National capital
- Railroad
- Road
- Yendi-Tatale Road
- Fufulso-Sawla Road

0 30 60 Kilometers  
0 30 60 Miles  
Transverse Mercator Projection, CM 1 W

CÔTE D'IVOIRE

BENIN

TOGO

Gulf of Guinea

Bight of Benin

Cape Three Points

Cape Saint Paul

# 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) and 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 Ffulso-Sawla Road Project is one such investment. This summary report presents the findings, conclusions, lessons, and recommendations of the impact evaluation of AfDB’s support of a road transport intervention in Ghana—the Ffulso-Sawla Road Project (FSRP). Several impact evaluations have been carried out on road construction projects in Sub-Saharan Africa and elsewhere in the world. These include road construction interventions by the AfDB. Studies of the impact of road construction on the multiple dimensions of poverty and economic development have been conducted, but are scarce.<sup>1</sup> This impact evaluation contributes towards filling this gap. This summary report is prepared based on detailed technical reports.

**Purpose and objectives:** The purpose of the 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 to:

- Estimate the impacts of AfDB supported integrated infrastructure projects on key intermediate outcomes (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 (poverty, health, education, and employment);

- Identify explanatory factors that affect the development outcomes of the project; and
- Generate lessons and provide recommendations for improving the impacts of ongoing and future integrated infrastructure interventions.

**Evaluation questions:** The overarching evaluation question is: “What are the differences made by the Bank supported integrated road project in Ghana?” Specific questions are:

- What is the impact (net effect) of the road on the intensity of the traffic, travel time, and travel cost?
- What is the impact of the road and related ancillary works on household income, employment, and access to social and economic services?
- What causal factors have resulted in the observed impacts?
- Has the intervention resulted in any unintended impacts?
- Are the impacts of the project differentiated by gender?
- What lessons can be learned from this intervention?

**Scope:** The primary focus was on the direct and intermediate outcomes realized among the final beneficiaries—the communities and households. However, this evaluation goes beyond the immediate and addresses changes in the behavior of the beneficiaries. In terms of budget, road construction represented 85.4 percent of the construction work carried out and ancillary works represented 7.4 percent. The remaining budget was spent

on studies (1.4%), project management (5.7%) and compensation and resettlement (0.05%). Proportionally, 36 percent of the ancillary works' budget was allocated to health facilities, 28 percent to education facilities, 2 percent to the grain storage built in Damongo, 9 percent to water supplies (boreholes), and 25 percent to markets and truck parks. The road construction began in 2012 and was completed in 2015. The impact data were collected in 2019. As per the project appraisal report (PAR), the primary and direct project beneficiaries of the project include the inhabitants near the road. The other project beneficiaries include diverse stakeholders

at local, regional, national, and international levels. The road corridor's immediate vicinity is inhabited by an estimated population of 30,000, of whom 50.8 percent are women.

This report presents the result of the impact evaluation. The rest of the report consists of the following sections: Section 2 provides a brief description of the project, which was covered by this impact evaluation. Section 3 describes the evaluation methodology. Section 4 presents the key findings of the evaluation. Finally, Section 5 summarizes the conclusions, lessons, and recommendations. ■



# The Ffulso-Sawla Road Project

While road projects financed by the Bank have traditionally tended to be implemented as a stand-alone intervention, in recent years, this has changed, where in addition to the construction of roads, other complementary community development interventions are incorporated as part of the intervention package. The Ffulso-Sawla Road Project (FSRP) in Ghana is one such project, which aimed at implementing other socio-economic infrastructure (water, health, education, agriculture, and social protection) besides the construction of a 147.5 km road.

The overall thrust of the FSRP, which is examined in this impact evaluation, was to support the improvement of the investment environment through transport infrastructure development. The project directly supported the Ghana Shared Growth and Development Agenda (2010–2013). This Agenda sees transport infrastructure as one of the channels through which economic growth and poverty reduction is envisioned. It also considers transport as relevant in achieving the country's goal of becoming a leading agro-industrial country. The FSRP aims to address development challenges caused by poor road infrastructure in the former Northern Region of Ghana, now the Savannah Region, which is one of the poorest and most isolated regions of the country.<sup>2</sup> The FSRP links the West and East main highways of Ghana. The road construction extends across three districts: Central Gonja, West Gonja, and Sawla-Tuna Kariba, between Ffulso town and Sawla city. Together, these districts constitute a population of 272,467, out of which 78 percent reside in rural areas (Ghana Statistical Service, 2015). The road project is located along a transit corridor linking landlocked countries (Burkina Faso, Mali, and Niger) in the north to the Tema Port in Ghana and providing access for improved trade between Ghana and its northern neighbors. The road corridor's immediate vicinity is

inhabited by an estimated population of 30,000, of whom 50.8 percent are women. These constitute the direct beneficiaries of the project. Other beneficiaries are people from other parts of the Savannah Region, traders and road transport operators, and travelers from the Upper East and West Regions, as well as Burkina Faso, Mali, and Niger.

Despite their vast resources and potential, the three districts along the road corridor are among the most deprived areas in Ghana. The incidence of household poverty is high across the three districts: Central Gonja (61 percent), West Gonja (53 percent), and Sawla-Tuna-Kalba (63 percent) (Ghana Statistical Service, 2015). Only 30 percent of households along the road have access to safe water, far below the regional and the national averages of 58 and 57 percent, respectively. Most households rely on unsafe water sources, such as dug-out dams for drinking water, most of which dry up during the dry season. This has contributed to a high prevalence of water-borne diseases in the project area. Before the project, the three districts along the road had only one medical doctor based in Damongo Hospital. The districts had, on average, a doctor-patient ratio of 1:29,394, nearly three-times the national ratio of 1:10,380. Educational infrastructure in many communities along the road is either inadequate or in a deplorable state of repair, with some classes held in sheds or under trees. Net primary school enrolment averages about 65 percent, below the national average of about 84 percent.

The AfDB specified six development objectives for this intervention: (i) improve the Ffulso–Sawla road condition; (ii) increase local economic activity resulting in improvement in livelihood; (iii) improve the mobility index in the Savannah Region and between Ffulso and Sawla in particular; (iv) reduce

transport costs and travel times; (v) increase revenue and the number of tourists visiting the area; and (vi) increase access to socio-economic infrastructure (schools, health posts, markets, truck parks, and water and sanitation) for communities. The latter was expected to expand the road's effect by improving socio-economic factors.<sup>3</sup> Specific synergies between the road and the ancillary works were not defined at the time.

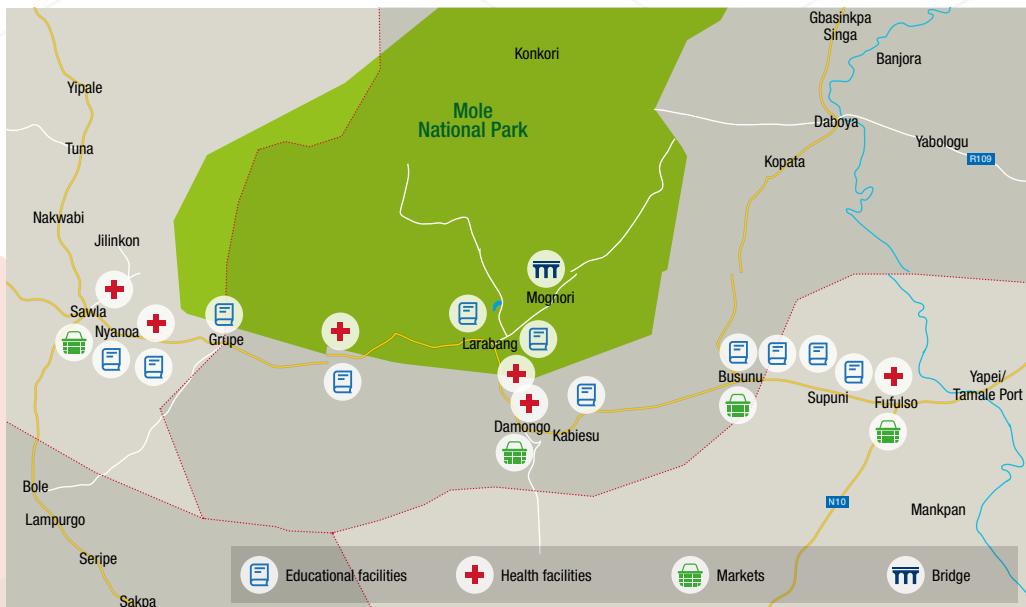
At completion, the 147.5 km of road built between Sawla and Fufulso was divided into two sections, Lot 1 (Fufulso-Larabanga) and Lot 2 (Larabanga-Sawla). Each Lot also incorporated several ancillary works serving 15 communities along the entire corridor. The construction in Lot 1 was carried out by the China International Water & Electric Corporation. The company took charge and executed all road and ancillary works. The China Harbour Engineering Company Ltd was the construction contractor in Lot 2; the company subcontracted the ancillary works to a third party. The same consultant supervised the work in

both lots. The constructors' contract included a 12 months defects liability period (DPL).

The road constructed was a Double Bituminous Surface Treatment (DBST), standard of a 7.3 m two-way one lane single carriageway plus 2.5 m shoulders on each side of the carriageway. The ancillary works built in the 15 communities located along the corridor varied across communities. They encompassed school facilities, health centers, and rehabilitation/renovation of the hospital in Damango, accommodations for nurses and teachers, Kumasi Ventilated Improved Pits (KVIPs), boreholes, truck parks, markets, and a grain storage facility.<sup>4</sup> Proportionally, 36 percent of the ancillary work was allocated to health facilities, 28 percent to education facilities, 2 percent to the grain store built in Damango, 9 percent to water supplies (boreholes), and 25 percent to markets and truck parks.<sup>5</sup>

In addition to the Mognori Bridge, nine communities received educational and sanitation facilities (Janikua, Kojope, Busunu, Janokponto, Bonyanto,

**Figure 1:** Geographical distribution of ancillary interventions along the road



Nasoyin, Jentilpe, and Nyange), seven received health and sanitation facilities (Sawla, Jentilpe, Nyange, Damango, Grupe, and Kabampe), and four communities received road safety and/or HIV/AIDS sensitization and awareness training (Grupe, Sawla, Larabanga, and Kabampe). The communities vary in terms of size and their degree of development, some being very small communities or villages, while others are small towns or small cities.

Figure 1 depicts the distribution of the different components along the constructed road. As might be expected, ancillary elements are concentrated where there is a higher population density, while markets are mostly evenly distributed along the larger towns/cities.

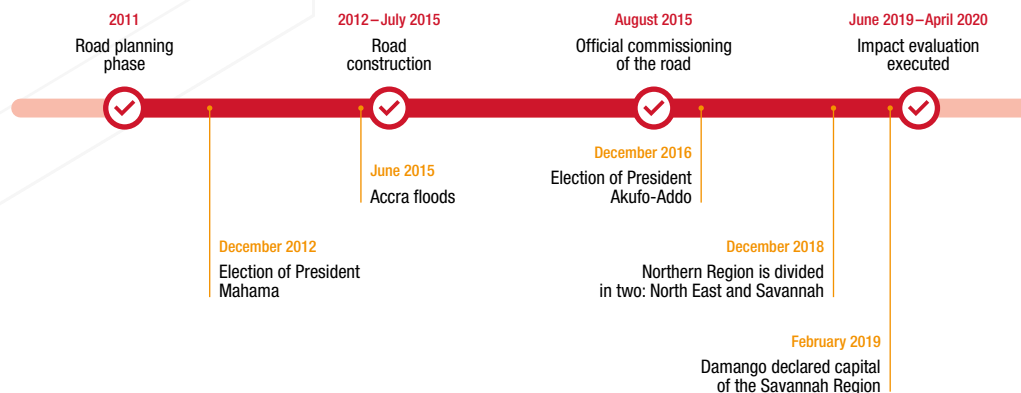
This intervention sought to improve existing poor road infrastructure in the region, thus opening new opportunities for local socio-economic development and trade with neighboring countries in the north. In December 2010, the Bank approved the financing of the Ghana FSRP. Although the project duration was between 2011 and 2015, the actual construction of the road and implementation of its accompanying ancillary facilities took place between January 2012 and July 2015, under the management of the Ghana Highway Authority (GHA), with collaboration from Ghana’s Ministries of Health and Education

in specific aspects relating to the ancillary works. The official commissioning of the road took place in August 2015.

Figure 2 depicts the timeline of the project and impact evaluation, as well as relevant external events. Among the latter is the election of President Mahama in December 2012, whose home place is located in the Savannah Region; the large Accra floods in June 2015, shortly before the completion of the construction of the Fufulso-Sawla road; and the election of President Akufo-Addo, the creation of the Savannah Region in December 2018, and the declaration of Damongo as its capital. The latter has accelerated the economic development of the FSRP area because of the growing presence of governmental administration offices and personnel. While presidential elections can be treated as an exogenous event that affected the country nationwide, and therefore both the treatment and control groups, this is not the case for the designation of Damongo as a capital for the newly created Savannah Region. However, Zabsugu, Tatale, and Yendi are among the communities included in the control group. All three towns are the three districts’ capitals.

The main ancillary works built in the 15 communities located along the corridor varied

**Figure 2:** Project time-line relevant external events



across communities and encompassed: (i) school facilities (9); (ii) health facilities (8) (Community Health-based Planning Services (CHPS) compounds and health posts); (iii) one accident center with an ambulance; (iv) markets and truck parks (4); and

(v) water supply (41 boreholes and one water treatment plant) and a grain storage facility.

The cost of the whole project was UA 110.59 million.<sup>6</sup> Table 1 presents the key design features of the FSRP. ■

**Table 1:** Key design features of the FSRP

Domain	Est. Cost (UA million)	%	Component description
Road Construction Works	94.48	85.4%	<ul style="list-style-type: none"> <li>■ Construction of 147.5 km of road between Fufulso and Sawla including lined drains at major settlements along the road.</li> <li>■ Environmental and social impact mitigation measures.</li> <li>■ Sensitization of project area inhabitants on HIV/AIDS and STIs; malaria and water-related diseases; road safety; and environmental protection.</li> <li>■ Construction of infrastructure in support of tourism (parking spaces, signposts along the road and in the Mole National Park, construction of a conservation museum at the entrance of the Mole National Park).</li> <li>■ Construction of 6 km long access roads and driveways to socioeconomic infrastructures along the road.</li> <li>■ Construction of two permanent weighbridge stations.</li> <li>■ Works construction supervision.</li> </ul>
Ancillary Works	8.21	7.42%	<ul style="list-style-type: none"> <li>■ Water supply in the communities along the road corridor.</li> <li>■ Support for women's agro-processing activities along the road corridor.</li> <li>■ Rehabilitation of existing schools (classrooms, equipment/furniture, sanitation, boreholes, fencing) along the road corridor.</li> <li>■ Rehabilitation of existing health facilities: (i) Community Health-based Planning Services (CHPS) compounds (works, equipment, and solar panels); (ii) construction of an accident center midway of the road (at the existing district hospital at Damongo and the provision of ambulances).</li> <li>■ Construction of markets and truck parks in Larabanga, Busunu, Fufulso, Sawla, and Damongo.</li> <li>■ Rehabilitation of the grain storage area at Damongo.</li> <li>■ Design and supervision of ancillary works.</li> </ul>
Studies	1.54	1.39%	<ul style="list-style-type: none"> <li>■ Road studies.</li> </ul>
Project Management	6.31	5.71%	<ul style="list-style-type: none"> <li>■ Project coordination.</li> <li>■ Technical assistance to the Project Coordination Unit.</li> <li>■ Project impact monitoring and evaluation.</li> <li>■ Financial and technical audit.</li> </ul>
Compensation and Resettlement	0.05	0.05%	<ul style="list-style-type: none"> <li>■ Compensation and resettlement costs for all project-affected persons</li> </ul>
<b>Total</b>	<b>110.59</b>	<b>100%</b>	



# FUFULSO-SAWLA ROAD PROJECT

## JONOKOPONTO PRIMARY SCHOOL

### INTERVENTIONS:

School Building  
Teacher's Bungalows

Water Facilities  
Sanitation Facilities

Sola Power  
School Furniture



### FUNDED BY:

AFRICAN DEVELOPMENT BANK GROUP  
GROUPE DE LA BANQUE AFRICAINE  
DE DEVELOPPEMENT

*For You*

YOUR PARTNER IN DEVELOPING AFRICA

### School Feeding

Jonokoponto P.S.  
...to ensure all your students are properly clothed.  
Canada





# Methodology

**This impact evaluation applies 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; 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 more insights into contextual issues and perspectives with strong relevance for design of the impact evaluation that enable or constrain the effectiveness and sustainability of integrated road project interventions. In the case of quantitative methods, IDEV carried out 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. The details of both quantitative and qualitative methods are presented in Annexes 2 and 3 of the Technical Annexes.

**The evaluation design and estimation strategies:**

In order to establish evidence of the accurate project impact, it is necessary to compare an outcome for 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 appropriate baseline data, 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.

The evaluation team carefully selected a comparison road that was as “similar” to the target road as possible based on observable characteristics, but that was not improved by the project. For the control group, the main road stretching between Yendi and Tatale was selected (Annex 6 of the Technical Annexes). This main road has similar characteristics to the Fufulso-Sawla road conditions before the FSRP implementation. It has the presence of 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 the 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 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 conduct 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 way 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 their communities. Furthermore, balance test outcomes confirmed the comparability of the control and treatment groups. However, although we carefully selected similar comparison roads, this does not ensure that the comparison group is similar to the treatment group in terms of unobservable characteristics as well, because the similarity was determined by a few observed variables. Thus, as a second strategy, the evaluation utilized OLS, ANCOVA, regression discontinuity, and interrupted time series analysis estimations in the context of an integral economic development approach for the impact analysis of the road's and ancillaries' use, as well as to measure their impact on socio-economic dimensions. The ANCOVA estimates are preferred over the difference-in-differences estimates in scenarios in which the autocorrelation of outcomes is low over time, as it provides a more efficient estimation of the effect (McKenzie, 2012). Autocorrelation tests on residuals for the main outcomes reject the hypothesis of autocorrelation, thus it supports the application of ANCOVA to this analysis. In addition, to capture more clearly the impact of the Fufulso-Sawla road on schooling, sanitation, and health, the regression discontinuity methodology was utilized, both employing the 2012 and 2017 Ghana Living Standards Survey (GLSS) and the primary household data collected. Finally, an interrupted time-series analysis (ITSA) with Newey-West standard errors and one lag (Linden, 2015) was performed to assess the effect of the FSRP on the number of tourists visiting the Mole National Park from 2012 to 2018. The holistic design of the evaluation allows for the assessment of both the direct and long-term impacts of the intervention on households and their communities. Finally, several issues and potential limitations highlighted by the literature and identified during the scoping mission in July 2019 were taken into consideration to ensure unbiased estimates and adequate attribution of outcomes. Furthermore, balanced test outcomes confirmed the comparability of control and treatment groups. In this manner, the

design eliminates potential sources of bias both the before-after and simple with-without comparisons have, and is expected to yield an unbiased estimate of the project impact (Annex 2 of the Technical Annexes presents more details on the methodology).

**Data and sample:** IDEV undertook household and community surveys to generate the required data for this evaluation. The data were collected through tablets and smartphones with the help of enumerators, by using Computer-Aided Personal Interviewing (CAPI), specifically Qualtrics (the digitized data collection tool). Data utilized for the econometric analysis in this study included: primary data collected from 2,393 households (across 17 treatment and 13 control communities); and 150 subjects corresponding to educators, health and tourism professionals. The household and institutional data collection took place simultaneously from 7 to 25 October 2019. Furthermore, the secondary data collection involved an analysis of six household-level national surveys obtained from the Ghana Statistical Services at the enumeration levels and tourism data from Mole National Park authorities.

**Evaluation limitations and mitigation strategies:**

As with any other evaluation, this evaluation inevitably contains some limitations. The 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 beyond the areas around the project road, 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 baseline data with the control group; (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 those in the group treated; and finally (iv) results show only the average effect of all the components of the project and the income declaration in household surveys has its limitations, requiring caution in interpreting income outcomes. The inclusion of other aspects such as a multidimensional poverty index (MPI) allows some triangulation. The evaluation estimates the average impact of all components of the project on development outcomes. The impact of the estimation results reflects the combined impact of all the components of the project.

Based on the theory of change (Annex 1 of the Technical Annexes), we categorized outcomes to be examined in this evaluation on key variables of interest (traffic intensity; travel time and transport cost; 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). The summary statistics of these outcomes of the treatment and comparison groups at the baseline are presented in Annex 4 of the Technical Annexes. In the next section, we present the estimated impact of the project on these outcomes. ■



Y FIRST  
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65 CF

DAF  
CF 610

# Major Findings/Impacts of the Project

## Impacts on transport-related outcomes

### Impact on travel time, traffic density, and transport costs

**Finding 1:** Overall, road construction significantly improved the transportation conditions for the treated population. The commuting time fell by 33 percent in 2019, equivalent to more than 120 minutes per month. Access and frequency of transport also significantly improved. However, the project failed to reduce transport costs.

**On average, treated households experienced a 25.3 percent reduction in commuting time in 2015 and a 33 percent reduction in 2019.** Before the treatment, the average commuting time was 30 minutes more per trip than the control group. It is worth noting that the three largest commuting saving times correspond to the commute to health-care

facilities, the hospital, and schools. Households living along the Lot 2 section of the road experienced a larger decline than those living along Lot 1. This is not surprising, given that traffic flow on the latter before the road construction was better than in Lot 2. Both males and females seem to have benefited on average equally from the decrease in commuting time.

Figure 10 of Annex 4 of the Technical Annexes presents the commuting time's normal distributions for the five places of reference utilized in the construction of the travel time index. On average, in 2012, households in the treatment group spent about 30 minutes more per trip commuting than the control group. After the construction of the road, however, these same households have a shorter commuting time across locations than the control group. Similarly, the road had improved transport access and frequency.

**Table 2:** Daily traffic flow for top four transport modes Ffulso-Larabanga-Grupe

Transport mode	Baseline 2013		Endline 2016		Observed differences	
	Average daily traffic flows	%	Average daily traffic flows	%	Average daily traffic flows	%
Motor cycles	141.0	26.9	257.3	23.6	116.3	-3.3
Cars (private, taxis)	45.0	9.0	154.2	15.1	109.2	6.1
Pick-ups/vans (pick-ups, land rovers, jeeps, 4WDs)	124.5	28.9	183.5	21.1	59.0	-7.8
Mini buses (seating cap. not more than 25 persons)	21.8	5.7	94.0	10.9	72.2	5.2
Others	131.0	29.5	336.0	29.2	205.0	-0.2
<b>Total</b>	<b>463.3</b>	<b>100.0</b>	<b>1.024.7</b>	<b>100.0</b>	<b>561.3</b>	<b>-</b>

Source: Abilin Consult

**Table 3:** Summary effects and impact of the FSRP – transportation outcomes

Outcomes	2015		2019	
	Average change	Significance	Average change	Significance
Traffic intensity (increase)	121%	●		
Travel time (decrease)	-25.3%	●	-32.5%	●
Transport cost (increase)	14.5%	●	14.5%	●

● Significant effects   ● No significant effects   ● Significant effects with unexpected sign  
Source: Evaluation Team

### Traffic flows within major towns of project beneficiary districts increased significantly.

Average daily traffic flow across three main stations—Fufulso, Larabanga, and Grupe—increased by 121 percentage points, from 463 flows in 2013 to 1,025 flows in 2016. Although motorcycles, cars (both privately owned and taxis), and pick-ups/vans accounted for most flows before and after the project, the proportion changed. While the proportion of motorcycles declined from 27 percent at baseline to 24 percent in 2016, that for cars increased from 9 percent in 2013 to about 15 percent in 2016 (Table 2).

It is partly attributable to a boost in commercial taxi activities as a result of increased accessibility brought about by the road project. In Larabanga, traffic flow by privately-owned cars and taxis increased by 9 percent over the same period. Triggered by increased access to places previously difficult to access, especially the country's Mole National Park. Table 18 in Annex 4 of the Technical Annexes presents details of the surveys, with emphasis on the top four modes of transportation.

**Notably, mini-buses used for commercial purposes saw a marked increase in daily traffic flow across all three stations.** In the case of Fufulso, daily traffic flow of mini-buses doubled in 2016, about 10.5 percent, while in the case of Larabanga, average daily flows as of 2016 stood at 7.7 percent, more than three times the situation at baseline.

However, **the project led to a significant increase in transport costs**, by 14.5 percent compared with the control group (Table 3).

### Impact on access to socio-economic services

#### Impact on overall market conditions

**Finding 2:** The road construction helped significantly improve overall market conditions in treated households by 11 percent in 2015 and 14 percent as of 2019. The presence of ancillary works, in addition to roads, amplified the impact generated by the road. The influence of the ancillary works on economic outcomes, however, is not uniform. Instead, it varies depending on the aspect measured, as well as over time.

The intervention had a statistically significant and positive impact on market conditions along the entire corridor. Its impact lasted and continued to grow four years after its completion. Villages located along Lot 2 experienced a positive impact only after 2015. When schools and markets are added to the road intervention, the market conditions' positive impact is enlarged. For households living in villages removed from the main road by 5 to 10 km, market conditions worsened. Males experienced better market conditions than females. Finally, the lower the level of education of the spouse, the more they saw an improvement in market conditions, albeit the improvement being significantly lower than the one experienced by their husbands or children. The list of measures encompassing the index utilized in the estimation could be found in Annex 5 of the Technical Annexes. Figures 7 and 8 in Annex 4 of the Technical Annexes depict the overall market conditions distribution for the heads of household and spouses in treatment and control groups over time.

On average, the control group faced better conditions than the treatment groups in 2012. Nonetheless, while control group households experienced no change, a 4.4 standard deviation increase was experienced by treatment households, exposing them to better market conditions than the control group in 2019. Spouses experience a 6.28 standard deviation shift.

### Impact on overall market integration

One of the goals of the FSRP was to improve the market integration of the Savannah Region with markets in other regions of the country, together with neighboring countries. The variable of interest utilized to evaluate the impact of the road on market integration is an index that measures the geographical reach of households in the acquisition of input products, as well as in the trading of their goods. A description of the index component is found in Annex 5 of the Technical Annexes.

**Finding 3:** The project improved market integration in the beneficiary areas by a significant 7 percent in 2019. It also fostered market diversification and unleashed synergies with other organizations' initiatives.

**The intervention had a statistically significant and positive impact on market integration four years after the construction of the road was completed.**

Evidence indicates that the FSRP led to a significant increase in the market integration index of 7 percent four years after the road was completed (Table 4). Evidence of synergy with other organizations' work was also identified. Specifically, households that received assistance with business development achieved better integration into other markets than those that did not.

**Evidence shows a positive and significant impact of the road and ancillary works on market diversification**, an impact of 2.1 percent in 2015, and 2.2 percent four years after completion. As was the case for previous economic outcomes analyzed, findings on the market's diversification lend support for comprehensive interventions rather than single-focused ones.

**The most significant increases in trade corresponded to trading with the regional capital (increased by a factor of 3), followed by foreign countries (increased by a factor of 2), and Accra (an increase of 1.5 times). Trading with bordering countries and district capital followed closely with an average increase of a factor of 1.3.** Local integration (i.e., trading with nearby and further communities, the district capital, and Accra) oscillated between 0.7 and 1.4 percent. In contrast, trading with foreign countries (i.e., bordering countries, foreign countries, and overseas) oscillated between 0.1 and 0.67 percent.

**Rural villages located 5 km from the road transport goods less frequently than those located on the road.**

As in previous cases, interventions carried out by other institutions also improve outcomes and thus highlight synergies that could be exploited in future interventions. Specifically, households that benefited from post-harvest loss training decreased the frequency with which they transported goods to the market, thus increasing their capacity to ensure stable incomes or exploit better market conditions. Similarly, households that benefited from new technologies reported an increase in the frequency with which they transported goods in 2019. Households with storage facilities transported their goods to the market less frequently.

**Also, evidence shows a statistically significant and positive impact of the FSRP on trading conditions.**

The improvement was generated by road access and by the combination of the road with ancillary works. The latter amplified the capacity of household members to negotiate prices as a result of the road construction. Evidence also suggests that villages removed from the road have less capacity to negotiate prices. Figures 10 and 11 (in Annex 4 of the Technical Report) present the normal distributions for markets' trade diversification index, and the frequency with which households trade in the control and treatment groups. In both cases, significant changes in the indexes' distribution for the treatment group and the shift experience are equal to a one (1) full standard deviation.

## Impact on the use of market facilities

**Finding 4:** The use of markets where facilities were constructed increased in Lot 1, but not in Lot 2. Problems with their location, design, and dusty commuting conditions at the baseline had a negative impact in 2015. The population seems to have adapted to the new locations, however, as by 2019 the negative effect had dissipated.

**The constructed market facilities were used in Lot 1 if no problems were reported with the market locations.** In markets in Lot 1 at the right location (as per users' needs), the use of the market facilities increased by a statistically significant 4.5 percent. Problems with the location of the markets led to a statistically significant decrease in the market use of 6.2 percent in 2015. By 2019, however, the population seemed to have adapted to the new location, but this was not the case for all markets. Some locations remained unused (Table 8 in Annex 4 of the Technical Annexes). Of the four, only the Sawla market was not used, due to socio-cultural reasons. In the case of Fufulso, it is only used on market days. Similarly, the truck park provided as part of the market facility in Fufulso is seldom used. This is because buses and other vehicles plying the route normally stop alongside the main road and so taxis prefer parking there. Unlike the Sawla market, the situation in the non-use of the Fufulso market and truck park is purely an enforcement problem which the district assembly is best placed to address and resolve.

Households also reported problems with the design of the markets. Nonetheless, this problem did not deter households from using the facilities. On the contrary, in markets where new designs were introduced there was a statistically significant increase in the frequency of market facilities' use in 2015 (6.3 percent increase). However, this impact dissipated by 2019, as users saw it was better to be more visible and display their goods outside the boxes built. Lack of transport access at the baseline and very dusty commuting conditions adversely affected households' use of markets,

but this also reverted by 2019, reflecting better transport conditions four years after the completion of the FSRP. Households' sense of responsibility for the maintenance of market facilities significantly increased the frequency of use. However, the impact was relatively small (0.2 percent).

**Finding 5:** The building of truck parks or the grain storage facility did not affect the frequency of use of these two ancillaries.

**No statistically significant evidence was found indicating that the building of truck parks or the grain storage facility affected the frequency of use of these two ancillaries** (Table 9 in Annex 4 of the Technical Annexes). Instead, it was the location where the families lived. Households in urban areas or those living closer to the road utilized the truck park more frequently (1.5 and 1.8 percent more frequently, respectively). Among other factors that played a minor but nonetheless statistically significant role in determining the frequency of use of truck parks and grain storage facilities, was the time it took households to reach the market (the closer the commute to the market, the more frequently they used both facilities). Other factors included: (i) the length of time spent collecting water for household use; (ii) the location where households acquire inputs and the types of goods they sold; (iii) transport access at baseline; and (iv) safety and crime recurrence on the road at the baseline. The sizes of the coefficients for these variables were all small.

## Impact on the development of new business, quality of employment for households, and economic opportunities for youth

**Finding 6:** Overall, the FSRP significantly improved the development and arrival of new business (by 12 percent in 2019). However, the impact on the quality of employment of households was only significant in 2015 when the road was associated with schools and health facilities. Also, the impact on economic opportunity for youth was only significant when the road was associated with market facilities.

**Table 4:** Summary effects and impact of the FSRP – market conditions outcomes

Outcomes	2015		2019	
	Average	Significance	Average	Significance
Market conditions	11%	●	14%	●
Market integration		●	7%	●
Development/arrival of new business	11%	●	11.6%	●
Type of occupation (road only)	-13%	●	-14%	●
Type of occupation (road + school facilities)	8%	●		●
Type of occupation (road + health facilities)	10%	●		●

● Significant effects   ● No significant effects   ● Significant effects with unexpected sign

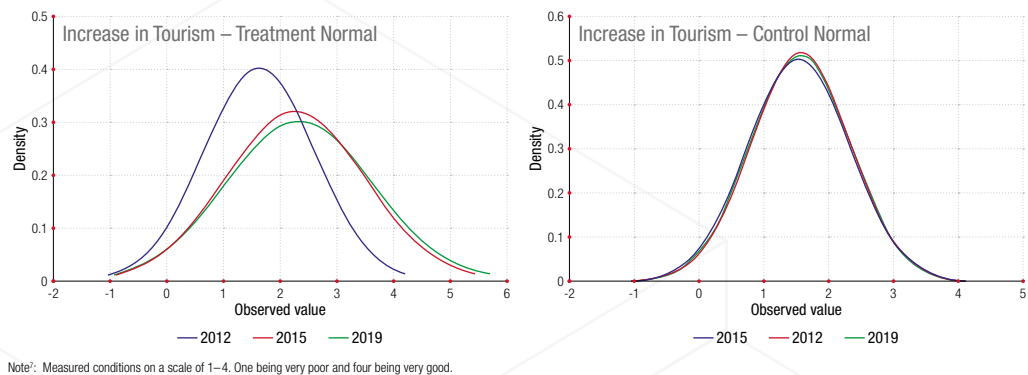
Source: Evaluation Team

**The evaluation found positive results of the development/arrival of new business.** The FSRP led to a significant increase in the development and arrival of new business (by 12 percent in 2019). The type of occupation held by three household members was used as a proxy for the quality of employment. Only categories 1 through 10 were included, as these capture jobs carried out outside the home. The higher the value assigned to the type of occupation included in the measurement, the more skilled and the better paid the job typically is. Consequently, higher values of the variable of interest are associated with a better type of occupation. In 2015, treatment groups reported a statistically significant and lower score (-13 percent) in the quality of employment held than households in the control group (Table 4). The same impact was found in 2019. However, the outcome was found not to be even across interventions and years. The inclusion of ancillary works had a positive and statistically significant impact on the type of occupation of households. In 2015, this was the case in villages where schools and health-care facilities (respectively, increases of 8 and 10 percent) were constructed along with the road (Table 4). This is mainly due to the fact that schools and health facilities offered better quality job opportunities, as they required high skills compared with those needed to work as farmers. Also, the new business did generate jobs, including better jobs, but these were located in urban areas. This is why statistically significant and positive results are found for urban areas, both in 2015 (5.9 percent) and in 2019 (5.7 percent).

The variable economic opportunity for youth measures the market conditions for young people's jobs in agriculture and non-farming employment, as well as their access to education, and whether they or their parents could pay for their education. **The road helped generate economic opportunities for youth when it was associated with market facilities.** This impact persists four years after the completion of the intervention. In 2012, the economic opportunities for youth were poor (1.84 out of 4). Although markets have helped improve them, seven years later, they remain poor (2.17 out of 4) (Table 16, Annex 4 of the Technical Annexes). **Additional explanatory variables included in the estimation played a significant role.** These include assistance received from other institutions in education, market access, and road access. The latter findings are of interest, as they highlight potential and effective synergies for future projects.

### Impact on tourism

**Results indicate a statistically significant and positive impact of the road on tourism activity along the road.** The increase equaled 1.26 standard deviations in 2015 and the effect continued to increase, albeit slightly, in 2019. The control group shows no statistically significant change. Figure 3 depicts the tourism expansion distribution between 2012 and 2019 for both the treatment and control groups. Findings are consistent with the reality faced by the Damongo-Mole area regarding a shortage

**Figure 3:** Tourism normal distributions 2012–19, treatment vs control

in hotel infrastructure, as well as the capacity of Mole National Park to handle a significant increase of tourists.

**The patronage of tourism among Ghanaians saw a marked increase in the beneficiary districts.** The total number of tourists to Mole National Park was estimated at 12,691 tourists in 2005, with the number increasing by an average 384 tourists annually up to 2013. In the first year of the road construction (2013), there was no significant effect on the number of tourists, followed by a significant increase in the annual trend of tourists relative to the pre-intervention trend (Figure 11 in Annex 4 of the Technical Annexes). When the number of tourists is disaggregated by origin (foreign and Ghanaian), the results show that, from road construction, local tourism has gradually substituted tourism of foreign origins. Indeed, the number of foreign tourists dropped considerably from 7,303 in 2012 (before the actual start of road works) to 4,927 tourists in 2015 (end of the works). Meanwhile, the number of Ghanaian tourists went from 7,271 to 12,815 tourists over the same period. This observation is confirmed by the estimations that show that the road construction saw a significant increase in the annual trend of Ghanaian tourists (relative to the pre-intervention trend), by 387 tourists per year and a non-significant negative effect on the number of foreign tourists. Table 17 in Annex 4 of the Technical Annexes shows the results

of the interrupted time series analysis of Ghanaian, foreign, and total (Ghanaian + foreign) tourists in Mole National Park.

### Impact on Mole National Park road and the Mognori Bridge

**Finding 7:** The use of the Mole National Park road and the Mognori Bridge benefited first the communities closer to the road, and by 2019 also villages removed from the main road. Furthermore, the impact goes beyond the immediate beneficiary communities located right before and after the Mognori Bridge.

**The use of these two works benefited first those communities that were closer to the road in 2015 (an increase of 3.5 percent). Nonetheless, the benefits reached villages removed from the main road four years later (an increase of 1.9 percent).** Specifically, by 2019, there is statistically significant evidence that households in rural communities located between 5 and 10 km from the road increased the frequency with which they used both the Mognori Bridge (1.9 percent higher) and the Mole National Park road (1.7 percent higher use). Furthermore, this also indicates that the impact of the ancillaries went beyond the immediate beneficiary communities located right before and after the Mognori Bridge, or located next to the Mole National Park entrance. There is also evidence



that those households that were utilizing the bridge and the Mole National Park road before the FSRP intervention began to be implemented in 2012 increased their use of both ancillaries after their construction (Table 10 in Annex 4 of the Technical Annexes). At a focus group discussion with Mognori and Murigu communities, members agreed that the project, especially with the construction of the bridge, had boosted economic opportunities. They noted that before the construction of the road and bridge, shea nuts picked from the wild were used to just make candle lights, but now women are picking and selling the shea nuts. They added that the use of tricycles to transport shea nuts to the main market centers had created a new avenue for women to earn higher incomes. In these communities, the charcoal-burning business was booming as the road and bridge made transportation easier.

### Impact on access to quality water supply

**Finding 8:** The project significantly increased households' access to quality water supply by 17 percent, though bad relations between staff (teachers and nurses) and communities reduced the impact.

The FSRP had a positive and statistically significant impact on households' access to quality water supply,<sup>8</sup> at about 17 percent as of 2015 (Table 5). The establishment of the water treatment plant as part of the project is largely responsible for the impact observed. This saw the connection of more than 10,000 people within the Fufulso catchments to potable water sources. In some communities, the provision of boreholes alongside health facilities and schools also contributed to increasing households' access to drinking water. For example, health-care facilities also contributed toward improving the water quality by 7 percent, but the impact was not statistically significant until 2019. A combination of factors explains the low impact of the mentioned ancillaries. Findings in this study highlighted the poor conditions encountered in some of the markets' and schools' boreholes.

Furthermore, relational factors affected access to clean water collected through boreholes. Typically, women reported that if they had problems accessing the boreholes and/or if they had a bad relationship with school or health staff, they generally chose not to use the boreholes. Instead, they collected water from the river or creeks. Households living close to the road and those that had access to schools face fewer water-quality problems. In the case of the water treatment plant, qualitative interviews revealed that under-utilization of the plant (about 8 percent) to an extent affects the revenue generation, which in turn undermines the maintenance of the plant to guarantee reliable water supply. Also, field visits to the water treatment plant revealed that, due to poor maintenance, some installations were subject to rusting and had the potential to adversely affect water quality.

### Impact on the overall sanitation conditions

**Finding 9:** Overall, the project generated a statistically significant and positive impact on households' access to and use of improved sanitation.

**Findings support a positive and statistically significant impact of the road and ancillary works on sanitation conditions.** The construction of the road, combined with improved access to health facilities, helped to improve access to sanitation services by 11 percent in 2015 and 14 percent in 2019 compared with control households (Table 5). Two main components of the sanitation ancillary works were the construction of boreholes and Kumasi Ventilated Improved Pits (KVIPs), which is an improved version of the standard latrines. All communities along the road had boreholes and KVIPs installed. Thus, a sanitation use index was constructed based on households and staff reporting on the frequency with which they used these two ancillary components. The higher the value of the index, the more frequently were the boreholes and KVIPs used by the subjects. In some communities, these sanitation facilities were attached to markets, schools, and health-care facilities; in others, they were not.

**Table 5:** Summary effects and impact of the FSRP – socio-economic services

Outcomes	2015		2019	
	Average Change	Significance	Average Change	Significance
Quality water supply Index	17%	●		●
Overall sanitation conditions Index	10.8%	●	14.4%	●

● Significant effects   ● No significant effects   ● Significant effects with unexpected sign  
Source: Evaluation Team

**Relational factors also affect outcomes.** Specifically, the quality of the relations between medical staff and community members, as well as the quality of the relationships between school staff and community members, when positive, help to increase sanitation conditions. Poor quality relations deter people from using the sanitation facilities attached to the school and health-care facilities.

US\$15 per week<sup>9</sup> or an increase of 84 percent from the average income in 2012 of US\$18 (Table 6). 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 an increase of 100 percent). As expected, communities closer to the road reported higher levels of income, but the increase was not statistically significant.

## Socio-economic impacts of the project

### Impact on household incomes

**Finding 10:** Overall, the FSRP improved the treatment households' income significantly in 2019. Evidence of a more positive impact on household incomes was found in communities where the road construction was accompanied by health-care facilities.

A positive and statistically significant impact of the road was found on household incomes in 2019, though no statistically significant difference was found between the treatment and control groups as a consequence of the road construction in 2015. The project had significant positive effects on household incomes in 2019, with an increase of

**As time passed, the use of sanitation facilities increased by 2.5 percent, especially among families living in communities in which health-care centres were built.** Other factors influencing the use included: the location of sanitation facilities in Lot 2 (it increased by 2.7 percent in 2019); the time spent to collect water at the baseline (if more than 120 minutes, this increased by 1 percent); commuting security factors on the way to or from schools and the condition of the facilities (children's use of KIVPs increased by 6 percent in 2015, but the impact disappeared in 2019 due to poor maintenance in schools); and interpersonal relational factors, such as the quality of the household relationships with school staff, and their sense of ownership and responsibility regarding boreholes built in their communities.

**Table 6:** Summary effects and impact of the FSRP – household incomes

Outcomes	2015		2019	
	Average Change	Significance	Average Change	Significance
Household incomes		●	84% (US\$15)	●

● Significant effects   ● No significant effects   ● Significant effects with unexpected sign  
Source: Evaluation Team

Figure 3 of Annex 4 of the Technical Annexes depicts the frequency of use of the two sanitation components, KVIPs, and boreholes. The evaluation also found uneven use among borehole users. Because women typically collect the water, they used boreholes, on average, more frequently than other household members. The boreholes of their choice were the community ones over those attached to other ancillary facilities. The use of the latter had decreased between 2012 and 2019 (Figure 4 in Annex 4 of the Technical Annexes).

### Impact on health outcomes

**Finding 11:** There was a positive and significant impact of the road on the overall health of beneficiaries (8 percent increase in 2015 and 9 percent in 2019) everywhere due to increased access to health facilities. The size of the road's treatment effects on access to health facilities was an 11 percent increase in 2015 compared with control households. The impact continued to expand four years after the intervention was completed (13 percent in 2019). Households also report being able to secure more skilled medical personnel.

**Econometric analysis based on the primary data collected finds a robust, positive, and statistically significant impact of the FSRP on the health conditions of the population living in the project area of influence.** Table 18 in Annex 4 of the Technical Annexes reports the outcomes of the impact estimations on the ability of household members to access health services. The index captures the ability of household members

to reach clinics, use of ambulance services, secure medical personnel for the clinics, and the frequency with which they need to be referred to the main hospital. The results show that the road led to an increase in access to health facilities by 11 percent in 2015 (Table 7). In villages where health clinic facilities were built, the impact was amplified (around 3 percent additional impact). The impact continued to expand four years after the intervention was completed (13 percent in 2019). The villages removed from the road do not seem to reap the same benefits. A positive and statistically significant impact of the road on the overall health of beneficiaries (8 percent increase in 2015 and 9 percent in 2019) was found also. 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 (41 percent) was observed in terms of prenatal care. This impact resulted from the increase in the frequency of households' use of health-care facilities.

**Finding 12:** By 2019, the introduction of the road in conjunction with health-care facilities has led to a statistically significant increase in the frequency of households' use of health-care facilities.

**No significant treatment effects were found in 2015 on the use of the health-care facilities. However, in 2019, the use of health-care facilities increased by 4.8 percent** (Table 7 in Annex 4 of the Technical Annexes). The presence of schools' ancillaries also helped increase the frequency with which health-care facilities were

**Table 7:** Summary effects and impact of the FSRP – socio-economic outcomes

Outcomes	2015		2019	
	Average Change	Significance	Average Change	Significance
Overall health	8%	●	9%	●
Prenatal care for HH (alongside the road)	41%	●		●
Use of health facilities		●	4%	●
Access to healthcare	11%	●	13%	●

● Significant effects ● No significant effects ● Significant effects with unexpected sign  
Source: Evaluation Team

used by 2 percent. Albeit small, the impact signals synergies generated between the road and the ancillary works. The evaluation also found a 2 percent increase in the frequency with which health-care facilities were used by households living 10 km removed from the road. Findings were consistent with the previous one in the literature, which highlighted the generation of the positive spillover effect of main roads on ancillary roads' access. This access, in turn, facilitated the population's capacity to access health services [Egan *et al.* (2009), Elvik (2009)]. Also, having a sense of ownership and responsibility for maintenance of the health facility increases the frequency with which the services were used, but 56 percent of households reported never being asked for assistance. Assistance was only requested when their livestock invade health-care premises, which is widespread and of frequent recurrence (97 percent of the people reported this happening).

**Finding 13:** Relational factors were also important for securing improved personal health and services. The quality of family relations, as well as the existence of a good rapport between medical staff, community, local officials, and medical supervisors significantly affected outcomes.

**Relational factors also influenced the outcomes in this case.** Having a good relationship with the medical personnel at the clinic increases access to health care. For women in a monogamous marriage, access to health care also increased vis-à-vis those women who were living under alternative marital arrangements.

**A positive and statistically significant impact of the road was found on the overall health of households.** Here the variable of interest measures the reported overall quality of health of the heads of household, spouses, and children. Once again, relational explanatory variables were also found to influence outcomes. The better the quality of the relations of the household members, the better was their overall health. Similar results were found when

examining the recurrence of illness, but a higher incidence of illnesses among treatment households vis-à-vis control households was found (Table 12 in Annex 4 of the Technical Annexes).

**There is also statistically significant evidence that the road and health-care facilities built contributed to securing medical personnel to run the health-care facilities and securing, on average, better qualified medical personnel.** Good relations between the community and the medical personnel at the clinics helped secure more qualified personnel. Indeed, when analyzing the reasons that motivated health-care professionals to work along the FSRP area, good relations with the community, with local government officials, and with supervisors appear as one of the drivers of staff's decisions to take the job in 2015. Synergies with interventions of other institutions were also found here.

**Villages with access to housing and clean water through boreholes amplified the positive impact on health achieved by the road.** Specifically, results indicate that villages where households had received help from other institutions to secure clean water, were able to secure qualified personnel. The finding lends support for the addition of boreholes to the clinics and other areas in the community.

**Consistent with the findings regarding the reduction of illness, no statistical evidence is found of a positive impact on nutrition being generated by the inception of the road or the new health-care facilities,** except for villages located in Lot 2; a positive and statistically significant impact on nutrition is found for villages located along this section of the road. Consistent with previous findings, male-headed households have a higher nutritional intake than females.

**Treatment households in 2012 were worse off than control households on all three counts: access, overall health, and securing quality medical personal. However, the new road helped households to catch up or even bypass**

**the health conditions enjoyed by control group households by 2015.** The mean assessment moved from 2.0 for each index component to 3.13. Figure 15 of Annex 4 of the Technical Annexes depicts the normal distribution of access to health-care services, overall health, and medical personnel qualifications between 2012 and 2019, both for the treatment and control households.

### Impact on education outcomes

**Finding 14:** The construction of the road and the educational facilities together had a positive and statistically significant impact on education.

**There is a statistically significant and positive impact of the road on educational achievement.** Subjects 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 of education than those who lived in rural areas. Demographic characteristics also influenced outcomes. Subjects who report belonging to Muslim families and parents who are farmers achieved lower educational levels.

**Similar results were seen when estimating the primary school completion rate.** Subjects who benefited from the road while they were in primary school, report a 25 percent higher probability of completing primary school than those who did not. **The road also had a positive statistically significant impact on school attendance.** Children who were at school-age when the road was constructed had a 3.96 times higher probability of attending school. If they lived in rural areas, removed from the road, the probability of them attending school decreased. Finally, males had a higher probability of attending school than females.

**Children in the treated group had a lower frequency occurrence of dropping out than children in the control group. Having good family relations also reduced the school dropout rate.** No evidence was found of any impact of the road on literacy rates.

### Impacts on poverty reduction

**Finding 15:** Multidimensional poverty was significantly reduced in the treatment group because of the road's construction. Combining the road with schools and markets further contributed to an increase of the overall impact on multidimensional poverty by 20 and 15 percent, respectively, in 2015.

**Construction of the road generated a positive impact on poverty reduction among beneficiary households.** The multidimensional poverty index (MPI) decreased significantly among beneficiary households, by 2.16 percent in 2015 and 2.59 percent in 2019 (Table 11 in Annex 4 of the Technical Annexes). Thus, the project impacted positively not only on the living standards of beneficiaries but also on education and health outcomes.

**The ancillary works generated a proportionately higher additional effect than their additional costs.** The road construction alone was estimated to have led to a statistically significant decrease in 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 of 0.54 percent, increasing the total decrease in MPI (road and school) to 2.70 percent. The additional effect of the school represented 20 percent of this overall effect. The construction of a market in addition to the road led to a statistically significant reduction in MPI of 0.39 percent and a total reduction (road and market) in MPI of 2.55 percent. The additional effect of the market represented 15 percent of this total effect. The ancillary works made it possible to generate a proportionately higher additional effect on the MPI than their additional cost. In 2019, only the markets led to a significant further reduction of MPI by 0.35 percent, which brings the total effect of road and markets to 2.94 percent. The additional effect of markets in 2019 represents 12 percent of this overall effect. Outcomes are consistent with previous findings in the literature, such as Aktin and Donaldson (2015), and provide information regarding the type of factors that can impact positively the primary intervention, as recommended by Van de Walle (2009).

**Table 8:** Summary effects and impact of the FSRP – poverty reduction outcomes

Outcomes	2015		2019	
	Average Change	Significance	Average Change	Significance
Multidimensional Poverty Index	-2.1%	●	-2.6%	●

● Significant effects   ● No significant effects   ● Significant effects with unexpected sign  
 Source: Evaluation Team

## Impacts on institutional networks and relationships

**Finding 16:** Both the road and ancillaries had a significant positive impact on the institutional networks along the corridor. Ancillary works were effective channels of these relations, as they provided a physical place of encounter and to share information.

Four groups of measures are included in this institutional analysis section. These were: the quality of life index, the social responsibility index, the civic responsibility index, and the personal and social ills index. Three of them measure life in three fundamental pillars of any society: family, civic life, and social networks of solidarity. They are all important for the development of functional markets and investment, and the stability and health of social life in general. The personal and social ills index facilitates the identification of fundamental problems in society. It also highlights possible lines of work for future interventions.

### Impact on the quality of life

**The road and ancillary works contributed to improving the quality of life of household members, with the impact lasting over time.** Evidence shows a positive and statistically significant impact (3 percent) for head of household and child, as well as 2 percent for the spouse, in 2015. This improvement lasts only for the head of household, with a positive and statistically significant increase of 4 percent four years after the road completion (2019). School interventions emerged again as a point of encounter for all members of the household. Households in villages removed from the road by less than 5 km also showed a positive impact on the

quality of their lives. The benefit does not reach those further removed. The impact on medical and school staff is significantly lower.

### Impact on social responsibility

**Similarly, a positive statistically significant treatment effect of the road on the living of social responsibility was found for staff and spouses.** In 2015, social responsibility increased by 27 percent for staff and 1 percent for the spouse. Ancillary works amplified the impact for the heads of household and children, in some cases. The impact on each of the subjects varied, however. The diverse kinds of ancillary works integrated into the road project provided different opportunities for the population to come together depending on their circumstances and professions. Thus, while for the head of household, schools, markets, and truck parks serve as channels for subjects to live out their social responsibilities, for the spouses, the majority of which are women, the optimal space seems to have been schools. Along the same lines, while the road did not seem to influence the way youth lived their social responsibility, schools, where they spent long hours, did. Outcomes suggest a different type of pattern for medical and school staff. While schools seem to have been a positive channel for living out their social responsibility, health-care facilities did not seem to be. Neither were markets. All in all, the multi-dimensional design of the intervention seems to have stimulated the living of social responsibility in the communities.

### Impact on civil responsibility

**The overall impact of the FSRP and its ancillary works on the living of civil responsibilities is weaker.** For the heads of household and children,

the positive, statistically significant effect of the intervention was felt with a lag (respectively, 0.3 percent). For the staff, evidence of an impact (20 percent increase) is found in 2015.

### Impact on personal and social ills

**For heads of households, markets are a path of exposure to social ills, while truck parks and health centers seem to reduce this exposure.**

At the same time, women face social ills along the road and in the market. They reported facing social and personal ills along the road (specifically personal safety and crime), conditions that worsened after road construction by 47 percent, representing a shift in the evaluation of conditions from poor to deplorable (Table 16 in Annex 4 of the Technical Annexes). This is consistent with previous findings reported in the analysis, as it indicates that spouses living in remote villages have lower exposure to social ills. On the other hand, children are exposed to school. They spend several hours there and are more likely to experience or hear about these types of problems while at school and/or conversing with their friends.

### Unintended impacts of project interventions

As part of the evaluation, unintended positive and negative effects were identified.

**Finding 17:** The project had positive and negative unintended impacts. On the positive side, the project promoted greater social cohesion among beneficiary communities, reduced the incidence of highway robbery, and helped to catalyze investments from other development partners in support of water supply. On the negative side, the project contributed to the degradation of the environment through growth in charcoal burning activity in the three beneficiary districts.

**The FSRP promoted greater social cohesion among beneficiary communities and reduced the incidence of highway robbery.** The equitable

distribution of the ancillary facilities brought greater social cohesion and peace among communities along the corridor of the road. Focus group discussions revealed that inter-community conflicts decreased because communities depend on each other for varying social services. In Sawla, for instance, a key informant indicated that:

*“...misunderstanding between two beneficiary communities nearly resulted in conflict but for the sake of the equitable distribution of ancillary works, they resolved their differences amicably. This was because one community benefited from a health center while the other benefited from a school. Hence, this inter-dependence quelled the impending conflict.”*

In terms of security, the project contributed to a reduction in incidents on the highway. Concerning robbery, an official at the Central Gonja District Assembly had this to say:

*“Before the road, armed robbery activity was high especially during the rainy seasons as the bad nature of the road slowed down the movement of cars. But this has reduced significantly as a result of the road.”*

**Furthermore, the FSRP helped to catalyze investments from other development partners in building 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 a sum of US\$1 million to address plant maintenance challenges, as well as increase its operating capacity for increased coverage to other households.

**In terms of negative unintended consequences, qualitative interviews point to an impact on environmental degradation.** The project is adversely affecting the environment due to a marked growth in charcoal-burning activities in the three beneficiary districts. At the same time, however, district assemblies in the three districts are

earning more 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.

## Sustainability of the project benefits

**As shown above, there is statistical evidence that the FSRP did indeed improve most of the livelihood indicators of the beneficiaries' communities. But, are these benefits sustainable in the long term? This section explores the extent of the sustainability of the benefits of the road project.** The evaluation points to the fact that the FSRP had a large impact on the beneficiaries' communities. The sustainability of the observed impact is however unlikely as the continued deterioration of the road (Lot 2) and some related ancillaries such as schools and health-care facilities may jeopardize the project. This is mainly due to: (i) irregularities with the construction of road infrastructure and ancillary works; (ii) insufficient ownership on the part of the population resulting from the absence of effective participation during the implementation process; and (iii) inappropriate maintenance of the road and its related ancillaries.

## Irregularities with the construction of road infrastructure and ancillary works

**Finding 18:** The project experienced irregularities with the construction of road infrastructure and ancillary works. There was widespread awareness of these problems among project stakeholders. There is little evidence, however, that issues of maintenance were addressed during the construction process in Lot 2 or afterward. Similarly, little support is found for communities acknowledging responsibility for the ancillary works in their communities.

**Overall, outcomes indicate widespread awareness of problems with the construction of both the road and the ancillary works.** This was especially the case in Lot 2, where households

reported irregularities during the construction process. There is also evidence that problems were discussed at the community level, as well as raised by local authorities and the construction companies/consultant. The former assisted in resolving ancillary construction problems in Lot 1, but not in Lot 2. There is little evidence, however, that issues of maintenance were addressed during the construction process in Lot 2 or afterward. Similarly, little support is found for communities acknowledging responsibility for the ancillary works in their communities.

**By 2015, the probability of households reporting problems with the road increased from 58 to 88 percent.** This was especially the case in Lot 2 (16 percent higher probability). Outcomes indicate that issues were raised with chiefs, government officials, and construction companies/consultants. Four years after, problems with the road continued to be reported along Lot 2 and by households that benefited from the Mognori bridge. Markets were still an important institutional channel of communication and a source of shared information. Households linked road deterioration problems with irregularities during the construction stage of the FSRP. Similar outcomes were found when analyzing staff responses.

**There is no evidence of any discussions taking place regarding the maintenance of the different facilities.** This was the case before, during, and after the construction. An exception was the Mognori bridge. Statistical findings were consistent with what was encountered during the exploratory trip. Specifically, during the meeting with district assembly members, they raised concerns with the fact that they did not have maintenance plans for the ancillary works constructed in their district. Estimation outcomes regarding the significance of household characteristics suggest that awareness of construction problems spread among all household members independently of those households' economic conditions.

**Ancillary problems reported by medical and school staff vary with the type of ancillary facility. Health clinics along Lot 2 reported the highest probability of having problems in 2015 and thereafter (50 and**



**80 percent in 2015 and 2019, respectively).** Staff also reported problems with construction appearing during the construction (86 percent) or the first three years after the construction (12 percent) (Table 1, Annex 4 of the Technical Annexes).

### Lack of sense of ownership

**Finding 19:** Efforts to engage the community remained at the level of information but not participation. This was the case for communities where health facilities were built or refurbished.

**The absence of participation during the implementation process compromised the sustainability of the project, and also reduced the positive initial impact four years after the completion of the road and ancillaries.** Variables utilized to measure engagement include knowledge of the road construction project before the construction began, as well as of meetings organized and the degree of participation on the part of the different community constituencies.

**The majority of spouses (58 percent) and children (56 percent) heard about FSRP before its construction, while the proportion of husbands and staff reporting knowledge of the project before its construction began was lower.** Family and civic networks such as district leaders and chiefs were typically the sources of this information. Medical and school staff instead learned about the FSRP through schools, NGOs, or the construction companies directly. Except for the children, awareness of meetings organized for the FSRP was low among the population (heads of households at 24 percent, spouses at 14 percent, and staff at 14 percent), and so was the percentage of beneficiaries invited to participate in them. This was the case for women and children. However, the majority of those given the opportunity to participate in the meeting reported a high level of participation in them, at over 63 percent (Figure 2, Annex 4 of the Technical Annexes). Those who attended the meetings found them to be informative, but they reported little willingness on the part of organizers to answer questions or receive input.

The main findings reported in Table 1 of Annex 4 of the Technical Annexes suggest that efforts to engage the community remained at the level of information, but not participation. This was the case for communities where health-care facilities were built or refurbished. Finally, findings on the regressions for medical and school staff reflected the same dynamics. They typically learned about the FSRP project through schools, community chiefs, and district officials but not through the AfDB. Staff report a 73 percent higher probability of organizers being open to input if community leaders attended the meetings. Outcomes from the estimations carried out on staff produced similar results.

### Inadequate maintenance and management

**Finding 20:** 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 inadequate maintenance as a recurring theme across many of the facilities provided, especially for health centers, schools, and bungalows built for teachers and nurses.

**The project led to significant improvement in school facilities for treated communities in 2015, but the improvement did not last.** By 2019 school conditions significantly deteriorated in treatment communities to the point of reversing the variables' coefficients' sign as shown in Table 4 of Annex 4 of the Technical Annexes. We also find that, on average, treatment communities that received schools in Lot 1 reported a statistically significant improvement in school conditions in 2015 (9.2 percent), while those in Lot 2 reported significant deterioration.

**No statistically significant difference was found in the conditions of health-care facilities between the treatment and control groups.** The best conditions were noted at the facilities' baseline (2012), but if problems with them were reported during the construction then the conditions of the facilities deteriorated by 2015 and further worsened by 2019.

**Another factor contributing to the deterioration of the health-care facilities' physical condition was the absence of training before staff received the facilities. Motivational factors also influenced the maintenance of the health facilities.**

Lack of staff motivation generated by poor relations with colleagues worsened the physical conditions of the facilities. This was especially the case along Lot 2. Similarly, staff who reported being motivated by the housing provided to health-care personnel reported better facility conditions (Table 4, in Annex 4 of the Technical Annexes). At the Fufulso Health Center, officials asserted that, while construction of the dispensary had helped improve health-care services at the center:

*“...all solar systems installed for bungalows for nurses are down. Also, sinks in the health facility are not working. This has been reported to the Ghana Health Services, but nothing has been done as yet.”*

Also, 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.

**Interpersonal relational factors affected the physical conditions of school facilities.**

If the staff was motivated by good relationships at their school, by their colleagues, as well as by their community and authorities, then the physical condition of their school was better in 2015 and 2019 (Table 3 in Annex 4 of the Technical Annexes). ■





# Conclusions, Lessons, and Recommendations

## Conclusions

The impact evaluation of the Fufulso-Sawla Road Project demonstrated the transformative nature and multidimensional impact of combining road, social and economic infrastructure in a single intervention on poverty reduction. It also highlighted the importance of institutional and relational factors in obtaining, as well as ensuring, that the impact generated lasts. Finally, it provided robust evidence for the effectiveness of implementing comprehensive and integrated interventions over single-focused ones, as it amplified the project's impact and generated synergies that contributed to accelerating development. However, the impacts observed were not uniform but varied depending on the economic or social aspect being measured.

Subjects included in the sample are representative of the population in the region of intervention, and the control group selected is comparable to the impacted population overall. Therefore, findings are not only of interest for the communities surrounding the two roads included in the study but could be of assistance for current and future development efforts in all three districts included, and for the Savannah Region of Ghana as a whole.

Through the impact evaluation of the FSRP, the Bank sought to answer a set of questions. The main findings are as follows:

- **The road project improved significantly the transportation conditions in beneficiary communities.** Commuting time was reduced by over two hours, and average daily traffic flow across the three main stations—Fufulso, Larabanga, and Grupe—in the project area increased. However, the project led to a significant increase in transport costs by 14.5 percent compared with the control group.
- **The road project interventions improved market conditions, favored market integration and diversification, and led to the development/arrival of new business.** Market conditions, including households' access to both farming and non-farming opportunities, inputs of production, and access to agricultural and other skills training, increased by 14 percent in 2019 as a result of the road project. The FSRP contributed to a significant increase in the market integration index and market diversification. Finally, the project led to a significant increase in the development and arrival of new business. However, the impact on employment opportunities for both adults (type of occupation) and youth (economic opportunities) was only significant when the road was associated with health facilities.
- **Household incomes significantly increased.** However, 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. As expected, communities closer to the road reported higher levels of income, but the increase was not statistically significant.
- **The project improved the living conditions of the beneficiaries.** The project significantly improved households' access to a quality water supply and sanitation services. These improvements are partly accounted for by the construction of the water treatment plant, the

sanitation facilities, and the boreholes associated with schools and health facilities. Also, the project improved significantly the overall health conditions of the beneficiaries. However, there was no statistical evidence of positive effects from the project on child mortality or prenatal care, apart from households alongside the road for which a significant increase (41 percent) was observed in terms of prenatal care. Finally, concerning the education outcomes, the evaluation found statistically significant positive effects on school attendance and completion.

**I The evaluation demonstrated that the Bank-supported integrated road project had the desired effects on poverty reduction.**

Multidimensional poverty, which considers that poverty reduction can come from changes in sources of income and better access to social services, was significantly reduced as a consequence of the integrated road project. This result shows 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 amplified. This underscores the significance of adopting integrative approaches to road projects, especially when targeting poor and economically disadvantaged areas.

**I The ancillary works generated a proportionately greater additional effect than their additional costs.**

Households that benefited from a school or a market in addition to the road experienced a significant additional reduction in the MPI, one that was higher than the total cost of the ancillary works.

**I The intervention also benefited girls and women, 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. In terms of poverty reduction, the impact

of the project on MPI is greater for male- than for female-headed households. Males also benefited more than females from the positive impact on education generated by the road. However, female school enrolment and retention increased, maternal deaths decreased, access by women to local markets and water collection improved, and their economic opportunities expanded.

**I The project had positive and negative unintended impacts.**

Regarding the positive unintended consequences, the project promoted greater social cohesion among beneficiary communities, reduced the incidence of highway robbery, and helped to catalyze investments from other development partners in support of water supply. However, on the negative side, the project contributed to the degradation of the environment through growth in charcoal-burning activities in the three beneficiary districts.

**I The sustainability of development outcomes of the Bank-supported road project and related ancillary works was 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 poor maintenance as a recurring theme across many of the facilities provided, especially for 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.

- 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.
- 2. Relational factors are key to the sustainability of integrated road interventions similar to the FSRP, as they can amplify or jeopardize a project's impact.** For example, failure to ensure active participation of project beneficiaries beyond 'information sharing' undermined the maintenance of 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 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.
- 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:

- 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.
- 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 investment: (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.

**3. Strengthen the human and institutional capacity to sustain development gains.**  
Neglect of periodic maintenance threatens

the long-term social and economic benefits from the road and ancillary facilities. The Bank should strengthen the human and institutional capacity needed 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. ■









## Annexes

The “Technical Annexes” document can be found on the following page:

<http://idev.afdb.org/en/document/evaluation-transport-impact>

### List of annexes:

1. Project Logic Model and Theory of Change
2. Methodological Approaches
3. Impact Analysis Design – Econometric Approach
4. Some Empirical Results
5. Indexes’ Definitions by Area Evaluated
6. Maps on Treatment and Control Roads, and Ghana Road Plan 2015–2035

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## Endnotes

- 1 See, for instance: Baum-Snow *et al.* (2011); Egan *et al.* (2009); Kircher (2007); and Shah (2002).
- 2 In December 2018, two new regions (North East and Savannah) were carved out of the Northern Region after a referendum. Therefore, in this document we will use Savannah Region in lieu of Northern Region, which was the name of the region at the time of the construction of the Fufulso-Sawla Road.
- 3 AfDB (2015), p. 10.
- 4 For a complete description of all ancillary works see AfDB Aide Memoires of March 2014 through December 2016, as well as Ablin Consult (2015).
- 5 Ablin Consult (2015).
- 6 AfDB (2015), p.4.
- 7 The graphs present the density function in the Y axes and the mean of the variables plus values of the mean+1-3 STD DEV. Indeed values are between 1 and 4 for all the variables, but the graph reports, as it is standard, values for the referred MEAN+STD DEV (in reality it is 2.698\*STD DEV, not 3).
- 8 Details of the elements included in the Index of quality water are included in Annex 5 of the Technical Annexes.
- 9 Corresponding to around US\$68 per month, at the monthly exchange rate as at 30 September 2019.







IDEV

Independent Development Evaluation  
African Development Bank





## 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 Ffulso-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 Ffulso-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.



# IDEV

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